

JANUARY 2017

In the Wake of Arbitration

Papers from the Sixth Annual CSIS
South China Sea Conference

EDITORS

Murray Hiebert

Gregory B. Poling

Conor Cronin

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INTERNATIONAL STUDIES

A Report of the
CSIS SOUTHEAST ASIA PROGRAM AND THE
ASIA MARITIME TRANSPARENCY INITIATIVE



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Center for Strategic & International Studies
1616 Rhode Island Avenue, NW
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202-887-0200 | www.csis.org

Rowman & Littlefield
4501 Forbes Boulevard
Lanham, MD 20706
301-459-3366 | www.rowman.com

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Preface

The Center for Strategic and International Studies (CSIS) hosted its sixth annual South China Sea conference on July 12, 2016. The day featured keynote speeches from Senator Dan Sullivan (R-AK), Committee on Armed Services, and Daniel Kritenbrink, senior director for Asian Affairs on the National Security Council, as well as four panel discussions with highly respected experts from 10 countries.

The event fortuitously fell on the same day that the arbitral tribunal at the Permanent Court of Arbitration in The Hague issued its ruling on the Philippines' case against China's claims in the South China Sea. The conference provided the panelists and the audience with a first opportunity to grapple with the results of the tribunal ruling and begin to measure its impact. This report contains papers by 11 of the panelists, providing a wide array of perspectives on the political, legal, military, and environmental outlook for the South China Sea in 2016.

The papers herein are based on the subject matter to which their authors spoke:

- Elina Noor and Admiral Mike McDevitt discuss the state of the South China Sea in 2016.
- Erik Franckx, Jay Batongbacal, and James Kraska discuss legal issues of the ruling and next steps.
- Carlyle Thayer, Timothy Heath, and Natalie Sambhi discuss military modernization and capacity building in the region.
- John McManus, E. D. Gomez, and Kwang-Tsao Shao discuss the impact of the disputes on the environment.

The papers that follow represent the views of the authors and do not reflect those of CSIS, the Southeast Asia Program, or the Asia Maritime Transparency Initiative.

PART ONE

The South China Sea in 2016

U.S. South China Sea Policy 2015–2016: The Growing Role of the Defense Department

Michael McDevitt

INTRODUCTION

There should be no mistake: the United States will fly, sail and operate wherever international law allows. . . . America, alongside its allies and partners . . . will not be deterred from exercising these rights. . . . After all turning an underwater rock into an airfield simply does not afford the rights of sovereignty or permit restrictions on international air or maritime transit.

—Secretary of Defense Ashton Carter

This statement made over a year ago at the high-profile Asia-oriented security Shangri-La Dialogue in Singapore on May 30, 2015 has become the single most repeated statement of U.S. policy regarding the South China Sea.¹ Since the U.S. secretary of defense, Ashton Carter, added this new formulation to Washington's South China Sea public policy position, it has been used repeatedly by U.S. officials, including President Barack Obama. What was initially a reaction to China's artificially created islands has become the term of art when U.S. officials speak more broadly about maritime-oriented security issues in East Asia. One reason it has become so popular is because it succinctly conveys Washington's harder-nosed approach to spelling out traditional U.S. maritime interests while implicitly saying no country can keep us out of East Asia.

When applied to the South China Sea, it also conveys a different U.S. public policy perspective than the more traditional statements, which focused on peaceful resolution and exhortations

1. Secretary of Defense Ashton Carter, "A Regional Security Architecture Where Everyone Rises" (presentation, IISS, Shangri-La Dialogue, Singapore, May 30, 2015), <http://www.defense.gov/Speeches/Speech.aspx?SpeechID=1945>.

implores China to follow a rules-based approach to solve difficulties in the South China Sea. Now these long-standing U.S. public policy statements have not disappeared; instead they have been augmented by the more muscular “sail and fly where international law allows” mantra.

Why? It can be argued that Washington became tired of looking toothless when its many years of almost single-minded focus on diplomatic discourse, public and private, that urged Beijing to moderate its efforts to claim sovereignty over all the land features in the South China Sea (along with jurisdiction over huge swaths of the surrounding waters) were largely ignored. Island building in the Spratly Islands appears to be the straw that broke the camel’s back and pushed Washington toward a more military-buttressed policy approach to China’s South China Sea activities. Sailing and flying wherever international law allows is essentially saying the United States can operate its air and naval forces anywhere it chooses to in international airspace and on the high seas, and there is nothing that China, or anyone else for that matter, can do about it—unless they want to start a war.

A LEADING ROLE FOR THE DEPARTMENT OF DEFENSE

Coming as it did from the secretary of defense rather than the secretary of state, the Carter statement was the most public example of the growing involvement of the U.S. security establishment in South China Sea policy, a trend that has been building over the past three years. Washington’s diplomatic pleas for Chinese restraint in the pursuit of what Beijing considers its territory in the Spratly Island chain of the South China Sea have gone nowhere.

Because diplomatic exhortations have had no impact on Beijing, a very visible turn toward “hard power” approaches has become a now routine element of U.S. policy toward Chinese activities in the South China Sea. Starting in August 2013, the U.S. Seventh Fleet instituted full time U.S. Navy warship presence, along with periodic aircraft reconnaissance missions, somewhere in the South China Sea. On average there are two USN warships patrolling that body of water daily, something on the order of 700 “ship days” of South China Sea presence on an annual basis. This compares with five to six People’s Liberation Army Navy (PLAN) warships, plus some number of Chinese Coast Guard (CCG) vessels operating on a daily basis in the South China Sea.² One type of mission these routine patrols conduct, when directed, is freedom of navigation transits near South China Sea features occupied by China.

2. Daniel R. Russel’s testimony before the Senate Foreign Relations Committee:

It is my belief that the consistent presence of the Seventh Fleet and our recent force posture movements have been significant factors in deterring conflict between claimants in recent years . . . a strong and sustained U.S. military presence . . . is welcomed by the overwhelming majority of countries in the region [however] . . . diplomacy will continue to be our instrument of first resort.

(Daniel R. Russel, “Maritime Issues in East Asia” [testimony before the Senate Foreign Relations Committee, Washington, DC, May 13, 2015], <http://www.state.gov/p/eap/rls/rm/2015/05/242262.htm>.) See also Lauren Chatmas, “USS Lassen Promotes Maritime Security in the South China Sea,” U.S. Navy News Service, July 9, 2015, http://www.navy.mil/submit/display.asp?story_id=90056. For the 700 ship days figure, see “USS William P. Lawrence Conducts South China Sea Patrol,” May 10, 2016, <http://www.public.navy.mil/surfor/ddg110/Pages/USS-William-P.-Lawrence-Conducts-South-China-Sea-Patrol.aspx#.V36X-mjD-po>.

THE ISLAND-BUILDING ISSUE

Because the demonstration of effective administration is considered an act of sovereignty, each claimant has permanently occupied features in the Spratly group—and has done so for several decades. Vietnam occupies 27 (31 outposts) features, China seven, the Philippines nine, Malaysia five, and Taiwan one—the largest naturally formed feature.³

Despite its long-standing claim, China was very late in establishing footholds in the Spratly Islands. They were left with slim pickings, as all the “best” islands and rocks had already been occupied by Vietnam, the Philippines, and Malaysia long before Beijing elected to act in 1988. After 1988, China, like other claimants, modestly expanded its foothold on its seven very small features so that small military garrisons on these remote outposts could be more comfortably housed and communications equipment, radar, and defensive armament could be accommodated. Importantly, over the years since China joined the “garrison club” in the Spratlys, all the claimants to the Spratlys have managed to coexist in a stable “live and let live” environment.

This stability began to change late in 2013, when China quietly began dredging operations aimed at enlarging the three rocks and four low-tide elevations (a land feature submerged at high tide) it has occupied for over 20 years.⁴ By the early months of 2016 China had changed its modestly developed holdings into de facto (not de jure) islands that are several orders of magnitude improved over what existed before. The reality today is that China has decisively changed the strategic balance in the Spratly Island chain by creating facilities on the new islands that militarily overshadow the garrisons and defensive capabilities of the features occupied by Vietnam, the Philippines, or Malaysia.

Studying satellite photos available online makes it obvious that China created well-designed military bases that will accommodate larger garrisons, more military equipment including defensive and offensive missile systems, fuel and ordnance storage, along with new harbors that are large enough for warships to moor pier-side. In at least one case (Fiery Cross Reef), the harbor is able to accommodate a warship as large as a Type 071 amphibious ship (a 25,000-ton, 690-foot-long amphibious ship that can embark between 500 to 800 soldiers/marines).⁵

All of the newly formed islands have expanded helicopter landing facilities and, most significantly, runways for jet aircraft on Fiery Cross Reef, Subi Reef, and Mischief Reef. At least one of these, on

3. Alexander Vuving, “The South China Sea: Who Occupies What in the Spratlys?,” *Diplomat*, May 6, 2016, <http://thediplomat.com/2016/05/south-china-sea-who-claims-what-in-the-spratlys/>.

4. China has occupied the “rocks” Fiery Cross Reef, Cuarteron Reef, and Johnson Reef South along with the submerged at high tide (known as low-tide elevations) features Gaven Reef, Subi Reef, and Hughes Reef since 1988. China seized Mischief Reef, another low-tide elevation, in 1995. J. Ashley Roach, “China’s Shifting Sands in the Spratlys,” *ASIL [American Society of International Law] Insights* 19, no. 54 (2015), <https://www.asil.org/insights/volume/19/issue/15/chinas-shifting-sands-spratlys>.

5. “China Warship Docks in the Spratly Islands,” *Taiwan English News*, May 4, 2016, <http://news.thewildeast.net/china-warship-docks-in-the-spratly-islands/>. More broadly, the best source for information on island building is found at the Asia Maritime Transparency Initiative (AMTI), a website sponsored by the Center for Strategic and International Studies (CSIS) in Washington, DC, has carefully documented China’s reclamation activities with high-resolution satellite photography. See <http://amti.csis.org/>.

Fiery Cross, has been completed and is long enough to accommodate fighter-jets.⁶ Despite trying to publicly downplay the military utility of these man-made islands, the ubiquity of commercially available satellite photography on the Internet makes Beijing's public attempts to deny the obvious seem foolish—there is no denying that Beijing has created seven island bases about 500 nautical miles (nm) away from mainland China.⁷

The inherent military capacity of these new island bases was officially and publicly clarified by Washington on February 23, 2016 in a letter from Director of National Intelligence James Clapper to Senator John McCain. He confirmed what many observers of satellite photographs of Chinese Spratly activity have already concluded—Chinese land reclamation and construction work in the Spratlys had established infrastructure needed

to project military capabilities in the South China Sea beyond that which is required for point defense of its outposts. . . . Based on the pace and scope of construction at these outposts, China will be able to deploy a range of offensive and defensive military capabilities and support increased PLAN and CCG presence beginning in 2016. . . . Once these facilities are completed by the end of 2016 or early 2017, China will have significant capacity to quickly project substantial offensive military power to the region.

What is China up to? These expansions are the latest step by Beijing in what has essentially been a long-term multi-decade campaign aimed at recovering de facto control over all the land features in the South China Sea.⁸ Because Chinese sovereignty assertions are involved, it is not surprising that Beijing has not backed down despite sustained criticism. Its responses to criticism can be generally characterized as telling everyone, including Washington, to mind their own business—that the Spratlys are Chinese territory and they can do what they like, and the improved facilities

6. For an excellent assessment of the implications of the new 10,000-foot runway on Fiery Cross Reef, see Andrew Erickson, "Lengthening Chinese Airstrips May Pave Way for South China Sea ADIZ," *National Interest*, June 29, 2015, <http://nationalinterest.org/blog/the-buzz/lengthening-chinese-airstrips-may-pave-way-south-china-sea-12736>.

7. Beijing has announced that island building per se is complete (i.e., the destruction of coral and associated dredging), but the construction of buildings and other necessary facilities goes on. Zachary Keck, "Exposed: China Did NOT Halt Island Building Project in the South China Sea," *National Interest*, August 6, 2015, <http://nationalinterest.org/blog/the-buzz/exposed-china-did-not-halt-island-building-project-the-south-13512>.

8. See David Shear's statement before the Senate Foreign Relations Committee:

Since 2014, China has reclaimed 2,000 acres—more land than all other claimants combined over the history of their claims. When combined with a range of activities, including assertion of its expansive Nine-Dash Line claim, relocation of oil rigs in disputed maritime zones, efforts to restrict access to disputed fishing zones, and efforts to interfere with resupply of the Philippine outpost at Second Thomas Shoal, we see a pattern of behavior that raises concerns that China is trying to assert de facto control over disputed territories, and strengthen its military presence in the South China Sea.

(David Shear, "Statement of David Shear, Assistant Secretary of Defense for Asian & Pacific Security Affairs, before the Senate Committee on Foreign Relations, May 13, 2015," http://www.foreign.senate.gov/imo/media/doc/051315_Shear_Testimony.pdf.)

would permit China to “better safeguard national territorial sovereignty [i.e., the Spratlys] and maritime rights and interests.”⁹

Finally, a word about why China has built these new bases. Clearly Beijing wants the Spratlys because it firmly believes they are Chinese territory. Besides the obvious positive economic resources and patriotic motivations, there is also a sensible strategic rationale at work. Intimidation of the other Spratly occupiers is obviously one strategic reason; maybe if they conclude their military positions are hopeless, they will leave. More practical from the perspective of a strategic planner in the People’s Liberation Army (PLA) is the reality that the Spratlys could potentially become a foothold that could permit a country to interfere with China’s trade, or shield a hostile naval force destined for China or the rest of Northeast Asia. In fact, the location of the Spratlys relative to traditional trade routes has been on the minds of Western geostrategists since the end of World War I. It was worries about an aggressive Japan that triggered France to annex both the Spratlys and the Paracels in the 1930s.¹⁰

Today the proliferation of precision weapons and the ability to deliver them has reduced the wartime salience of military forces in the Spratlys as a threat to either maritime commerce or naval forces operating in the southern half of the South China Sea. But controlling these islands is the best way for China to make certain no one else controls them, and during peacetime allows improved surveillance of its maritime approaches. Since China is hugely dependent on the maritime trade routes that pass to the west of the Spratlys, including trade associated with the much-touted Twenty-First-Century Maritime Silk Road, it is not a surprise that China blends strategic interest along with a nationalist narrative of recovering lost territory as the reason it wants to physically be in control of all the Spratlys.

FREEDOM OF NAVIGATION (FON) OPERATIONS¹¹

China’s island-building activities have triggered greater U.S. involvement “on the ground,” as it were. A tangible demonstration of the U.S. policy of “sailing wherever international law permits” led to direct involvement of the U.S. Navy. On October 27, 2015, Washington directed a U.S. Navy destroyer to sail within 12 nautical miles of one of China’s reclaimed islands (Subi Reef). This was intended as a demonstration that the United States would not recognize any extended or new maritime entitlements associated with Beijing’s island building.¹² Since Beijing has yet to make any claims to entitlements, such as a territorial sea that Subi Reef is not entitled to under the United

9. Hua Chunying, cited in Shear, Statement before the Senate Foreign Relations Committee.

10. Marwyn S. Samuels, *Contest for the South China Sea* (New York, Methuen 1982), 4; and Bill Hayton, *The South China Sea: The Struggle for Power in Asia* (New Haven, CT: Yale University Press, 2014), 53–56.

11. This chapter was greatly improved thanks to the comments and expertise in international maritime law of Jonathan Odom, Mark Rosen, and Peter Dutton.

12. This was a freedom of navigation operation, better known as a FONOP. According to the Department of Defense, the FON program is

actively implemented against *excessive maritime claims* by coastal nations in every region of the world, based upon the Department’s global interest in mobility and access. The program is principle-based, in that it is administered with regard to the *excessive nature of maritime claims*, rather than the identity of the coastal

Nations Convention on the Law of the Sea (UNCLOS) because it is a low-tide elevation (LTE) and not subject to national claims, the legal reasoning behind the U.S. Navy's demonstration is convoluted. It is in fact so convoluted that the best way to explain it is to quote at length a letter from Secretary Carter to an unhappy Senator John McCain, who was seeking an explanation as to why the operation was characterized as "innocent passage." A passage from the Department of Defense response explaining the reasoning behind the involvement of the USS *Lassen* follows:

With respect to Subi Reef, *the claimants have not clarified whether they believe a territorial sea surrounds it*, but one thing is clear: under the law of the sea, China's land reclamation cannot create a legal entitlement to a territorial sea, and does not change our legal ability to navigate near it in this manner. We [the Obama administration] believe that Subi Reef, before China turned it into an artificial island, was a low-tide elevation and that it therefore cannot generate its own entitlement to a territorial sea. However, if it is located within 12 nautical miles of another geographic feature that is entitled to a territorial sea—as might be the case with Sandy Cay—then the low-water line on Subi Reef could be used as the baseline for measuring Sandy Cay's territorial sea. In other words, in those circumstances, Subi Reef could be surrounded by a 12-nautical mile-territorial sea despite being submerged at high tide in its natural state. Given the factual uncertainty, we conducted the FONOP in a manner that is lawful under all possible scenarios to preserve U.S. options should the factual ambiguities be resolved, disputes settled, and clarity on maritime claims reached.¹³

While Senator McCain was not happy, the intended message was clearly received by Beijing. The Chinese too were not happy, but in this case that result was the objective of the operation—it was the operational equivalent of diplomatic representation.¹⁴ In response, Beijing did not argue that

nations asserting those claims. As a result, U.S. forces challenge excessive claims asserted not only by potential adversaries and competitors, but also by allies, partners, and other nations. (Emphasis added.)

U.S. Department of Defense, "Freedom of Navigation Program: Fact Sheet," March 2015, [http://policy.defense.gov/Portals/11/Documents/gsa/cwmd/DoD%20FON%20Program%20—%20Fact%20Sheet%20\(March%202015\).pdf](http://policy.defense.gov/Portals/11/Documents/gsa/cwmd/DoD%20FON%20Program%20—%20Fact%20Sheet%20(March%202015).pdf).

13. Emphasis added. "Document: SECDEF Carter Letter to McCain on South China Sea Freedom of Navigation Operation," *USNI News*, January 5, 2016, <http://news.usni.org/2016/01/05/document-secdef-carter-letter-to-mccain-on-south-china-sea-freedom-of-navigation-operation>. The letter itself was dated December 22, 2015. The reason that the operation triggered many public questions is best spelled out in the article by Bonnie S. Glaser and Peter A. Dutton, "The U.S. Navy's Freedom of Navigation Operation around Subi Reef: Deciphering U.S. Signaling," *National Interest*, November 6, 2015, <http://nationalinterest.org/feature/the-us-navy%E2%80%99s-freedom-navigation-operation-around-subi-reef-14272>.

14. The State Department's explanation of the Freedom of Navigation (FON) Program is as follows:

U.S. policy since 1983 provides that the United States will exercise and assert its navigation and overflight rights and freedoms on a worldwide basis in a manner that is consistent with the balance of interests reflected in the Law of the Sea (LOS) Convention. The United States will not, however, acquiesce in unilateral acts of other states designed to restrict the rights and freedoms of the international community in navigation and overflight and other related high seas uses. The FON Program since 1979 has highlighted the navigation provisions of the LOS Convention to further the recognition of the vital national need to protect maritime rights throughout the world. The FON Program operates on a *triple track*, involving not only diplomatic

the United States had violated Chinese sovereignty,¹⁵ but instead indicated that the United States had “harmed” China’s security.

In the last sentence of his letter, Carter wrote: “We will continue to demonstrate as much by exercising the rights, freedoms and lawful uses of the seas all around the world and the South China Sea will be no exception.”

As promised, the United States has conducted two more FON operations in the South China Sea. The second took place on January 30, 2016, this time against one of China’s occupied Paracel Islands—Triton Island, to be specific. This operation was more clear-cut than the Subi Reef FON; Triton is an island, not a low-tide elevation. This operation challenged attempts by the three claimants—China, Taiwan, and Vietnam—to restrict navigation rights and freedoms around the Paracels. Each claimant has domestic laws that require either prior authorization or prior notification for a foreign warship to conduct “innocent passage” transit through its territorial sea; this is a violation of UNCLOS, which prohibits prior notification schemes. The U.S. government does not agree that domestic law supersedes the international law right of innocent passage; hence the “excessive claims” similarly asserted by each of these three claimants were challenged.

But in this case, the FON operation was not as effective as it could have been. An opportunity was missed. One of China’s other actions that is inconsistent with UNCLOS is the fact it has chosen to use straight baselines to surround the Paracel Island chain and the Senkaku Islands (as opposed to normal baselines around each individual island). According to UNCLOS, only archipelagic states are permitted to draw straight baselines around island chains—and China is not an archipelagic state. The U.S. government officially made this point to Beijing in 1996¹⁶ and again in 2013.¹⁷ The

representations and operational assertions by U.S. military units, but also bilateral and multilateral consultations with other governments in an effort to promote maritime stability and consistency with international law, stressing the need for and obligation of all States to adhere to the customary international law rules and practices reflected in the LOS Convention. (Emphasis added.)

U.S. Department of State, Fact Sheet, “Maritime Security and Navigation,” accessed July 11, 2016, <http://www.state.gov/e/oes/ocns/opa/maritimesecurity/>.

15. Graham Webster, “How China Maintains Strategic Ambiguity in the South China Sea,” *Diplomat*, October 29, 2015, <http://thediplomat.com/2015/10/how-china-maintains-strategic-ambiguity-in-the-south-china-sea/>.

16. U.S. Department of State, “Straight Baseline Claim: China,” *Limits in the Seas* 117 (1996): 8, <http://www.state.gov/documents/organization/57692.pdf>. The document says,

China (or Vietnam) would not be allowed to establish archipelagic straight baselines around the Paracel Islands, since the LOS Convention is quite clear in stating that an archipelagic State “means a State constituted wholly by one or more archipelagoes and may include other islands.” . . . As continental states, China and Vietnam cannot establish archipelagic straight baselines around islands belonging to them.

The *Limits in the Seas* series is issued by the Office of Ocean and Polar Affairs, Bureau of Oceans and International Environmental and Scientific Affairs in the Department of State. The series aims to examine coastal states’ maritime claims and/or boundaries and assess their consistency with international law. These studies represent the views of the U. S. government only on the specific matters discussed therein and do not necessarily reflect an acceptance of the limits claimed.

17. The United States sent a diplomatic note to the Ministry of Foreign Affairs of the People’s Republic of China on March 7, 2013; see *Digest of United States Practice in International Law 2013*, ed. CarrieLyn D. Guymon (Washington, DC: U.S. Department of State, Office of the Legal Adviser), 369–370, <http://www.state.gov/documents/organization/226409.pdf>.

January FON could have also protested this especially troubling excessive claim. If other continental states attempt to assert they have archipelagic status, the result could be a rash of new claims that would gobble up considerable amounts of ocean territory.

A third FON operation was conducted on May 10, 2016 at Fiery Cross Reef, a Spratly rock that has been transformed into an artificial island. According to the Pentagon, it was conducted to

challenge excessive maritime claims by China, Taiwan, and Vietnam which were seeking to restrict navigation rights in the South China Sea. This operation challenged attempts by China, Taiwan, and Vietnam to restrict navigation rights around the features they claim, specifically that these three claimants purport to require prior permission or notification of transits through the territorial sea, contrary to international law, . . . no claimants were notified prior to the transit, which is consistent with our normal process and international law.

Chinese officials were quick to condemn the operation with stronger language than in the past. A Chinese Ministry of Foreign Affairs spokesman said, "This action by the U.S. side threatened China's sovereignty and security interests, endangered the staff and facilities on the reef, and damaged regional peace and stability."¹⁸

This was the third innocent passage FON. While maintaining the right of innocent passage is important, conducting only innocent passage FONs has frustrated many individuals who seemingly want to conflate FON with some sort of deterrent signal to China. Moreover, some have erroneously assumed that "innocent passage" and FON operations are a binary choice, when in fact one category of FON operations are deliberately conducted to preserve the right of innocent passage.¹⁹ Deterrence is not the purpose of FON operations; if the U.S. government wants to send a signal of either reassurance to a friend or an implied military warning to an adversary, routine naval presence and naval exercises are a perfectly appropriate and tried-and-true ways to do this. But these uses of naval forces for signaling should not be mischaracterized as FON operations (FONOPs). FONOPs serve a specific purpose related to excessive maritime claims and have to follow UNCLOS to be credible. Moreover, the intended purpose of FONOPs can be ameliorated in geographic areas like the Spratlys that involve competing sovereignty claims and where one or more of the claimants concurrently has ambiguous maritime claims. To this point, the basic problem was spelled out in the Carter letter to McCain, which noted that conducting FON operations to challenge excessive claims that have not yet been officially made by China limits U.S. options: "The claimants have not clarified whether they believe a territorial sea surrounds it . . . we conducted the FONOP in a manner that is lawful under all possible scenarios to preserve U.S. options *should the factual ambiguities be resolved, disputes settled, and clarity on maritime claims reached.*"²⁰

18. U.S. and Chinese spokesmen quoted in Sam La Grone, "U.S. Destroyer Passes Near Chinese Artificial Island in South China Sea Freedom of Navigation Operation," *USNI News*, May 10, 2016, <https://news.usni.org/2016/05/10/u-s-destroyer-passes-near-chinese-artificial-island-in-south-china-sea-freedom-of-navigation-operation>.

19. Jonathan G. Odom, "FONOPs to Preserve the Right of Innocent Passage: Despite Popular Misconception, That Is Hardly Mission Impossible," *Diplomat*, February 25, 2016, <http://thediplomat.com/2016/02/fonops-to-preserve-the-right-of-innocent-passage/>.

20. Emphasis added. "Document: SECDEF Carter Letter to McCain."

Until China clarifies its claims in the Spratlys, one has to wonder whether the utility of frequent innocent passage FONs that run the risk of a direct military face-off is worth the risk, since they will do nothing to either change the reality of China's new island bases or China's interpretation of UNCLOS that requires prior notification. As demonstrated in areas where China has clarified its maritime claims (e.g., its mainland coast, around the Paracels, and the Senkakus) and codified claims that are excessive under international law, the United States has diplomatically protested and operationally challenged those maritime claims and should continue to do so to ensure that these claims do not ripen into the legitimate exercise of jurisdiction based on a theory of prescription. For example, the United States' frequent reconnaissance operations in China's exclusive economic zone (EEZ) have a secondary effect of challenging efforts by China to restrict lawful military activities beyond its territorial seas. But the ambiguity of the maritime claims in the Spratlys raises the issue of the confusing message sent when the United States uses the language of "protest" against maritime entitlements that have as yet never been officially asserted.

SCARBOROUGH SHOAL

In early 2016, Scarborough Shoal suddenly became a renewed issue of concern for U.S. officials. Information obtained by the *Washington Free Beacon* strongly suggested that China was preparing to turn Scarborough into another artificial island. One of the factors that suggested Beijing was about to act was an image posted on a Chinese website that purportedly depicted plans for dredging as part of a construction bid by the "Huangyan Island (the Chinese name for Scarborough Shoal) Township," a municipality created under China's South China Sea regional authority located on Woody (Sansha) Island in the Paracels.

While it is not clear whether Beijing ever intended to turn Scarborough into another new island base, a modern Scarborough airfield with radar and other modern intelligence, surveillance, and reconnaissance facilities so close to Philippine bases where the United States has been granted rotational access by the Philippine government creates obvious strategic issues. Turning Scarborough into a base with air search radars would allow China to have full-time radar coverage over most of Luzon.

As mentioned, whether this is China's intent is not known, but Washington reacted as though it was. The Department of Defense deemed its information credible enough to trigger a full-court press aimed at dissuading Beijing from taking those steps. Since Scarborough is ideally located to control the northeast exit of the South China Sea and is only 150 nautical miles west of Subic Bay, if it were turned into a PLA base like the recently constructed facilities in the Spratlys, it would enable (among other things) a credible Chinese air defense identification zone in the South China Sea.

The U.S. response included the rotational deployment of a small task force of U.S. Air Force tactical aircraft to the Philippines, the presence operations of the USS *John C. Stennis* aircraft carrier strike group in the South China Sea from March through May, and many high-level public statements, the most dramatic of which came from the secretary of defense in testimony before the Senate Armed Services Committee. Carter said that Scarborough is "a piece of disputed territory that, like other disputes in that region, has the potential to lead to military conflict. . . . That's

particularly concerning to us, given its proximity to the Philippines.”²¹ According to *New York Times* reports, President Obama also mentioned Scarborough Shoal to President Xi Jinping during their meeting on March 31, 2016 on the margins of the Nuclear Security Summit:

The stakes are so high that Mr. Obama warned the Chinese leader, Xi Jinping, during their recent meeting in Washington not to move on the Scarborough Shoal or invoke an air defense zone, said an American official who was briefed on the details of the encounter and spoke anonymously because of the diplomatic sensitivities.²²

In essence, the flurry of activity regarding Scarborough was meant to send a clear signal to China that the United States sees Scarborough differently from the Paracels and Spratlys. Although Scarborough is included in the official U.S. policy of taking no position on the merits of disputed sovereignty claims in the South China Sea, recent U.S. action suggests that it holds a different unofficial view. Since Scarborough is in neither the Spratly nor the Paracel chains, is not claimed by any littoral state other than China and Taiwan, and for almost 50 years was treated as though it was under U.S. jurisdiction, changing the U.S. position on sovereignty over Scarborough would not be a stretch. To this point:

It is [Mark E. Rosen’s] view that the evidence supports Philippine sovereignty over the Shoal. When comparing the Chinese and Philippine cases, evidence of effective occupation is not overwhelming in either case—but, of the two, the Philippines’ case is stronger. Most mariners charted this feature only in order to remain well clear of it since it was a hazard to navigation. Similarly, the presence of itinerant fishermen from either China or the Philippines is legally insufficient to establish a legal presence.

But past activities by the U.S. Navy and Philippine authorities to survey the Shoal so that it could be safe for shipping constitute some positive occupation, along with its [i.e., the Shoal’s] contemporaneous appearance on Philippine charts. Past actions by the Philippine armed forces to exercise law enforcement jurisdiction in the 1960s, both to eject smugglers and to monitor future movement, show intent to exercise jurisdiction over the atoll.

The past uses of the shoal by the U.S. Navy for military activities and its legal assessment that the atoll was part of the Philippines also support the case that the Republic of the Philippines was exercising sovereignty over the atoll. Even though the Philippines today asserts that its current claims are independent of the territory that was ceded by Spain to the United States, the key point is that the U.S. government considered it to be part of the Philippines, and any

21. Secretary of Defense Carter quotes are found in Bill Gertz, “Pentagon Warns of Conflict over Chinese Buildup on Disputed Island,” *Washington Free Beacon*, April 29, 2016, <http://freebeacon.com/national-security/pentagon-warns-conflict-chinese-buildup-disputed-island/>.

22. Jane Perlez, “U.S. Admiral’s Bluntness Rattles China, and Washington,” *New York Times*, May 6, 2016, http://www.nytimes.com/2016/05/07/world/asia/us-admiral-harry-harris.html?_r=0.

“occupying” activities which it undertook can be vicariously attributed to the Philippines because the United States was the legal proxy for the Philippine people until full independence in 1946.²³

In short, it would not be legally difficult for the U.S. government to persuade itself that the Philippines has a superior claim to sovereignty over Scarborough Shoal. The obvious political and security implication of such a judgment would be that the U.S.-Philippine Mutual Defense Treaty could be interpreted to cover Scarborough Shoal, an act that hopefully would deter Chinese island building while also creating one more potential Sino-U.S. flashpoint in maritime Asia. Unless the recent U.S. military posturing around Scarborough was simply a bluff, it suggests that Washington has already decided that Scarborough is important enough to the security of the Philippines (and to the United States’ position in the Philippines) to accept this risk.

THE PARACELS: ENHANCED INTEREST IN 2016

During the first three months of 2016, Chinese military activity in the Paracel Islands generated headlines. Beijing announced that it was improving its air defenses on Woody Island and installing anti-ship cruise missile batteries throughout the chain. Combined with the earlier lengthening and improvements to the extant fighter-jet-capable runway, these activities represented a definite improvement of Paracel defenses and what appears to be the beginning of a new airfield on the linked North and Middle Island. The reason these relatively unremarkable actions by Beijing became “headline material” was because they appeared to be a clear example of Beijing not following through on President Xi Jinping’s statement in Washington in September 2015 that China would not militarize holdings in the South China Sea.

Whether President Xi’s pledge was about just the Chinese artificial islands in the Spratlys or the entire South China Sea is subject to some Western debate, but the official Chinese spokesman saw no contradiction between what Xi said in September 2015 and what the PLA did in February and March 2016. Chinese officials and commentators have in fact depicted the deployment as a “defensive response” to the U.S. FON operation around Triton Island in January 2016 (discussed previously) and routine U.S. reconnaissance missions that fly between the Paracel Islands and Hainan in international airspace over China’s EEZs (the area where the fatal midair collision between a USN EP-3 reconnaissance aircraft and PLA Navy Air Force fighter occurred in 2001).

At a February press conference, China’s Ministry of Defense spokesman mocked U.S. efforts to make the installation of surface-to-air missiles a big issue, claiming, correctly in my judgment, the deployment served defensive purposes. The Foreign Ministry chimed in with its view that “China’s deployment of national defense facilities on its own territory is reasonable and justified, it has nothing to do with the so-called militarization.”²⁴

23. Mark E. Rosen, “Philippine Claims in the South China Sea: A Legal Analysis,” CNA Occasional Paper, August 2014, 6–17, seasresearch.files.wordpress.com/2014/08/iop-2014-u-008393.pdf.

24. Ministry of Foreign Affairs of the People’s Republic of China, “The Foreign Ministry Spokesperson Hong Lei Regular Press Conference on March 30, 2016,” http://www.fmprc.gov.cn/mfa_eng/xwfw_665399/s2510_665401/t1351862.shtml.

This effort to improve the defense of the Paracels is often seen by Western commentators to presage similar activity in the Spratlys, but it is important to realize the strategic importance of the Paracels to China may outweigh that of the Spratlys. It has to do with water depth and the fact that Beijing is stationing its ballistic missile submarines in the vicinity of Sanya City on the southern end of Hainan. Around the Paracels, the ocean depth ranges from 1,000 to 2,000 meters compared to the deep waters of 3,000-plus meters to the east and south. Significantly, a finger of this deep water divides the Paracels in the north from mainland China and the eastern half of Hainan. Immediate access to deep water for submarines leaving port is an advantage only available to China here (the East China and Yellow Seas are comparatively very shallow and hemmed in by Japan and its Ryukyu chain), and the Paracels provide important defensive depth to this strategically significant PLA capability.

As Dr. Tim Heath from RAND correctly pointed out:

In military terms, the deployment of the HQ-9 on the Paracel Islands incrementally increases China's ability to control the airspace immediately surrounding Woody Island. However, its tactical significance increases when deployed in combination with other anti-access/area denial (A2/AD) weapons. Moreover, the weapon carries tactical and strategic implications that can affect the regional security order in peacetime, crisis and in conflict.

The most immediate threat posed is to aircraft that fly within its range—principally, U.S. reconnaissance and surveillance airplanes. Although China has long challenged the legitimacy of those flights, it is unlikely to shoot down the airplanes unprovoked. In a crisis featuring a military standoff involving U.S. forces in the South China Sea, however, Chinese willingness to risk a crisis to demonstrate its resolve would greatly increase the danger. U.S. commanders would have to weigh the hazards of flying within range of the system against the importance of signaling U.S. resolve and collecting intelligence.²⁵

CONCLUDING THOUGHTS

There is hope that the arbitral tribunal decision on the merits of the Philippine request for arbitration will clarify that the nine-dash line has no legal basis in international law. In many ways, it is at the root of many of the direct confrontations between China and its neighbors because it cuts through the EEZs of all of the South China Sea coastal states and seems to be an underhanded way for China to claim a significant portion of the resources that, under UNCLOS, legitimately belong to the coastal states.

Beijing has refused to officially clarify what the nine-dash line signifies, but while officially mute on the topic, the actions its coast guard, maritime militia, and state-owned oil company have taken

25. Timothy Heath, "Beijing Ups the Ante in South China Sea Dispute with HQ-9 Deployment," *China Brief* 16, no. 6 (2016), http://www.jamestown.org/programs/chinabrief/single/?tx_ttnews%5Btt_news%5D=45233&tx_ttnews%5BbackPid%5D=828&no_cache=1#.V4Kvn4dTHSc.

over the years indicate that Beijing thinks it has a claim on most of the fish and hydrocarbon resources in the South China Sea. The United States finally in 2014 made clear that it thinks this line has no legal basis under UNCLOS.²⁶

While the depiction of the nine-dash line has existed on Chinese maps and charts for more than 60 years, it was not until December 2014 that the U.S. government finally conveyed an official position challenging the use of the nine-dash line as a way to indicate a claim beyond the land features inside the line.²⁷ It seems that Beijing's deliberate ambiguity preserves all of China's options without forcing it to make legally dubious assertions.²⁸ Ambiguity makes issuing protests that Chinese sovereignty is being compromised easy since the totality of the claim is unclear. Ambiguity also makes it possible for Beijing to rationalize employing a wide range of activities that harass and threaten maritime activity undertaken by other South China Sea littoral states in their own EEZ.

In this regard, the arbitral findings strip away much of this ambiguity. This is not necessarily a good thing, because it could generate pressure within China to take domestic legal actions regarding the Spratlys that would in turn generate pressure to expel "illegal" occupiers (the Vietnamese, Philippine, and Malaysian garrisons) from their Spratly holdings.

Finally, the reality in the South China Sea today is that China has occupied the entire Paracel group for over 40 years (with apparent U.S. blessing)²⁹ and, short of military action by Vietnam to try to recapture the archipelago, it will never leave. While its hold over Scarborough Shoal began only recently, there is no reason to expect China to lessen its grip unless some sort of bargain is reached with Manila that acknowledges Chinese sovereignty in return for access for Philippine

26. Daniel R. Russel, "Maritime Disputes in East Asia" (testimony before the House Committee on Foreign Affairs Subcommittee on Asia and the Pacific, Washington, DC, February 5, 2014), <http://www.state.gov/p/eap/rls/rm/2014/02/221293.htm>. Russel was blunt in his testimony, stating, "I want to emphasize the point that under international law, maritime claims in the South China Sea must be derived from land features. *Any use of the 'nine-dash line' by China to claim maritime rights not based on land features would be inconsistent with international law*" (emphasis added).

27. For an authoritative but not well publicized report on China's maritime claims, see the U.S. Department of State, Bureau of Oceans and International Environmental and Scientific Affairs, *Limits in the Seas* 143 (December 5, 2014): 4, <http://www.state.gov/documents/organization/234936.pdf>.

28. The January 2013 edition of the *American Journal of International Law* (AJIL) features an Agora on the South China Sea Disputes. One of the articles, by Robert Beckman, remains the single best short analysis of the LOS issues surrounding the various claims in the South China Sea, exploring Chinese "ambiguity" in detail. See Robert Beckman, "The UN Convention on the Law of the Sea and the Maritime Disputes in the South China Sea," *American Journal of International Law* 107, no. 1 (2013): 150–151, <http://www.jstor.org/discover/10.5305/amerjintelaw.107.1.fm>.

29. See Memorandum of Conversation between Secretary of State Henry Kissinger and China's Ambassador Han Hsu, Acting Director, PRC Liaison Office, Washington, DC, January 23, 1974, <https://history.state.gov/historicaldocuments/frus1969-76v18/d66>. The memorandum quotes Kissinger as saying,

There are only two points I wanted to make with respect to the Paracel Islands issue. Chinese forces captured Gerald Emil Kosh, an employee of the Department of Defense, during a battle between South Vietnam and China over competing claims to the Paracel Islands. The South Vietnamese government is making a number of representations to international organizations, to SEATO as well as to the United Nations. *We wanted to let you know we do not associate ourselves with those representations.* (Emphasis added.)

fishermen. In sum, China has control of all the land features in the northern half of the South China Sea; only the Spratlys remain beyond its physical grasp.³⁰

When it comes to the South China Sea, Washington should not announce policies it is not prepared to back up; in other words, no bluffing. It is unclear, by design one suspects, whether recent military activity around Scarborough is an indication that the United States would use force or a bluff, but extending the U.S.-Philippine Mutual Defense Treaty umbrella over that feature, similar to the way the treaty with Japan is said to cover the Senkakus, could lend credibility to American efforts to deter conflict in the South China Sea.

Washington should also review the arbitral findings very closely, and where warranted, be very specific in publicly identifying where China is in violation of the Law of the Sea. In addition, policy guidelines should include the following principles:

- The South China Sea is not the central strategic element in the overall U.S.-China relationship. Keep the South China Sea in perspective.
- Recognize that for all practical purposes the disputes over the Paracels are settled. China controls the land features and associated maritime entitlements. The focus now should be managing Scarborough and Spratly developments by returning geostrategic balance as a way to buy time, awaiting a permanent solution.
- The U.S. government should remain sensitive to the efforts of littoral states to entangle the United States more deeply in supporting their claims—acting as their counterbalance to China.

Repeated exhortations from Washington did not stop China's island building until reclamation activity was complete. This track record suggests it is not likely that a new spate of exhortations against militarization of the facilities will be effective. But since President Xi announced during his post-summit press conference in Washington that China is not going to "militarize" its Spratly holdings, Washington should press Beijing to explicitly explain what it thinks nonmilitarization means.³¹ As discussed earlier, from a U.S. military perspective the facilities being built on the new islands are inherently military in nature. The only possible explanation for Xi's pledge is that he meant China will not put weapons on these island bases. This is an important point to focus on when continuing to voice concern about the changes to the status quo that are being created by this activity.

Meanwhile, the only apparent way to reintroduce some element of stability in the southern half of the South China Sea is to assist the other claimants who desire help to look after their own holdings. To this end, Washington has decided to double down on its willingness to help improve the maritime security capacity of South China Sea littoral states. In May 2015, Secretary Carter used the Shangri-La venue in Singapore to announce a \$425 million "Southeast Asia Maritime Security

30. Taiwan (the Republic of China) controls the Pratas Island group located in the northeast area of the South China Sea. No other country except China claims these features. Since the People's Republic of China is the legal successor state to the Republic of China, I choose to consider the island group legally China's. The fact it has not elected to evict the Republic of China (ROC) garrison, something it could easily do, is caught up in the larger issue of the Taiwan-Mainland dynamic.

31. Jeremy Page, Carol Lee, and Gordon Lubold, "China's President Pledges No Militarization in Disputed Islands," *Wall Street Journal*, September 25, 2015, <http://www.wsj.com/articles/china-completes-runway-on-artificial-island-in-south-china-sea-1443184818?cb=logged0.8426927910956248>.

Initiative," originated by Senator John McCain, chair of the Senate Armed Services Committee. Focused on Indonesia, Malaysia, the Philippines, Thailand and Vietnam, this program is designed to provide equipment, training, supplies, and small-scale construction. It needs to be executed as efficiently as possible.³²

To ensure Beijing does not resort to military force to accomplish its objectives, a policy approach that puts more emphasis on deterrence also needs to be considered. In this regard, Secretary Carter's call for Hanoi to stop improving its facilities in the Spratlys, probably to appear even-handed, seems strategically misguided. The goal should be to return some sort of strategic equilibrium to the Spratlys; Vietnam is the claimant best equipped to accomplish that. Hanoi gives every indication it will fight to hang on to its holdings; this predisposition improves deterrence if China concludes it would face a difficult campaign in trying to force Vietnam out of the Spratlys. Vietnam should be encouraged to improve its defenses. The other aspect of deterrence that will hopefully keep the peace is the U.S.-Philippine Mutual Defense Treaty, thanks to its potential applicability if Filipino servicemen are harmed.

The United States also needs to be completely committed to a long-term and dedicated effort to improve the maritime capabilities of the armed forces of the Philippines. This will take patience and money. This assistance should also include the development or improvement of existing bases on the Philippine island of Palawan, directly east of the Spratlys. For a long time to come, the Philippines' best deterrent is the security alliance with the United States, but Washington should resist pressure to expand the scope of the Mutual Defense Treaty to cover the contested (and legally suspect) Philippine claims in the Spratlys.

U.S. naval and air presence in the South China Sea is already a visible daily occurrence. To improve on this presence, the United States should increase the duration of its exercises with South China Sea littoral states and expand participation in these exercises by inviting other Asian maritime states, such as Japan, Australia, South Korea, and possibly India. This will increase U.S. presence in the region and demonstrate that other maritime states are concerned about stability in the South China Sea.

Finally, the reality is the newly elected Philippine president Rodrigo Duterte may make a deal with Beijing over access to Scarborough and the submerged Reed Bank area, thought to be a source of gas and oil, and take other steps that make the arbitral findings a dead letter as far as Manila is concerned. However, with the arbitration findings public, it will presumably be impossible to undo them, and Beijing is stuck with the adverse consequences.

32. White House, Office of the Press Secretary, "Fact Sheet: U.S. Building Maritime Capacity in Southeast Asia," November 17, 2015, <https://www.whitehouse.gov/the-press-office/2015/11/17/fact-sheet-us-building-maritime-capacity-southeast-asia>; and Aaron Mehta, "Carter Announces \$425M in Pacific Partnership Funding," *Defense News*, May 30, 2015, <http://www.defensenews.com/story/defense/2015/05/30/carter-announces-425m-in-pacific-partnership-funding/28206541/>.

Understanding Malaysia's Approach to the South China Sea Dispute

Elina Noor

Malaysia's approach to the South China Sea dispute over the last few years has elicited a range of responses from regional observers. These have included curiosity, puzzlement, frustration, and even outright disdain for what has sometimes come to be viewed as the Malaysian government's muted and inadequate response in the face of increasingly assertive developments in the area.

This chapter considers Malaysia's interests and claims in the South China Sea in three parts. First, it explains what the South China Sea means to Malaysia. Second, it aims to clarify Malaysia's position amid occasionally conflicting and confusing statements issued by officials. In order to frame this discussion, this section lists the incidents and developments that contextualize those statements. Finally, it offers some thoughts on the way forward for Malaysia following the arbitral award of the international tribunal constituted under Annex VII to the United Nations Convention on the Law of the Sea (UNCLOS) in the case brought by the Philippines against China. This chapter concludes with a suggestion that an understanding of the Malaysian position requires a more nuanced inspection of detailed developments rather than an expectation of dramatic posturing.

As the aim is to discuss Malaysia's viewpoint(s) since the Fifth Annual CSIS South China Sea Conference in 2015, the focus is developments in the last year to August 2016. For context, however, some references will be made to years prior, though no earlier than 2010.

THE IMPORTANCE OF THE SOUTH CHINA SEA TO MALAYSIA

Malaysia's "special relationship" with China has been touted in the past to explain its subdued response to construction activities in the South China Sea as well as bolder Chinese approaches

within Malaysia's exclusive economic zone (EEZ). Over the past year, however, there have been stronger allegations of political and economic imperatives underpinning Malaysia's South China Sea policy and, particularly, how it has chosen to deal with China on the matter.

A series of massive Chinese investment deals in Malaysia toward the end of what was a politically tumultuous year in 2015 seemed to offer dots that many were quick to connect. In November 2015, China General Nuclear Power Corporation purchased EDRA Global Energy Berhad for \$2 billion from 1Malaysia Development Bhd (1MDB), the controversy-plagued strategic investment company wholly owned by the government of Malaysia. The next month, in another billion-dollar deal, China Railway Construction Corporation purchased a substantial equity stake in Bandar Malaysia, also a development project under 1MDB. Bandar Malaysia will host the Malaysian terminal station for the high-speed rail (HSR) connection between Malaysia and Singapore. In anticipation of being awarded the HSR project, China Railway Engineering Corporation announced plans to establish its regional headquarters in Bandar Malaysia.¹

It is true that Malaysia prizes its relationship with China and enjoys close economic and trade ties with this neighboring power. However, the following are also true: that Malaysia prizes its relationship with all the region's major powers, and that China has become the top trading and/or investment partner for a majority of the world's countries.²

It is worth bearing in mind that as a historically pragmatic country, Malaysia considers the South China Sea dispute only one—albeit significant—element of its bilateral relationship with China. This is not to say that the Malaysian government views its territorial claims in the Spratly Islands lightly. On the contrary, as the rest of this chapter will show, the government's defense of its claims has only been articulated more strongly over the past several years.

Apart from the hydrocarbon and marine resources amassed in the South China Sea, Malaysia's stake in that body of water is intrinsically rooted in the stark and immutable realities of geography. Malaysia comprises two separate land masses: 11 states and two federal territories on the peninsula known collectively as Peninsular or West Malaysia, as well as two large states and one other federal territory on the island of Borneo referred to in shorthand as East Malaysia.

The noncontiguous nature of the country is underscored by the vast body of the South China Sea flowing between Peninsular and East Malaysia. The narrowest point between both territories is approximately 600 kilometers. That distance increases to 1,600 kilometers at its widest point. This is a remarkable expanse for a small country; it is thrice the distance between Kuala Lumpur and Singapore, and approximate to that between Kuala Lumpur and Bangkok. It takes half an hour

1. Ho Wah Foon, "China Investments to Lift Malaysia's Outlook," *Star*, April 17, 2016, <http://www.thestar.com.my/news/nation/2016/04/17/china-investments-to-lift-malaysias-outlook/>. In a press release, 1MDB clarified that the award of the HSR project is "an entirely separate project, whose award will ultimately be determined jointly by the governments of Malaysia and Singapore, per a separate process, that is and will not be linked or be contingent on, in any way, to the sale of 1MDB equity in the Bandar Malaysia project." 1Malaysia Development Berhad (1MDB), "Further Clarification on Bandar Malaysia Equity Sale," press release, January 6, 2016, <http://www.1mdb.com.my/press-release/further-clarification-on-bandar-malaysia-equity-sale>.

2. Malaysia has long-standing and strong defense and security ties with the United States that predate those with China, for example. Malaysia has also inked partnerships with China, the United States, Japan, and India.

longer to fly between Kuala Lumpur and Kota Kinabalu, the capital city of Sabah, than it does to fly the two hours internationally to either Jakarta or Bangkok.

The importance of East Malaysia to the integrity of the country cannot be overstated. However, it is often under-considered. Of the 330,800 square kilometers of Malaysia's total surface area,³ Peninsular Malaysia accounts for 131,880 square kilometers⁴ while Sabah and Sarawak each constitute 72,500 square kilometers⁵ and 124,449 square kilometers, respectively.⁶ These two latter states combined not only physically outsize the whole of the peninsula but also do so electorally, given the vast swathes of rural areas in both places. Indeed, Sabah and Sarawak are considered "fixed deposit" seats for the long-ruling government coalition, Barisan Nasional (BN).⁷

This physical separation between both parts of Malaysia has several important and practical implications for the defense and integration of the nation. Militarily, this means a division of defensive assets and personnel in two territories of the country. The Malaysian Armed Forces, already operating within the bounds of a modest budget,⁸ now faces greater resource constraints even as the country's borders and sovereignty are being challenged in multiple ways and more than ever before in recent times.

Developmentally, the cabotage policy between east and west has impeded the flow of goods resulting in a disruption in market access and competition. The higher cost of raw materials, goods, and production in East Malaysia means higher prices and a comparatively higher cost of living there. This is exacerbated by the fact that wages in both Sabah and Sarawak fall short of the national average.

Politically, these economic differences pose a challenge for the government, which must be seen to be responsive to the concerns of its East Malaysian constituencies. After all, much of its

3. "Malaysia@ a Glance," official portal of the Department of Statistics, Malaysia, https://www.statistics.gov.my/index.php?r=column/cone&menu_id=ZmVrN2FoYnBvZE05T1AzK0RLcEtiZz09. The Department of Survey and Mapping Malaysia lists the area of Malaysia as 330,396 square kilometers (205,298.6 square miles). This figure is taken from *Performance and Statistical Information on Electricity Supply Industry in Malaysia 2014* (Putrajaya, Malaysia: Energy Commission, 2015), 6, <http://meih.st.gov.my/documents/10620/f34c62ce-b169-4729-b4e8-854bb5016922>.

4. "Malaysia@ a Glance."

5. Official website of the Sabah state government, <https://www.sabah.gov.my/main/en-GB/Home/About>. "Malaysia@ a Glance" lists Sabah covering an area of 73,902 square kilometers; see Department of Statistics Malaysia, "Sabah," https://www.statistics.gov.my/index.php?r=column/cone&menu_id=dTZ0K2o4YXgrSDRtaEJyVmZ1R2h5dz09.

6. "Facts on Sarawak," official website of the Sarawak state government, <http://www.sarawak.gov.my/web/home/page/151/About%20Us/>. "Malaysia@ a Glance" lists Sarawak covering an area of 124,450 square kilometers; see Department of Statistics Malaysia, "Sarawak," https://www.statistics.gov.my/index.php?r=column/cone&menu_id=clJnWTITbWFHdmUwbmtSTE1EQStFZz09. The federal territory of Labuan spans 92 square kilometers.

7. "Politics in Malaysia: Cracking Open the Fixed Deposits," *Economist*, June 9, 2012, <http://www.economist.com/node/21556617>.

8. The defense and security budget for 2016 was projected to account for 1.9 percent of total expenditure. *Ucapan Bajet Tahun 2016 oleh YAB Dato' Sri Mohd Najib Tun Haji Abdul Razak, Perdana Menteri dan Menteri Kewangan ketika membentangkan Rang Undang-Undang Perbekalan (2016)* [Budget 2016 Speech by YAB Dato' Sri Mohd Najib Tun Haji Abdul Razak, Prime Minister and Minister of Finance while Tabling the Supply Bill (2016)] (Putrajaya: Percetakan Nasional Malaysia Berhad, 2015), <http://www.treasury.gov.my/pdf/bajet/ucapan/ub16.pdf>.

electoral mandate rests on that side of the South China Sea. So, when the presence of foreign vessels in the country's EEZ off Sarawak becomes news because they are anchored there or because they actively obstruct the fishing rights and livelihood of Sarawakians, then the federal government in Putrajaya is compelled to respond.

Socially, the fact that there is no alternative mode of ferrying Malaysians between the east and the west of the South China Sea other than by sea or flight means that the existing gap in how communities on both sides have historically viewed each other and conducted their affairs is further entrenched by the difficulty of distance. It has also unfortunately perpetuated feelings of alienation, if not outright marginalization, among East Malaysians. For multiethnic Malaysia, in which national unity figures as top priority, managing this distance—actual and communal—becomes a national security concern.

These multidimensional challenges of protecting, defending, administering, and integrating a divided Malaysia over and across the South China Sea are reflected in official policy. The first chapter of the national defense policy of Malaysia definitively states that “the physical separation between peninsula Malaysia and Sabah and Sarawak by the South China Sea necessitates central attention towards the sea routes and air space between those territories. Any threat or disruption to the sea routes and air space there could detrimentally affect the integrity of both those territories and Malaysia as a whole.”⁹ It is this imperative that guides the country's approach to the South China Sea dispute at the highest levels but it is also one that, at times, appears to conflict with other more pressing priorities.

A MALAYSIAN POSITION ON THE SOUTH CHINA SEA DISPUTE?

Until 2013, when reports broke of four Chinese People's Liberation Army Navy (PLAN) vessels in waters around James Shoal (Beting Serupai), Malaysia was content to keep a distant but watchful eye over developments in the South China Sea. Up to that point, the country's sovereignty, territorial integrity, and national interests in those waters had not been openly challenged in over three decades.¹⁰

In general, Malaysia has contributed in at least three ways to efforts to preserve the peace and status quo of the features in the South China Sea. First, for its part, Malaysia has eschewed erecting new installations on the five features it occupies in the Spratlys, even as others did so

9. The Malay version reads, “[P]emisahan secure fizikal Semenanjung Malaysia dengan Sabah dan Sarawak oleh Laut Cina Selatan memerlukan negara memberi perhatian utama terhadap laluan laut dan ruang udara di antara kedua-dua wilayah tersebut. Sebarang ancaman atau gangguan di laluan lalu dan ruang udara berkenaan boleh menjejaskan keutuhan kedua-dua wilayah tersebut dan Malaysia secara keseluruhannya.” (See *Malaysia's National Defence Policy* 12, accessed December 10, 2016, <http://www.mod.gov.my/phocadownload/DASAR-PERTAHANAN/ndp.pdf>.)

10. One of the most significant confrontations was with Vietnam over Amboyna Cay in the 1980s. Malaysia's claim to sovereignty over the reef, justified by its then deputy minister in charge of legal affairs as a “simple matter of sovereignty” and asserted by its placement of markers, was met head on in 1979 when Vietnam destroyed those markers and occupied Amboyna Cay.

in direct contravention of the Declaration on the Conduct of Parties in the South China Sea (DOC).¹¹

Second, despite its stakes in the South China Sea, Malaysia has generally refrained from provoking nationalist sentiments at home by keeping reports of the dispute in the media to a minimum. Until recently, discussions on the South China Sea—an issue confined to the familiarity and interest of the policy and bureaucratic elite—usually took place behind closed doors. This was partly to encourage frankness among involved interlocutors, but primarily to ensure the matter did not blow out of proportion in the glare of the media and the public eye.

Third, at the regional level and for a time, Malaysia also resisted persuasions to open up discussion of the dispute to other interested parties beyond the claimants. Wary of internationalizing the issue and drawing greater major power rivalry into the region, the Malaysian government's position was that dialogue ought to be held within the immediate framework of the Association of Southeast Asian Nations (ASEAN) rather than other ASEAN-led multilateral forums like the ASEAN Regional Forum (ARF) or the East Asia Summit (EAS).

What has remained clear and constant about Malaysian policy toward the South China Sea at the official, declaratory level has been the following:¹²

- That, as with other claimant states, Malaysia wholly rejects the nine-dash line claim due to its incompatibility with international law, including UNCLOS;¹³
- That the South China Sea dispute should be resolved peacefully through negotiations, dialogue, and consultations among all claimant parties in accordance with the DOC, pending completion of a substantive and meaningful code of conduct (COC), as well as with the principles of international law;
- That the dispute should be resolved within the framework of international law, including UNCLOS, given also that all claimant states are parties to UNCLOS;
- That Malaysia remains open to legal mechanisms of third-party dispute resolution as provided for by UNCLOS. After all, there is nothing within the DOC that prohibits or precludes this option. This, however, seems to be Malaysia's lesser preferred option for now.

What has evolved over the years, however, has been the articulation and tone of the government's position largely in response to changing realities at sea.

11. These five features are Terumbu Mantanani (Mariveles Reef), Terumbu Ubi (Ardasier Reef), Terumbu Siput (Erica Reef), Terumbu Peninjau (Investigator Reef), and Pulau Layang-Layang (Swallow Reef).

12. See, for example, Minister Shahidan Kassim responding to Liew Chin Tong (MP-Kluang) in Parliament, March 17, 2014: "Soalan Parlimen 43: Kapal perang asing menceroboh EEZ Malaysia," LiewChinTong.com, <http://liewchintong.com/2014/03/soalan-parlimen-43-kapal-perang-asing-menceroboh-eez-malaysia/?lang=my>. For a fuller discussion of Malaysia's options with regard to the South China Sea dispute, see Elina Noor, "The South China Sea Dispute: Options for Malaysia," in *The South China Sea Dispute: Navigating Diplomatic and Strategic Tensions*, ed. Ian Storey and Lin Cheng-yi (Singapore: ISEAS Publishing, 2016).

13. See, for example, Deputy Foreign Minister Reezal Merican, Parliament of Malaysia (House of Representatives), *Hansard*, D.R.19.05.2016, May 19, 2016, 10.

Late in March 2013, Xinhua reported the sailing of the PLAN's four-ship amphibious flotilla in waters near James Shoal about 43 nautical miles from Sarawak.¹⁴ On board the 200-meter landing ship, the *Jinggangshan*, crew were said to have pledged to "defend the South China Sea, maintain national sovereignty and strive towards the dream of a strong China."¹⁵ This news was picked up in international media before many Malaysians themselves found out about it.

Most of Malaysia was at the time still reeling from the end of a violent incursion of Lahad Datu in Sabah by a militant group of fighters from Sulu in the Philippines.¹⁶ Malaysia was also preparing for a hotly contested general election scheduled for May 8, 2013. The timing of the PLAN's foray into Malaysia's EEZ right in the middle of these two major domestic events was therefore especially delicate and unfortunate.

In January 2014, the PLAN returned to James Shoal with three ships for a military exercise and, according to Chinese media, carried a "sovereignty oath-taking" ceremony.¹⁷ Curiously, the then-chief of the Royal Malaysian Navy (RMN), Admiral Abdul Aziz Jaafar, stated that the exercise had actually been conducted 100 nautical miles away from Malaysia's EEZ and that Malaysia had been given prior notice of it.¹⁸ A month later, the Malaysian chief of defense forces, General Zulkifeli Mohd Zin, confirmed that the Chinese vessels had "strayed" into Malaysian waters while on innocent passage. Downplaying the incident, both he and Defense Minister Hishammuddin Hussein urged the media not to blow the incident out of proportion.¹⁹ The defense minister maintained that Malaysia would "never compromise on our integrity, our independence and our position." He carefully qualified that claim, however, by tying his statement to the country's "territorial waters." He did not mention the EEZ specifically. Foreign Minister Anifah Aman stated he had received no confirmation of the incident, but cautioned that any intrusion into Malaysian territory would not receive a warm response.²⁰

Responding to a parliamentary question on March 17, 2014, a minister in the Prime Minister's Department, Shahidan Kassim, elaborated that since 2011, PLAN vessels had intruded into

14. Greg Torode, "PLA Navy Amphibious Task Force Reaches Malaysia 'to Defend South China Sea,'" *South China Morning Post*, March 27, 2016, <http://www.scmp.com/news/asia/article/1200564/pla-navy-amphibious-task-force-reaches-james-shoal-near-malaysia>.

15. Ibid.

16. The incursion of Lahad Datu, Sabah began on February 11, 2013 and drew military strikes from Malaysian authorities in the following weeks. It was not till March 11, 2013 that the original site of the insurgency was secured with a death toll of 63 killed from among militants, civilians, and security forces. "Mopping up" operations continued until late June 2013. For more information, see, for example, Najiah Najib, "Lahad Datu Invasion: A Painful Memory of 2013," *Astro Awani*, December 30, 2013, <http://english.astroawani.com/malaysia-news/lahad-datu-invasion-painful-memory-2013-27579>.

17. Santha Oorjitham, "China Claims Its Vessels Patrolled James Shoal," *Star*, January 31, 2013, <http://www.thestar.com.my/news/nation/2014/01/31/china-claims-its-vessels-patrolled-james-shoal/>.

18. Ibid.; Megawati Zulfakar, "China's Envoy to Malaysia Makes Courtesy Call on Defence Minister Hishammuddin," *Star*, January 30, 2014, <http://www.thestar.com.my/news/nation/2014/01/30/china-ambassador-courtesy-call-on-malaysia-defence-ministry/>.

19. Teoh El Sen, "Chinese Ships Were Just Passing Through—Armed Forces Chief," *Astro Awani*, February 20, 2014, <http://english.astroawani.com/malaysia-news/chinese-ships-were-just-passing-through-armed-forces-chief-30493>.

20. Ibid.

Malaysia's maritime zone²¹ in the South China Sea roughly once a year. These intrusions increased in 2013 and were concentrated around James Shoal, South Luconia Shoal (Beting Patinggi Ali), and North Luconia Shoal (Beting Raja Jarom), all within Malaysia's EEZ. He reported that from 2013 until February 2014, there were seven intrusions detected involving 16 assets belonging to the PLAN and China Maritime Surveillance (CMS).²² The first incident of intrusion by Chinese Coast Guard (CCG) vessels around the area occurred on September 4, 2013.²³

In March 2016, according to reports, between 80 and over 100 fishing boats accompanied by the CCG encroached into Malaysia's EEZ around both North Luconia Shoal and South Luconia Shoal.²⁴ Three Malaysian Maritime Enforcement Agency (MMEA) assets—KM *Adil*, KM *Stapa*, and KM *Siakap*—and 70 personnel were deployed to monitor the situation.²⁵ The brazenness of the incident was underscored by the fact that only a few months earlier, Foreign Minister Anifah assured local fishermen that they did not have to worry about operating around that area because South Luconia Shoal was undisputedly Malaysian.²⁶ A month earlier, Defense Minister Hishammuddin also promised that the situation was under control. Curiously, however, he urged direct communication on the issue between the Chinese embassy in Malaysia and the Sarawak state leadership.²⁷

The Chinese ambassador to Malaysia, Dr. Huang Huikang, denied that the intrusion had taken place or that Malaysian fishermen had been obstructed from fishing. He clarified that the CCG had simply been on a routine patrol and the vessels had not stopped or anchored. Sidestepping Hishammuddin's earlier suggestion, Huang said there was no need to discuss the issue with Chief Minister of Sarawak Adenan Satem, since the matter was between two nation-states.²⁸

On March 28, 2016, Hishammuddin, having been briefed by the Royal Malaysian Navy (RMN), declared that there were no Chinese vessels intruding into the Malaysian EEZ around the Luconia

21. The Malaysian Maritime Enforcement Agency (MMEA) defines Malaysia's maritime zone as the "waters, territorial sea, continental shelf, exclusive economic zones and fisheries of Malaysia and includes the airspace over the Zone," <https://www.mMEA.gov.my/eng/index.php/en/citizens-and-public/36-malaysian-maritime-zone>.

22. Minister Shahidan Kassim Responding to Liew Chin Tong (MP-Kluang) in Parliament, March 17, 2014.

23. Minister Shahidan Kassim, Parliament of Malaysia (Senate), *Hansard*, D.N.14.12.2015, December 14, 2015, 52.

24. Early reports listed the number as more than a hundred vessels while later reports pegged the number in the high 80s. See, for example, Syed Azahedi Syed Abdul Aziz, "Heat Rises over Maritime Dispute," *New Straits Times*, March 28, 2016, <http://www.nst.com.my/news/2016/03/135558/heat-rises-over-maritime-dispute>.

25. Rusnan Mustaffa, "APMM pantau bot nelayan, kapal China" (MMEA monitoring Chinese fishing vessels), *Borneo Post*, March 26, 2016, <http://www.theborneopost.com/2016/03/26/apmm-pantau-bot-nelayan-kapal-china/>.

26. "Beting Patinggi Ali Belongs to Malaysia, Not Subject to Overlapping Claims, Says Anifah," *Malay Mail*, November 4, 2015, <http://www.themalaymailonline.com/malaysia/article/beting-patinggi-ali-belongs-to-malaysia-not-subject-to-overlapping-claims-s>.

27. "Kehadiran kapal pengawal pantai China di luar perairan Sarawak berada dalam kawalan—Hishammuddin" (Presence of China Coast Guard Vessels Outside of Sarawak Water under Control—Hishammuddin), *Astro Awani*, February 13, 2016, <http://www.astroawani.com/berita-malaysia/kehadiran-kapal-pengawal-pantai-china-di-luar-perairan-sarawak-berada-dalam-kawalan-hishammuddin-94197>.

28. Mohd Zahir Haqim, "China nafi ceroboh Beting Patinggi Ali, Sarawak" (China Denies Intruding South Luconia Shoal, Sarawak), *Sarawakvoice.com*, March 10, 2016, <http://sarawakvoice.com/2016/03/10/china-nafi-ceroboh-beting-patinggi-ali-sarawak/>.

Shoals. Again, he was careful to qualify that if there were indeed attempts at military activities in the area, the government would view those seriously and cooperate with neighboring countries.²⁹ The CCG is technically not part of the People's Liberation Army, and "military activities" is an ambiguous term.

Official pronouncements in the last year have been made more frequently, and in some cases more forcefully, as patience wears thin. At the end of March 2015, the Malaysian Ministry of Foreign Affairs confirmed the presence of a large number of vessels in Malaysia's maritime areas and called in Huang "to seek clarification as well as to register Malaysia's concerns over the matter."³⁰

By contrast, a few days later, the Chinese embassy in Kuala Lumpur released a statement that the ambassador had paid a courtesy call on the Malaysian Foreign Ministry's new deputy secretary-general in charge of bilateral affairs, Shahrul Ikram Yaakob, on April 1. The release referred to "speculations" of Chinese fishing boats in Malaysian waters but concluded that "after verification," those boats had not entered Malaysian waters and were "quite far away from" the Luconia shoals. Huang said that Chinese fishing boats had a long history of fishing in "the southwestern fishing-ground of South China Sea" and recalled that since Admiral Zheng He's naval expeditions more than 600 years ago, "Chinese fishermen have been doing seasonal fishing operations in relevant waters."³¹ Huang did acknowledge, however, overlapping claims between Malaysia and China over certain islands and reefs in the South China Sea, but noted that this was a "historical issue."³²

The Malaysian Foreign Ministry's move was notably out of the ordinary. The government had been using diplomatic channels, including lodging regular diplomatic notes on an almost weekly basis, to protest, manage, and resolve the repeated intrusions of waters around South Luconia Shoal.³³ However, the ministry's uncharacteristic summoning of the Chinese ambassador is telling of the growing disgruntlement within the government toward increasingly obtrusive Chinese moves closer to the Malaysian coastline. As the government's chief diplomatic agency, the minister's primary and preferred approach is still through quiet, diplomatic negotiations, but as Chinese vessels intrude deeper and deeper, it appears that the ministry is now refining its tone.

29. "Tiada bot, kapal China di Beting Patinggi Ali—Hishammuddin" (No Chinese Boats, Vessels in South Luconia Shoal—Hishammuddin), *Berita Harian*, March 28, 2016, <http://www.bharian.com.my/node/138144>.

30. Ministry of Foreign Affairs Malaysia, "Recent Development in Malaysia's Maritime Areas in the South China Sea," press release, March 31, 2016, http://www.kln.gov.my/web/guest/press-release/-/asset_publisher/t3pS/content/press-release/-:recent-development-in-malaysia's-maritime-areas-in-the-south-china-sea?redirect=%2Fweb%2Fguest%2Fpress-release%3Fp_p_id%3D101_INSTANCE_t3pS%26p_p_lifecycle%3D0%26p_p_state%3Dnormal%26p_p_mode%3Dview%26p_p_col_id%3Dcolumn-2%26p_p_col_count%3D1%26_101_INSTANCE_t3pS_delta%3D10%26_101_INSTANCE_t3pS_keywords%3D%26_101_INSTANCE_t3pS_advancedSearch%3Dfalse%26_101_INSTANCE_t3pS_andOperator%3Dtrue%26_101_INSTANCE_t3pS_cur%3D14.

31. Embassy of the People's Republic of China in Malaysia, "Chinese Ambassador Paid a Courtesy Call on New Deputy Secretary General of MFA," April 5, 2016, <http://my.china-embassy.org/eng/zgxw/t1353062.htm>.

32. Ibid.

33. See, for example, "Malaysia Lodges Diplomatic Protest against Beting Patinggi Ali Intrusion," *New Straits Times*, August 15, 2016, <http://www.nst.com.my/news/2015/09/m'sia-lodges-diplomatic-protest-against-beting-patinggi-ali-intrusion>; Minister Shahidan Kassim, Parliament of Malaysia (Senate), *Hansard*, D.N.14.12.2015, 52; Deputy Foreign Minister Reezal Merican, Parliament of Malaysia (Senate), *Hansard*, D.N.25.04.2016, April 25, 2016, 8.

Even Minister of Youth and Sports Khairy Jamaluddin weighed in on the matter in February 2016, with a Twitter post calling for China to be held to its assurance not to militarize the South China Sea, even as its behavior indicated otherwise.³⁴ Responding to Khairy's tweet, Hishammuddin insisted that Malaysia must "push back, as we decided in Cabinet this morning."³⁵ Although Hishammuddin did not elaborate on the term "push back," the mere mention of it—and the fact that the Malaysian cabinet had discussed the matter—indicated a greater resolve to react to China in the South China Sea.

These social media posts came after Shahidan's own update the previous year. On June 3, 2015, he bucked convention by uploading to his personal Facebook page nine photographs from his flight over South Luconia Shoal with the MMEA. He noted, specifically, the location of South Luconia Shoal well within Malaysia's EEZ, the anchoring of a CCG vessel nearby, and the shadowing of this CCG vessel by two others from the RMN and the MMEA one nautical mile away. Without specifically mentioning the CCG vessel, he asserted the intrusion of "foreign vessels" in defiance of Malaysia's indisputable claim over South Luconia Shoal.³⁶

On November 18, 2015, Shahidan uploaded six more aerial photos over South Luconia Shoal to his official Facebook page, satisfied that, on that morning, there had been no disturbances or intrusions.³⁷ The following January, he promised a program with Sarawakians that would sail for 12 hours to South Luconia Shoal. He warned that the MMEA would arrest any foreign vessels there and stressed that the feature was Malaysia's, that no party should bully Malaysia because the country was small, and that 30 million Malaysians would defend the dignity of their beloved nation.³⁸

The manner in which these positions have been articulated, even if not officially sanctioned, is remarkable. The Malaysian government has avoided public discussion of the South China Sea dispute. The fact that ministers have shared their views on social media reflects an exasperation with traditional channels, a desire to raise awareness of the issue among the general public, and a willingness to "democratize" discussion of the dispute.

34. Minister of Youth and Sports Khairy Jamaluddin, Twitter post, February 23, 2016, <https://twitter.com/Khairykj/status/702339109444931584>. The tweet was retweeted 72 times. Khairy also tagged his colleagues in the Malaysian Youth Parliament and suggested the organization's international committee look into the matter. The matter was indeed taken up and debated on August 9, 2016 in the second session of the Malaysian Youth Parliament. See, for example, "Four motions passed in Youth Parliament to be brought to Cabinet—Shabery Empat usul dilulus di Parlimen Belia akan dibawa ke Kabinet—Shabery," *Bernama*, August 10, 2016, <http://www.bernama.com/bernama/v8/bm/ge/newsgeneral.php?id=1271641>.

35. Minister of Defense Hishammuddin Hussein, Twitter post, February 23, 2016, <https://twitter.com/hishammuddin2o/status/702370225992437761>.

36. Minister Shahidan Kassim, Facebook post, June 3, 2015, <https://www.facebook.com/ybdssk/posts/799976780117499>. The post drew 411 likes and 187 shares.

37. Minister Shahidan Kassim, Facebook post, November 18, 2015, <https://www.facebook.com/datoserishahidan.kassim/posts/735714639893410>. His caption thanked the defense minister, the Ministry of Foreign Affairs, the deputy prime minister, and the prime minister. He gave assurances that MMEA boats would continue to patrol the area and ended with the Malay word for independence or freedom, "Merdeka."

38. Minister Shahidan Kassim, Facebook post, January 17, 2016, <https://www.facebook.com/datoserishahidan.kassim/posts/759204487544425:0>.

In fact, Malaysian officials had started to raise concern over developments in the South China Sea a few years prior. In 2011, then-secretary of the National Security Council, Mohamed Thajudeen Abdul Wahab, cautioned that “Malaysia can no longer adopt a ‘silent, wait-and-see attitude’ because the stakes are indeed very high.”³⁹

MMEA and RMN air and sea assets constantly patrol the South Luconia Shoal area. When the CCG vessel appeared for the first time in those waters on September 4, 2013, the RMN deployed the fast attack craft KD *Serang* to the location the next day. In 2014, both MMEA and RMN operated in those areas for 269 days, with the RMN bearing the bulk of patrols for 191 days and the MMEA for 78 days. In 2015, that frequency jumped to 345 days in total, with the RMN patrolling for 241 days and the MMEA for 104 days. Although the MMEA’s assets are aging and therefore unable to venture to the outer limits of Malaysia’s EEZ, the MMEA nonetheless in 2015 had 17 vessels on standby for the South Luconia Shoal area alone. All those vessels were ready to deploy within 30 minutes of a complaint.⁴⁰

The frequency and continuity of these intrusions in Malaysia’s EEZ have also drawn bipartisan attention in Parliament over the last couple of years. In the first half of 2016, the South China Sea dispute was raised for discussion in Parliament every month from April to June. This may seem only natural given the magnitude of the nation’s interests at stake, but the order of business in Parliament over recent decades has typically skewed to domestic bread-and-butter or political issues rather than national security ones. It was not really until about three years ago that the South China Sea, in particular, began to figure more seriously in parliamentary sessions.

Beyond official voices and responses, the most recent incursion of March 2016 also made the news more widely in several print and online media outlets in Malaysia. In 2015, a major Malay daily, *Utusan Malaysia*, published an editorial urging the defense of James Shoal through multiple fronts and as provided for by international law.⁴¹ Understandably, because of their proximity to the issue, the East Malaysian-based papers took a harder line in reporting. The *Borneo Post*, for example, published an editorial on the incursion of South Luconia Shoal that smoldered with anger, frustration, and a tinge of resignation in recognizing the limitations of Malaysia’s options: “The boats from China fishing with impunity at South Luconia Shoal are not there just to plunder the marine resources of Malaysia—they are actually a statement of intent by China on its claim over large territories of the South China Sea.” Civil society forums have also made their sentiments known. The Sarawak Association of Peoples’ Aspiration, which the Malaysian Ministry of Home Affairs had earlier sought to ban for unrelated reasons,⁴² staged a peaceful protest outside the Chinese consulate in the Sarawakian capital of Kuching in December 2015 and encouraged non-governmental organizations (NGOs) and activists to “join in the people’s initiatives to defend our

39. Mohamed Thajudeen Abdul Wahab, “Opening Remarks at the Colloquium on the South China Sea: Issues, Challenges, and Strategic Options for Malaysia,” National Security Council, Prime Minister’s Department, December 28, 2011.

40. Minister Shahidan Kassim, Parliament of Malaysia (Senate), *Hansard*, D.N.14.12.2015.

41. “Defend James Shoal Pertahan Beting Serupai,” *Utusan Malaysia*, March 24, 2015, <http://www.utusan.com.my/rencana/agama/pertahan-beting-serupai-1.73199>.

42. In October 2015, the High Court overturned the ministry’s ban of the association. “High Court Rules Sarawak Association of Peoples’ Aspiration Legal,” *Borneo Post*, October 31, 2015, <http://www.theborneopost.com/2015/10/31/high-court-rules-sarawak-association-of-peoples-aspiration-legal/>.

territorial integrity.”⁴³ The obstruction of Malaysian fishermen around South Luconia Shoal by Chinese vessels even made its way into one of the country’s largest online community forums, LowYat.net. The conversation thread lasted one day and drew only 50 posts, but that it was even discussed in a forum that is usually a marketplace for goods and services is of note.⁴⁴

The Malaysian position, mirrored by both government and civil society, is echoed at the regional level through ASEAN statements. As chair of ASEAN in 2015, Malaysia released chairman’s statements at the ASEAN Summit and the East Asia Summit (breaking away from its previous position of not “internationalizing” discussion of the South China Sea), each containing five paragraphs dedicated to the South China Sea. Without naming parties, those statements specifically expressed concerns about the possibility of militarized outposts and the erosion of trust and confidence. The chairman’s statements of the ASEAN-China Summit and the ASEAN-U.S. Summit in 2015 also dedicated two paragraphs to the South China Sea.

POST-ARBITRAL TRIBUNAL DECISION

On July 12, 2016, the arbitral tribunal under Annex VII to the 1982 UNCLOS issued its award substantially favoring the Philippines over China. The Malaysian Ministry of Foreign Affairs issued a carefully worded press release noting the decision. The release recalled past and continuing ASEAN statements urging “the full and effective implementation of the DOC in its entirety” and early conclusion of the COC, as well as “full respect for diplomatic and legal processes; and relevant international law and 1982 UNCLOS [sic].” In emphasizing peace, security, and stability, the release also recalled the undertaking of self-restraint among claimants encapsulated by point 5 of the DOC.⁴⁵

The tribunal decision was a timely and overwhelming validation of the institution of international law. For a small country like Malaysia with limited, practical options, the decision provided welcome clarity and a useful reference point from which to move all negotiations forward. The fact that the tribunal ruled that there were no overlapping EEZs in the South China Sea means that the contemplation of joint development initiatives is now possible. In reality, this will depend on whether parties will continue to insist on the acceptance of their sovereignty and sovereign rights as a precondition to joint development.

For its part, as tensions temporarily ebb in the South China Sea, Malaysia will continue to press for the importance of adherence to the DOC in its entirety and the expeditious conclusion of a legally binding COC. There are rumors that the COC may be completed in 2017, in time for ASEAN’s

43. Sarawak Association for Peoples’ Aspiration, Facebook, accessed August 29, 2016 at <https://m.facebook.com/sapasarawak/photos/a.220136331512378.1073741826.220130344846310/444783829047626/> and <https://www.facebook.com/media/set/?set=a.447360282123314.1073741855.220130344846310&type=1>.

44. “China Navy Bar[s] Local Fishermen from Luconia Shoals,” *Lowyat.net*, October 31, 2015, <https://forum.lowyat.net/topic/3760826/all>.

45. Ministry of Foreign Affairs, “Statement by Malaysia” (press release following the decision of the arbitral tribunal on the South China Sea issue, July 12, 2016), http://www.kln.gov.my/web/ukr_kiev/ps2016/-/asset_publisher/ME2g/blog/statement-by-malaysia-following-the-decision-of-the-arbitral-tribunal-on-the-south-china-sea-issue?redirect=%2Fweb%2Fukr_kiev%2Fps2016.

golden anniversary. At the rhetorical level, these continued refrains are important if only to stress the value of norms in managing the conduct of state parties at sea and to lend credence to the notion of ASEAN centrality. In reality, however, point 5 of the DOC has already been violated and the physical landscape of certain features in the South China Sea has been irrevocably changed. With further plans by claimants China and Vietnam to militarily and commercially develop these areas, it is clear that only more changes should be expected.

It is against this backdrop that Malaysia will have to weigh its moves vis-à-vis the South China Sea very carefully. The government has consistently repeated that the defense of territory is nonnegotiable. However, in protecting and preserving sovereignty, it will also have to balance other considerations—political and economic—in order to ensure the country continues to develop, the nation remains united, and regional peace and stability prevail. These different considerations are not necessarily exclusive.

Malaysia's quiet strategy has worked well enough for it, so far. Whether it will continue to do so remains to be seen. Those wishing to understand Malaysia's position should bear in mind the reality of its situation, domestic and external, and the limitations of its capabilities. It will be obvious that Malaysia's views on the South China Sea are subtly evolving once one is able to look beyond the drama and focus instead on the details.

PART TWO

Legal Issues

Philippines v. China: Impact of the Arbitral Tribunal Award on the Merits

Jay L. Batongbacal

INTRODUCTION

The Philippines made a clean sweep of nearly all of its submissions in its UN Convention on the Law of the Sea (UNCLOS) Annex VII arbitration case against China on July 12, 2016. The tribunal laid down significant rulings that will undoubtedly reshape the discourse over the South China Sea disputes in the years to come. The five broad categories of claims that the tribunal decided in the Philippines' favor establish the guidance for how interested states, whether principal claimants or affected users, should interact with each other pending the final resolution of the South China Sea disputes.

Although technically the award is legally binding only on the principal parties, China and the Philippines, it represents a contemporary and authoritative analysis of the current state of international law, especially UNCLOS, as applied to the South China Sea. Such reasoning, based on a lengthy analysis and detailed application of law to facts, undoubtedly influences the viewpoints of international legal practitioners and, indirectly, the subsequent legal positioning of concerned states.

The award has particularly restrictive legal implications for China's claims and the more recent manifestations of its assertion and maritime expansion into the South China Sea to the detriment of the surrounding Southeast Asian coastal states. This chapter carries out an overview of the key rulings of the Annex VII tribunal and considers their legal effects.

HIGHLIGHTS OF THE AWARD

China's Excessive Claims

The tribunal definitively interpreted and then struck down the most expansive of all the various claims to the South China Sea: China's historic rights claims, as represented by the "nine-dash line" map. China alleges that these historic rights claims existed prior to and independently of UNCLOS and are purported to apply not only to islands and rocks in the Spratly Islands and Scarborough Shoal, but also to the living and nonliving resources beyond the territorial sea of those islands or rocks and within all other sea areas encompassed within the nine-dash line. The veil of ambiguity over China's claims, whether they referred to historic title, waters, or rights, or some other kind of claim not specifically mentioned in UNCLOS but encompassed in general international law (as China claimed), was finally removed by the tribunal.

The tribunal struck down the possible interpretation of China's claims as either historic title or historic waters. Ultimately, in the eyes of the tribunal, China was in fact claiming a much more limited set of maritime rights. Based on the record of official statements in the past, "China does not claim historic title to the waters of South China Sea, but rather a constellation of historic rights short of title."¹ Furthermore, the tribunal

understands, on the basis of China's actions, that China claims historic rights to the living and non-living resources in the waters of the South China Sea within the "nine-dash line," but that China does not consider that those waters form part of its territorial sea or internal waters (other than the territorial sea generated by islands). Such a claim would not be incompatible with the Convention in any areas where China already possesses such rights through the operation of the Convention. This would, in particular, be the case within China's exclusive economic zone and continental shelf. However, to the extent that China's claim to historic rights extends to areas that would be considered to form part of the entitlement of the Philippines to an exclusive economic zone or continental shelf, it would be at least at variance with the Convention.²

This interpretation directly addresses China's historical ambiguity and refusal to clarify the nature of its claims as represented by the map of the nine-dash line. Rather than await China's explanation in order to classify and interpret its claims, the tribunal used China's own varied and sometimes contradictory statements and allegations in numerous past diplomatic communications.³ This permitted the tribunal to measure China's claimed historic rights against UNCLOS, implicitly dividing the application of such claims into distinct geographic areas:

1. In the Matter of the South China Sea Arbitration (Phil.-China), PCA Case No. 2013-19, Award, July 12, 2016, para. 229, <https://pca-cpa.org/wp-content/uploads/sites/175/2016/07/PH-CN-20160712-Award.pdf>.

2. Ibid., para. 232.

3. Ibid., para. 180–187, 200–201, 207–214, and 263–272.

1. Historic claims to land territory within islands and rocks in the South China Sea;
2. Historic claims to the territorial sea adjacent to such islands and rocks, but not exceeding the 12-nautical-mile limit as specified in UNCLOS;
3. Historic claims to the living and nonliving resources of the exclusive economic zone (EEZ) and continental shelf within 200 nautical miles of China's land territory, but not within the corresponding 200-nautical-mile limits of other coastal states in the South China Sea;
4. Historic claims to the living and nonliving resources beyond 200 nautical miles from its land territory but within 200 nautical miles of other coastal states' baselines in the South China Sea;
5. Historic claims to the living and nonliving resources beyond 200 nautical miles from its land territory and not within 200 nautical miles of other coastal states' baselines in the South China Sea.

Beyond recognizing the possibility of their existence, the tribunal specifically avoided touching on geographic categories 1 and 2, considering that such claims formed part and parcel of the contentious claim of sovereignty over them;⁴ at the same time, it acknowledged the validity of possible UNCLOS-based EEZ and continental shelf claims under category 3. The tribunal was quite emphatic:

In particular, the Tribunal emphasizes that nothing in this Award should be understood to comment in any way on China's historic claim to the islands of the South China Sea. Nor does the Tribunal's decision that a claim to historic rights to living and non-living resources is not compatible with the Convention limit China's ability to claim maritime zones in accordance with the Convention, on the basis of such islands.⁵

However, the tribunal held that any and all historic rights claims to waters beyond the territorial sea or to living and nonliving resources beyond 200 nautical miles of China's coast, and particularly those within 200 nautical miles of other coastal states (i.e., categories 4 and 5), were relinquished and abandoned by China when it signed and ratified UNCLOS and thereby agreed with the establishment of the EEZ and continental shelf regimes in favor of all coastal states. According to the tribunal,

The Convention is clear in according sovereign rights to the living and non-living resources of the exclusive economic zone to the coastal State alone. The notion of sovereign rights over living and non-living resources is generally incompatible with another State having historic rights to the same resources, in particular if such historic rights are considered exclusive, as China's claim to historic rights appear to be. Furthermore, the Tribunal considers that, as a matter of ordinary interpretation, the (a) express inclusion of an article setting out the rights of other States and (b) attention given to the rights of other

4. Ibid., para. 5.

5. Ibid., para. 272.

States in the allocation of any excess catch preclude the possibility that the Convention intended for other States to have rights in the exclusive economic zone in excess of those specified.⁶

The tribunal therefore emphasized the following:

Insofar as China's relevant rights comprise a claim to historic rights to living and non-living resources within the "nine-dash line," partially in areas that would otherwise comprise the exclusive economic zone or continental shelf of the Philippines, the Tribunal cannot agree with this position. The Convention does not include an express provision preserving or protecting historic rights that are at variance with the Convention. On the contrary, the Convention supersedes earlier rights and agreements to the extent of any incompatibility. The Convention is comprehensive in setting out the nature of the exclusive economic zone and continental shelf and the rights of other States within those zones. China's claim to historic rights is not compatible with these provisions.

The Tribunal considers the text and context of the Convention to be clear in superseding any historic rights that a State may once have had in the areas that now form part of the exclusive economic zone and continental shelf of another State.⁷

The tribunal noted that even China itself, in the negotiations for UNCLOS, "was resolutely opposed to any suggestion that coastal States could be obliged to share the resources of the exclusive economic zone with other powers that had historically fished in those areas."⁸ In addition,

China's position, as asserted during the negotiation of the Convention, is incompatible with a claim that China would be entitled to historic rights to living and non-living resources in the South China Sea that would take precedence over the exclusive economic zone rights of the other littoral States. China never advanced such a claim during the course of the negotiations, notwithstanding that the South China Sea and the question of sovereignty over the Spratly Islands was raised on several occasions in exchanges between China and the Philippines during the work of the Seabed Committee and between China and Viet Nam during the Third UN Conference.⁹

These statements mean that China cannot plausibly make any legitimate claim to any portion of the living and nonliving resources within another coastal state's EEZ or continental shelf, such claims having been relinquished with the signing and ratification of UNCLOS as part of the package deal of the mutual compromises between the state parties. Any historic claims that China could make were limited to either the territorial seas around land territory or living and nonliving resources within its own EEZ or continental shelf.

6. Ibid., para. 243.

7. Ibid., para. 246–247.

8. Ibid., para. 251.

9. Ibid., para. 252.

The tribunal even assumed, for the sake of argument, that China did have some form of historic rights in areas located within the EEZ of other littoral South China Sea states. But in the end, even the presumed existence of such prior historic rights did not support China's cause:

The Tribunal has no doubt that Chinese fishermen have long made use of the waters of the South China Sea, including in areas beyond the territorial sea of any feature. If China had historic rights giving it a privileged position with respect to the resources of such waters, the acceptance of the exclusive economic zone as a matter of customary international law and China's adherence to the Convention altered that situation. Through the Convention, China gained additional rights in the areas adjacent to its coasts that became part of its exclusive economic zone, including the areas adjacent to any island entitled to such a zone. It necessarily follows, however, that China also relinquished the rights it may have held in the waters allocated by the Convention in the exclusive economic zones of other States.¹⁰

Moreover, to drive home the point, the tribunal found that China could not even make such historic rights claims because it never actually and officially clarified the extent of its claims until 2009,¹¹ it never exercised exclusive control over the waters or resources beyond the territorial sea areas within the nine-dash line,¹² and its claims never received either the acquiescence or acceptance by any of the affected states.¹³ In the absence of these essential elements, there was no legal basis for any of China's claims to historic rights to the entire area of the nine-dash line—that is, beyond the maritime zones allowed under UNCLOS. According to the tribunal:

In practice, to establish the exclusive historic right to living and non-living resource within the "nine-dash line," which China now appears to claim, it would be necessary to show that China had historically sought to prohibit or restrict the exploitation of such resources by the nationals of other States, and that those States had acquiesced in such restrictions. In the Tribunal's view, such a claim cannot be supported. The Tribunal is unable to identify any evidence that would suggest that China historically regulated or controlled fishing in the South China Sea, beyond the limits of the territorial sea. With respect to the non-living resources of the seabed, the Tribunal does not even see how this would be theoretically possible. Seabed mining was a glimmer of an idea when the Seabed Committee began the negotiations that led to the Convention. Offshore oil extraction was in its infancy and only recently became possible in deep water areas. Indeed, the China National Offshore Oil Corporation itself was only founded in

10. Ibid., para. 257.

11. Ibid., para. 275.

12. Ibid., para. 270.

13. Ibid., para. 270, 275.

1982, the same year that China signed the Convention. With respect to the seabed, the Tribunal does not see any historical activity that could have been restricted or controlled, and correspondingly no basis of a historic right.¹⁴

Thus whatever remained of China's historic rights claims could only be applicable to the islands and rocks and their adjacent 12-nautical-mile territorial seas; but the tribunal did not need to examine these issues since they were integral to the questions of territorial sovereignty that were expressly excluded from the case. The tribunal emphasized that historic rights claims to the islands were separate and distinct from the historic rights claims to the resources and waters around them:

The scope of a claim to historic rights depends upon the scope of the acts that are carried out as the exercise of the claimed right. Evidence that either the Philippines or China had historically made use of the islands of the South China Sea would, at most, support a claim to historic rights to those islands. Evidence of use giving rise to historic rights with respect to the islands, however, would not establish historic rights to the waters beyond the territorial sea. The converse is also true: historic usage of the waters of the South China Sea cannot lead to rights with respect to the islands there. The two domains are distinct.¹⁵

These rulings lay out the fundamental parameters that confine China's expansive claims based on historic rights or so-called historic facts: implicitly, the historic facts, based on China's own official actions and statements since the 1950s, demonstrate that China cannot use such claims as a basis for claiming rights, jurisdictions, or resources in excess of the 200-nautical-mile EEZ and continental shelf from its baselines, and most especially not within the 200-nautical-mile EEZ and continental shelf of other coastal states. At best China could only make valid claims based on the islands and rocks; however, the potential scope of such claims were then limited by the succeeding rulings of the tribunal on the maritime entitlements of the islands and rocks in the South China Sea.

Maritime Entitlements of South China Sea Islands

The ability to use the islands and rocks in the South China Sea to make disproportionately large claims to most of the area of the nine-dash line was in fact restricted by the tribunal when it comprehensively characterized all of the features in the Spratly Islands region and Scarborough Shoal as not being entitled to either EEZs or continental shelf areas of their own. Directly addressing the issue of interpretation of UNCLOS Article 121(3), the tribunal identified detailed rules for the proper application of the provision and established specific criteria for determining whether any island feature should be entitled to such extended maritime zones.¹⁶

14. Ibid., para. 270.

15. Ibid., para. 266.

16. Ibid., para. 540–549.

1. The use of the word “rock” does not limit the provision to features composed of solid rock;¹⁷
2. The status of a feature is based on its natural capacity, without external additions or modifications intended to increase its capacity to sustain human habitation or an economic life of its own;¹⁸
3. With respect to “human habitation,” the critical factor is the nontransient character of the inhabitation, such that the inhabitants can fairly be said to constitute the natural population of the feature, for whose benefit the resources of the EEZ were seen to merit protection; it should involve the inhabitation of the feature by a stable community of people for whom the feature constitutes a home and on which they can remain, although it could include periodic or habitual residence by a nomadic people;¹⁹
4. The term “economic life of their own” refers ordinarily to the life and livelihoods of the human population inhabiting and making its home on a maritime feature or group of features, oriented around the feature itself and not focused solely on the waters or seabed of the surrounding area;²⁰
5. Either the ability to sustain human habitation or an economic life of its own would suffice to entitle a high-tide feature to an EEZ and continental shelf; but as a practical matter, a maritime feature will ordinarily only possess an economic life of its own if it is also inhabited by a stable human community; and an exception may be made for populations sustaining themselves through a network of related maritime features;²¹
6. The capacity of a maritime feature is an objective criterion unrelated to sovereignty or whether it is presently, or has been, inhabited or home to economic life;²²
7. The capacity of a maritime feature to sustain human habitation or an economic life of its own must be assessed on a case-by-case basis; but the principal factors that contribute to such capacity include the presence of water, food, and shelter in sufficient quantities to enable a group of persons to live on the feature for an indeterminate period of time;²³
8. The capacity of a maritime feature should be assessed with due regard to the potential for a group of small island features to collectively sustain human habitation and economic life;²⁴
9. Evidence of physical conditions are insufficient for features that either are definitely incapable of sustaining human habitation like small, barren rocks or surely are large features that are definitely inhabitable; features that fall in between must be analyzed through the above criteria.²⁵

17. *Ibid.*, para. 540.

18. *Ibid.*, para. 541.

19. *Ibid.*, para. 542.

20. *Ibid.*, para. 543.

21. *Ibid.*, para. 544.

22. *Ibid.*, para. 545.

23. *Ibid.*, para. 546.

24. *Ibid.*, para. 547.

25. *Ibid.*, para. 548.

On the basis of these comprehensive criteria, the tribunal determined that none of the largest features in the Spratly Islands region, whether held by China, Taiwan, or their neighbors in the past or present, could qualify as an island entitled to an EEZ and continental shelf. Even if any of these islands may have been historically used by the littoral states for many decades, such usage did not legally amount to human habitation and/or independent economic life required to generate extended maritime zones.

The effective limitation of maritime zones around islands and rocks in the South China Sea to only territorial seas, the maximum breadth of which would only be 12 nautical miles, again undercuts China's expansive maritime claims and restricts them legitimately to only 12-nautical-mile enclaves around each island or rock above water at high tide. It is therefore only within these 12-nautical-mile enclaves that China could legitimately claim or argue that it has basis for its more draconian assertion measures using maritime law enforcement and naval ships; beyond these areas, the high seas freedoms and due regard obligations in favor of all user states within the high seas and EEZs are applicable, and no state (especially China) could legitimately restrict the usage of the waters by other states except in accordance with UNCLOS or other specific conventions. Conversely, outside of the 12-nautical-mile enclaves but within 200 nautical miles of the coastal state, the latter is fully empowered to carry out such management activities and exercise its full coastal state jurisdiction and rights under UNCLOS.

With no island or rock being capable of generating anything more than a 12-nautical-mile territorial sea, the tribunal was able to consider the issues of interpretation and application of UNCLOS raised by the Philippines concerning China's activities outside the territorial seas of those features. The islands and rocks created pockets of disputed territorial sovereignty, but the sea areas around them could be jurisdictionally allocated to adjacent coastal states in accordance with UNCLOS. Beyond the 12-nautical-mile territorial enclaves around each island or rock, China's justification of its activities on the basis of historic rights enclosed within the nine-dash line could not hold water against the legally protected rights and jurisdictions of those coastal states.

The tribunal thereafter proceeded to consider the specific status of features currently occupied by China to determine which among them could be considered to be entitled to 12-nautical-mile territorial seas and which were merely low-tide elevations that did not generate any such zones, unless they were within 12 nautical miles of another feature that was so entitled. This presented a particular evidentiary challenge, considering that in the meantime, China had not only refused to participate to give evidence on the features it occupied, but it also undertook massive artificial island-building activities that completely erased the natural conditions of the features. The difficulties this presented, and the impact of these Chinese actions on the South China Sea disputes, would later be firmly rebuked in the subsequent portions of the award. But the tribunal was not deterred from declaring the status of the Chinese-held features on the basis of best available evidence, departing from the usual convention (based on cooperation of the parties) of requiring and using up-to-date and accurate surveys. In the end, the tribunal decided on the status of the features as summarized in Table 3.1.

The most important effect of the tribunal's determinations is to either categorize the features as disputed territorial enclaves or as high seas or EEZ/continental shelf features pertaining to the

Table 3.1. Tribunal-Determined Statuses of Select Features in the South China Sea

Name of Feature	High-Tide Elevation with Territorial Sea?	Remarks/Qualifications?
Scarborough Shoal	Yes	
Cuarteron Reef	Yes	
Fiery Cross Reef	Yes	
Johnson Reef	Yes	
McKennan Reef	Yes	
Hughes Reef	No, but . . .	. . . it may generate a territorial sea as a basepoint of Sin Cowe Island and nearby McKennan Reef.
Gaven Reef	No, but . . .	. . . it may generate a territorial sea as a basepoint of nearby Namyit Island.
Subi Reef	No, but . . .	. . . it may generate a territorial sea as a basepoint of nearby Sandy Cay.
Mischief Reef	No	
Second Thomas Shoal	No	

adjacent coastal state (in this case, the Philippines). Thus, Scarborough, Cuarteron, Fiery Cross, Johnson, and McKennan Reefs are encompassed within disputed enclaves at least 12 nautical miles across (depending on the actual or presumed location of the rocks above high water). Hughes, Gaven, and Subi Reefs are low-tide elevations, but since the Philippines admitted that they could be used as basepoints of adjacent islands, they could be regarded to possibly generate 12-nautical-mile territorial zones connected to such adjacent islands or rocks and could actually create much larger disputed territorial enclaves than the first four. Mischief Reef and Second Thomas Shoal, however, are fully submerged areas that do not generate territorial sea zones and are therefore part of the Philippines' EEZ/continental shelf, within which they are located. All other areas beyond these enclaves are either Philippine EEZ/continental shelf or high seas and possibly extended continental shelf areas of the adjacent coastal states.²⁶

26. It should be noted that the seabed areas around Fiery Cross, Cuarteron, and Subi Reefs are encompassed by Vietnam and Malaysia's joint submission for a continental shelf beyond 200 nautical miles, currently pending before the Commission on the Limits of the Continental Shelf. The Philippines may also lay claim to the same area as part of its own continental shelf beyond 200 nautical miles.

Legality of Chinese Maritime Assertion Activities

The tribunal examined all of China's activities that took place beyond 12 nautical miles from islands or rocks and which aggrieved the Philippines, and in most cases found that they were in contravention of China's solemn obligations under UNCLOS. In particular, the tribunal found that China's interference with Philippine fishing and petroleum exploration activities, its construction of artificial islands, and its failure to prevent Chinese fishermen from fishing in the Philippine EEZ were in violation of the Philippines' sovereign rights over its EEZ and continental shelf.

Diplomatic correspondence alone did not constitute unlawful interference. The tribunal accepted that "China has asserted its claim to rights in the waters within 200 nautical miles of the Philippine baselines in good faith"²⁷ and stated:

the Tribunal does not consider that China's diplomatic communications, asserting China's understanding of its rights in the South China Sea pursuant to the Convention and international law, can themselves constitute breaches of the provisions of the Convention regarding the continental shelf. It is an altogether normal occurrence that States will have different understanding of their respective rights. If the expression of such differences were itself sufficient to place the State whose understanding of the law ultimately proved incorrect in breach of the underlying obligation, it would cast an unacceptable chill on the ordinary conduct of diplomacy. The Tribunal does not exclude that it could reach a different conclusion in the case of diplomatic statements claiming rights in bad faith, or in the case of attempts by one State to induce another to relinquish its rights through repeated statements, veiled threats, or diplomatic coercion. That, however, is not the case on the record before the Tribunal. Accordingly, the Tribunal concludes that China's diplomatic statements to the Philippines regarding their respective rights, although incorrect with respect to the law, do not constitute breaches of the Convention.²⁸

This good faith status, however, may be presumed to have ended as of July 12, 2016, because from that date China may be assumed to be on notice that it cannot legitimately assert such claims within the EEZ or continental shelf of another coastal state. Any further diplomatic interference subsequent to the tribunal's judgment can be considered to be done in bad faith—that is, with full knowledge that its claim or assertion is invalid under UNCLOS. China can no longer allege good faith in continuing to diplomatically interfere with or contest a coastal state's exercise of its rights within its own EEZ or continental shelf.

Actual interference with maritime activities at sea, or reasonably credible threats thereof, were deemed to cross the line. The tribunal noted, for example, that instead of seeking to resolve the dispute over a petroleum exploration concession on Reed Bank through negotiations or other peaceful means, "China instead sought to carry out its own understanding of its rights through

27. In the Matter of the South China Sea Arbitration (Phil.-China), PCA Case No. 2013-19, para. 704.

28. *Ibid.*, para. 705.

the actions of its marine surveillance vessels.”²⁹ Regarding China’s establishment of a fishing moratorium intended to apply to areas of the Philippine EEZ that was not limited to Chinese flagged vessels, the tribunal declared that “in contrast to mere statements, the fishing moratorium established a realistic prospect that Filipino fishermen, seeking to exploit the resources of the Philippines’ exclusive economic zone, could be exposed to the punitive measures spelled out in the moratorium, including the possible confiscation of the fishing vessel in question.”³⁰ These actions were all deemed to have been in direct violation of the Philippines’ sovereign rights to its EEZ and/or continental shelf.

Even more odious were China’s unlawful acts intended to create serious risk of collisions to obstruct Philippine vessels carrying out their fishing, petroleum exploration, or other activities. The operations of Chinese law enforcement vessels against their smaller Philippine counterparts and fishing vessels were also called out for being in violation of Rules 2, 6, 7, 8, 15, and 16 of the International Regulations for Preventing Collisions at Sea and Article 94 of UNCLOS.³¹ China was found to have used such tactics in interfering with Philippine traditional fishing activities in Scarborough Shoal.³²

These tribunal rulings indicate that China’s most blatant and dangerous interference activities against other ships operating in the South China Sea can no longer be legally justified. Active interference, especially dangerous interference, was adjudged by the tribunal to be clearly incompatible with international law. Thus should China continue such maritime assertion practices and maneuvers, it could be held internationally responsible for committing further deliberate breaches of international obligations.

The tribunal rebuked not only active and direct interference, but also China’s failure to prevent its fishermen from engaging in destructive fishing practices, and its promoting and protecting the violation by Chinese nationals of the sovereign rights and jurisdiction of the Philippines. As the tribunal noted:

Chinese vessels have in all reported instances been closely escorted by government CMS [China Marine Surveillance] vessels. The actions of these ships constitute official acts of China and are all attributable to China as such. Indeed, the accounts of officially organized fishing fleets from Hainan at Subi Reef and the close coordination exhibited between fishing vessels and government ships at Scarborough Shoal support an inference that China’s fishing vessels are not simply escorted and protected, but organized and coordinated by the Government. In any event, there can be no question that the officers aboard the Chinese Government vessels in question were fully aware of the actions being taken by Chinese fishermen and were able to halt them had they chosen to do so.³³

29. Ibid., para. 708.

30. Ibid., para. 712.

31. Ibid., para. 1109.

32. Ibid., para. 794–814.

33. Ibid., para. 755.

Thus any future activities by China along the same lines would also make China responsible for acting directly in contravention of international law by effectively acting as a state sponsor of illegal, unreported, and unregulated fishing.

Most significant, the tribunal declared in no uncertain terms that China had absolutely failed in its obligation to preserve and protect the marine environment by constructing its seven artificial islands in the Spratlys. The tribunal was particularly pointed in its criticism, based on reports from numerous sources and statements, including some coming from China itself:

Based on the compelling evidence, expert reports, and critical assessment of Chinese claims . . . the Tribunal has no doubt that China's artificial island-building activities on the seven reefs in the Spratly Islands have caused devastating and long-lasting damage to the marine environment. The Tribunal accordingly finds that through its construction activities, China has breached its obligation under Article 192 to protect and preserve the marine environment, has conducted dredging in such a way as to pollute the marine environment with sediment in breach of Article 194(1), and has violated its duty under Article 194(5) to take measures necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life.³⁴

It must be understood that in most cases, the legal status of the artificial islands themselves were not evaluated. Six of the seven artificial islands were built on high-tide elevations that constituted land territory and generated a territorial sea and thus were encompassed and integrated within the sovereignty disputes that were beyond the tribunal's jurisdiction. However, the very act of building such artificial islands was deemed to be contrary to international law due to the effect of aggravating the dispute between China and the Philippines and causing serious and irreparable harm to the marine environment in the South China Sea. Thus while the artificial islands themselves were not deemed contrary to international law *per se*, the act of constructing them in an admittedly disputed area clearly was.

The exception to this was Mischief Reef; the tribunal ruled that the artificial island built on it was more egregious because it was constructed on a low-tide elevation that definitely formed part of the EEZ and continental shelf of the Philippines and which the latter did not permit.³⁵ It is only this structure that the tribunal may be deemed to have declared inherently illegal, because it is located within the Philippines' extended maritime zones without consent or approval.

These rulings have legally delimited China's range of legitimate actions in the South China Sea. They imply that beyond the disputed territorial enclaves, China has no legal basis for interfering with the Philippines resource activities within its own EEZ and continental shelf, whether diplomatically or through actions at sea. They also place on China the burden of accountability for active interference and environmental damage in the South China Sea that it has already done and might do in the future. Depending on location, continuation of China's maritime assertion activities

34. *Ibid.*, Art. 983.

35. *Ibid.*, Art. 1043.

against the Philippines may now definitely be illegal under international law and could expose Beijing to various sanctioning mechanisms by international organizations or groupings. Should its continued activities cause actual damage, China is additionally responsible for taking corrective and remedial actions against its erring diplomats, mariners, and ships.

Not all of the Philippines' claims with regard to interference with fishing activities were granted by the tribunal. For example, the tribunal did not consider the Hainan provincial government's fishing regulations to be in breach of UNCLOS. Nor did it agree with the Philippines' claim that China prevented fishermen from fishing near Mischief Reef and Second Thomas Shoal.³⁶ With respect to the former, the tribunal did not see the fishing regulations as intended against foreign fishers.³⁷ And it could not consider the latter due to lack of evidence.³⁸

Notably the tribunal also did not rule on the Philippines' claim with respect to interference with the resupply and alleged harassment of the detachment based on Second Thomas Shoal, for the most part due to the partly military character of the claim.³⁹ The lack of jurisdiction over military activities may be the only remaining loophole that would permit China's maritime expansion and assertion activities through the use of naval and other military units. However, this is an extremely sensitive and critical area. If China used this loophole in the future, it would only lead to an emphasis on its potential use of force or threat of use of force in the South China Sea, which would be certain to cause hedging and alliance-building behavior among aligned and nonaligned coastal states. China would then be prompting the further militarization of the South China Sea, as it would instigate an action/reaction pattern of military mobilization and presence.

Legality of China's Activities Pending Dispute Settlement

The tribunal found that China violated its obligations to refrain from taking actions that cause permanent and irreparable harm to the marine environment through the construction of artificial islands that destroyed extensive coral reef areas. In so doing, China acted prejudicially against the rights of the Philippines by permanently destroying evidence of the reefs' natural conditions, thereby impeding the ability to determine their capacity to legally generate maritime zones under UNCLOS. China also acted contrary to international law by aggravating the dispute. The tribunal emphasized that both parties had "the duty to abstain from any measure capable of exercising a prejudicial effect in regard to the execution of the decision to be given and, in general, not allow any step of any kind to be taken which might aggravate or extend the dispute constitutes a principle of international law."⁴⁰

This ruling of the tribunal emphasizes the disputing parties' duty of self-restraint and abstention from permanently prejudicial or aggravating actions. It legally restricts China's freedom of action in its maritime assertion and expansion activities by calling for actions that are not damaging to the marine environment and, implicitly, not of a permanent and irreversible nature. To do otherwise

36. *Ibid.*, para. 713–714.

37. *Ibid.*, para. 713.

38. *Ibid.*, para. 714.

39. *Ibid.*, para. 1161–1162.

40. *Ibid.*, para. 1173.

would be a violation of international law. The scope of such a restriction could be broadly interpreted: it may cover resource extraction activities such as seabed mining and coral harvesting, unilateral petroleum drilling in the disputed enclaves, or the building of new artificial islands. Overall the award effectively seeks to promote and ensure the current status quo and prevent any future massive changes.

CONCLUSIONS

The award in the case of the Philippines v. China has indeed turned a page on the South China Sea disputes by marking out in clear terms what are the legitimate and illegitimate claims, the limits of permissible and legitimate behavior among claimants, who may exercise exclusive jurisdiction and rights over resources (for the most part), and which areas should and should not be considered to be legally disputed. It is indeed a strong rebuke of China's recent tactics in asserting its claims and provides the essential parameters for acceptable state behavior in the South China Sea.

Most of China's maritime assertion and expansion activities have been judged and rebuked by the award, and the standards of acceptable conduct in the South China Sea have been clearly defined. The range and extent of China's maritime assertion and expansion activities have been measured against a clear legal standard, and its future activities may now be definitively characterized in terms of law and legitimate conduct. Although the award does not completely resolve the disputes between the Philippines and China (nor does it presume to address the rest of the South China Sea disputes), it does provide a legal, fair, and reasonable basis for assessing the legitimacy and legal effect of claimant states' actions.

Loopholes remain that could still spark confrontation; in particular, the disparate territorial enclaves scattered across the area and still relatively unrestricted range of claimant state actions within them (save for the no-harm and no-aggravation limits) still form the basis of destabilizing unilateral actions. China's insistence on its exceptionalist legal positioning and provocative unilateralism has shown no signs of diminishing. But in the long run, China may find that it cannot sustain a direct and absolute opposition to the award because the way in which the tribunal disposed of the issues through reason and argument is compelling and hard to debunk. Persistence in opposition would only keep highlighting that China's actions have been, and may always be, in direct contravention of international law.

The Effects of the South China Sea Dispute and the Arbitral Ruling on UNCLOS and International Law

Erik Franckx

The organizers of the Sixth Annual CSIS South China Sea Conference could hardly have picked a better day to hold their conference, especially as far as the legal panel is concerned. In *tempore non suspecto*, they opted for the very day on which the arbitral tribunal in the case opposing the Philippines and China later decided to render its award public. This coincidence of course had a positive as well as a negative side for a panel dealing with this very issue. On the one hand, the long-awaited decisions were available for careful scrutiny on the very day of the conference. On the other hand, of course, the panelists were all nevertheless caught somewhat off-guard as they did not have a chance to prepare their presentations on the basis of the information the decision contained. They consequently had to somewhat improvise on the spot based on a very quick reading of the decision or its summary, depending on how late they were able to lay a hand on the award itself.

My own contribution to the panel suffered most from this last element. Indeed, while my colleagues were all asked to focus on one particular country, be it China, the Philippines, or the United States, the organizers asked me to address the effects of the ruling, as well as the dispute more generally, on the legal regime contained in the 1982 United Nations Convention on the Law of the Sea (UNCLOS)¹ and international law more broadly. Needless to say, such a vast topic is not to be grasped in a few thousand words, and certainly not in a brief oral presentation.

This chapter only focuses on UNCLOS Annex VII arbitral awards. It first frames these arbitral awards in the broader framework of Part XV of UNCLOS. It then clarifies the relationship between these Annex VII arbitral awards (see Table 4.1 for the full list of arbitration awards discussed) and

1. United Nations Convention on the Law of the Sea (UNCLOS), Montego Bay, December 10, 1982, entered into force November 10, 1994, UN Doc. A/CONF.62/122, 21 I.L.M. 1621–1354 (1982), 1833 UNTS 397, www.un.org/Depts/los/convention_agreements/texts/unclos/unclos_e.pdf.

the Permanent Court of Arbitration (PCA). Against this background, the effect of awards rendered by such bodies is analyzed. And in a final section, some concluding remarks are made.

ANNEX VII ARBITRAL AWARDS AND UNCLOS

To the layman it might come as a surprise that UNCLOS, which specifically created the International Tribunal for the Law of the Sea (ITLOS) as one of the few conventional bodies established under that convention² to hear “all disputes and all applications submitted to it in accordance with this Convention,”³ is not the only body entrusted with this task. Indeed, Article 287 of UNCLOS, entitled “Choice of Procedure,” lists three other bodies, after having mentioned ITLOS in first order: the International Court of Justice, Annex VII arbitral tribunals, and Annex VIII special arbitral tribunals.⁴ ITLOS is not even the preferred option, because if the parties to a dispute have made a different choice, that dispute can only be brought before an Annex VII arbitration, unless the parties agree otherwise.⁵

To understand this apparent anomaly, it needs first to be remembered that the dispute settlement provisions contained in UNCLOS are quite different from those operational at the time of the first codification attempt undertaken by the United Nations with respect to the law of the sea, the so-called 1958 conventional system.⁶ Under that system, the dispute settlement provisions formed part of a separate protocol whose adoption was facultative.⁷ If these treaties only received a limited number of ratifications over the years,⁸ the optional protocol concerning compulsory dispute settlement attracted even fewer ratifications.⁹ Moreover, it is noteworthy that the only convention of the four adopted in 1958 that did have some provisions on dispute settlement¹⁰ was

2. The other two bodies so established are the International Seabed Authority and the Commission on the Limits of the Continental Shelf.

3. UNCLOS, Annex VI, Art. 21.

4. *Ibid.*, Art. 287(1).

5. *Ibid.*, Art. 287(5).

6. This 1958 conventional system is composed of four conventions: Convention on the Territorial Sea and the Contiguous Zone, April 29, 1958, UNTS, vol. 516, 205, 206–224, http://untreaty.un.org/ilc/texts/instruments/english/conventions/8_1_1958_territorial_sea.pdf; Convention on the Continental Shelf, April 29, 1958, UNTS, vol. 499, 311, 312–320, http://untreaty.un.org/ilc/texts/instruments/english/conventions/8_1_1958_continental_shelf.pdf; Convention on the High Seas, April 29, 1958, UNTS, vol. 450, 11, 82–102, http://untreaty.un.org/ilc/texts/instruments/english/conventions/8_1_1958_high_seas.pdf; Convention on Fishing and Conservation of the Living Resources of the High Seas, April 29, 1958, UNTS, vol. 559, 285, 286–300, http://untreaty.un.org/ilc/texts/instruments/english/conventions/8_1_1958_fishing.pdf. These conventions entered into force on September 10, 1964; June 10, 1964; September 30, 1962; and March 20, 1966.

7. Optional Protocol of Signature concerning the Compulsory Settlement of Disputes, April 29, 1958, UNTS, vol. 450, 169, 170–172, http://legal.un.org/ilc/texts/instruments/english/conventions/8_1_1958_optional_protocol.pdf. This protocol entered into force on September 30, 1962.

8. As of the time of this writing, the number of participating states range between 63 (Convention on the High Seas) and 39 (Convention on Fishing and Conservation of the Living Resources of the High Seas). Information from the United Nations Treaties Collection, accessed December 10, 2016, https://treaties.un.org/Pages/ParticipationStatus.aspx?clang=_en.

9. *Ibid.* Only 38 states are, at present, bound by this optional protocol.

10. Convention on Fishing and Conservation of the Living Resources of the High Seas, arts. 9–12.

also the one that has obtained the least number of ratifications¹¹ and can be considered as having failed to be effective in operation or becoming part of international law.¹²

If dispute settlement consequently only forms part of the very far periphery of the 1958 conventional system, it by contrast forms the very core of UNCLOS. The package-deal approach that was the basis of almost a decade of negotiations required that the final result (i.e., UNCLOS) could not be unraveled by states by either making reservations¹³ or refusing to subject their own interpretation to compulsory third-party dispute settlement. UNCLOS was in fact the very first multilateral agreement, with universal aspirations, that included such a compulsory dispute settlement system—namely Part XV, which all states were obliged to accept if they wanted to become a state party.¹⁴ Part XV therefore was outright revolutionary at the time it was adopted.

It is generally recognized that Louis B. Sohn, member of the U.S. delegation to the Third United Nations Conference on the Law of the Sea (UNCLOS III), has been one of the main architects devising this system.¹⁵ As he emphasized in one of his scholarly articles, one of the innovations of the system is that it does not impose on states a “preselected sole procedure”¹⁶ but rather allows them to make a choice between four alternatives.¹⁷ In this system, arbitration plays a double role, as remarked by Sohn: It is not only one of the four options presented to the states to choose from, but at the same time it constitutes the default procedure if states have made different choices or no choice at all.¹⁸ This privileged status attributed to arbitration as a means of compulsory dispute settlement has made it a serious competitor to the jurisdiction of ITLOS concerning law of the sea disputes.

In *tempore non suspecto*, arguments were advanced on both sides of the spectrum, meaning that some predicted a bright future for ITLOS, which in certain areas has so-called residual compulsory jurisdiction,¹⁹ such as provisional measures or prompt release of vessels and crews. It means that with respect to these preliminary procedures ITLOS will have jurisdiction awaiting, for instance,

11. See United Nations Treaties Collection.

12. William Edeson, “Soft and Hard Law Aspects of Fisheries Issues: Some Recent Global and Regional Approaches,” in *The Stockholm Declaration and Law of the Marine Environment*, ed. Myron Nordquist, John Moore, and Said Mahmoudi (The Hague: Martinus Nijhoff Publishers, 2003), 165, 175.

13. UNCLOS, Art. 309, providing that no reservations or exceptions may be made unless expressly allowed by the convention.

14. Out of a convention consisting of 320 articles, about one-third of them are dispute-related. Moreover, almost half of all the annexes attached to that document also concern dispute settlement.

15. Sohn was member of the U.S. delegation to UNCLOS III from 1974 to 1982, specifically responsible for dispute settlement negotiations.

16. Louis B. Sohn, “Settlement of Law of the Sea Disputes,” *International Journal of Marine and Coastal Law* 10, no. 2 (1995): 205–206.

17. See UNCLOS, Art. 287(1).

18. Sohn, “Settlement of Law of the Sea Disputes,” 212.

19. John E. Noyes, “Law of the Sea Dispute Settlement: Past, Present, and Future,” *ILSA Journal of International & Comparative Law*, 5, issue 2, (1999): 301, 308, emphasizing that ITLOS, rather than an arbitral tribunal, has residual compulsory jurisdiction in certain cases (302). About this residual compulsory jurisdiction of ITLOS, see also Kristen Gustafson Juras, John E. Noyes, and Erik Franckx, *Law of the Sea in a Nutshell* (St. Paul: West Publishing Company, 2010), 508 and 510.

that an Annex VII arbitral tribunal is duly established. The merits in such a case will be decided by a body different from the one having considered these preliminary proceedings. Others rather emphasized the importance of arbitration as the default procedure to predict a sharp increase in such cases.²⁰ At present, one can say that both sides in a way proved to be right. ITLOS made its first judgment in 1997; since then, 25 cases have been submitted to ITLOS.²¹ Of these cases, about 65 percent concerned “compulsory residual jurisdiction”—namely, seven cases concerning the prescription of provisional measures²² and nine cases concerning the prompt release of vessels and crews.²³

But a respectable number of “default procedure” Annex VII arbitration cases have also been instituted from 1998 onward. Here the count is somewhat more difficult, as some of these cases, after having been instituted as Annex VII arbitrations, were later transferred to ITLOS by common agreement of the parties or were terminated either by the claimant state alone or by agreement of both parties. As the numbers provided for ITLOS also include discontinued cases, it seems appropriate to include these cases nevertheless in the listing. With this remark in mind, the total number at present stands at 17.²⁴

These figures, however, need to be put somewhat in perspective. If one looks at the number of cases in which either ITLOS or an Annex VII tribunal has delivered a final judgment or award, a quite different picture appears. If one discounts the “compulsory residual jurisdiction” with respect to ITLOS, nine cases remain.²⁵ Of this group, two are advisory opinions²⁶ and one case was

20. Adhering to the latter strand, see, for instance, Renate Platzöder, “Impact of Arbitration Established under Annex VII on the Implementation of the Law of the Sea Convention,” in *Order for the Oceans at the Turn of the Century*, ed. Davor Vidas and Willy Østreng (The Hague: Kluwer Law International, 1999), 105–122. But see *contra* Karin Oellers-Frahm, “Arbitration: A Promising Alternative of Dispute Settlement under the Law of the Sea Convention,” *Zeitschrift für ausländisches öffentliches Recht und Völkerrecht (ZaöRV)* 55 (1995): 457–478, predicting that arbitration will only be used in exceptional cases (*ibid.*, 477).

21. Information on all cases available at International Tribunal for the Law of the Sea (ITLOS), “Cases,” <https://www.itlos.org/en/cases/>.

22. *Ibid.* This issue concerns the following cases: 1. and 2. Southern Bluefin Tuna Cases (New Zealand v. Japan; Australia v. Japan), 1999; 3. The MOX Plant Case (Ireland v. United Kingdom), 2001; 4. Case concerning Land Reclamation by Singapore in and around the Straits of Johor (Malaysia v. Singapore), 2003; 5. The “ARA Libertad” Case (Argentina v. Ghana), 2012; 6. The “Arctic Sunrise” Case (Netherlands v. Russian Federation), 2013; and 7. The “Enrica Lexie” Incident (Italy v. India), 2015.

23. This issue concerns the following cases: 1. The M/V “Saiga” Case (Saint Vincent and the Grenadines v. Guinea), 1997; 2. The “Camouco” Case (Panama v. France), 2000; 3. The “Monte Confurco” Case (Seychelles v. France), 2000; 4. The “Grand Prince” Case (Belize v. France), 2001; 5. The “Chaisiri Reefer 2” Case (Panama v. Yemen), 2001; 6. The “Volga” Case (Russian Federation v. Australia), 2002; 7. The “Juno Trader” Case (Saint Vincent and the Grenadines v. Guinea-Bissau), 2004; 8. The “Hoshinmaru” Case (Japan v. Russian Federation), 2007; and 9. The “Tomimaru” Case (Japan v. Russian Federation), 2007.

24. See Table 4.1.

25. Compare ILOS, “Cases” and UNCLOS, Annex VI, Art. 21.

26. Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area (Request for Advisory Opinion Submitted to the Seabed Disputes Chamber), 2011; and Request for an Advisory Opinion Submitted by the Sub-Regional Fisheries Commission (SRFC), 2015.

terminated by agreement of the parties.²⁷ Of the remaining six cases, four have been decided on the merits²⁸ and two are still pending.²⁹

Turning to Annex VII arbitrations, it appears that of the 17 cases that were instituted, four were transferred to ITLOS after originally having been instituted under Annex VII³⁰ and three were terminated either by the claimant³¹ or by agreement of the parties.³² This results in the fact that seven awards have been rendered so far,³³ with three cases pending.³⁴

This brief analysis indicates that when compared to ITLOS, specifically created within the framework of UNCLOS to settle law of the sea disputes, Annex VII tribunals have so far been solicited almost twice as often to settle the substance of disputes between parties.

ANNEX VII ARBITRAL AWARDS AND THE PERMANENT COURT OF ARBITRATION

In recent years, the PCA has experienced a sharp increase in cases brought under Annex VII of UNCLOS in which it was asked to act as registry. This heightened activity would be cause for unbri-dled optimism among supporters of interstate dispute settlement were it not for a parallel develop-ment of considerable concern: the reemergence of nonparticipation. After a lull of about three decades,³⁵ the defaulting party phenomenon has resurfaced in two Annex VII arbitrations. One just rendered its final award (Philippines v. China), and the other one already rendered its awards on jurisdiction and on the merits, but still needs to settle the amount of the compensation ("Arctic Sunrise"). Before addressing this worrisome development, however, some remarks are in order concerning the exact relationship between these Annex VII arbitrations, in general, and the PCA.

27. Case concerning the Conservation and Sustainable Exploitation of Swordfish Stocks in the South-Eastern Pacific Ocean (Chile/European Union), instituted in 2000 and terminated in 2009.

28. 1. The M/V "Saiga" (No. 2) Case (Saint Vincent and the Grenadines v. Guinea), 1999; 2. Dispute concerning Delimi-tation of the Maritime Boundary between Bangladesh and Myanmar in the Bay of Bengal (Bangladesh/Myanmar), 2012; 3. The M/V "Louisa" Case (Saint Vincent and the Grenadines v. Kingdom of Spain), 2013; and 4. The M/V "Virginia G" Case (Panama/Guinea-Bissau), 2014.

29. Dispute concerning Delimitation of the Maritime Boundary between Ghana and Côte d'Ivoire in the Atlantic Ocean (Ghana/Côte d'Ivoire) and the M/V "Norstar" Case (Panama v. Italy).

30. The four cases are: "Saiga"; Delimitation of the Maritime Boundary in the Bay of Bengal; M/V "Virginia G"; and Delimitation of Maritime Boundary in the Atlantic Ocean (see Table 4.1).

31. The MOX Plant Case.

32. Concerns the following cases: "ARA Libertad" and Atlanto-Scandian Herring.

33. It needs nevertheless to be stressed that five awards concerned the merits: 1. Delimitation of the Exclusive Eco-nomic Zone and the Continental Shelf; 2. Delimitation of the Maritime Boundary; 3. The Bay of Bengal Maritime Boundary; 4. Chagos Marine Protected Area; and 5. Philippines v. China. One case only dealt with jurisdiction and admissibility (Southern bluefin tuna). Finally, one case was an award on terms agreed by the parties (Land Reclamation by Singapore in and around the Straits of Johor).

34. The three cases are: "Arctic Sunrise"; "Duzgit Integrity"; and "Enrica Lexie" Incident (see Table 4.1).

35. The last nonparticipation being that of the United States in the merits phase of Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America) before the International Court of Justice.

It deserves to be clearly noted that these Annex VII cases are not cases of the PCA itself. The basis for their submissions is not to be found in the 1899 Convention for the Pacific Settlement of International Disputes, nor the 1907 Convention for the Pacific Settlement of International Disputes.³⁶ Instead the legal basis for their submissions to compulsory third-party settlement needs to be found in UNCLOS—and UNCLOS Annex VII in particular. The only link with the PCA is that these Annex VII arbitrations tend to request that the PCA act as registry.³⁷ This is no obligation, however, as can be inferred from the fact that in the Southern bluefin tuna arbitration, the services of the International Centre for Settlement of Investment Disputes were instead solicited in this respect.³⁸ It is true that ever since the Southern bluefin tuna arbitration, all Annex VII arbitrations under UNCLOS have steadfastly relied on the PCA for registrar services. This fact is duly highlighted by the PCA on its official webpage, where one can read: “Since the 1982 Convention came into force in 1994, the PCA has acted as registry in all but one of the cases that have been arbitrated under Annex VII of UNCLOS.”³⁹

It can therefore be concluded that a link certainly exists at present between the PCA and Annex VII arbitrations under UNCLOS. But that link is restricted to the use of the registrar services. The awards so rendered do not become awards of the PCA, as neither the 1899 nor the 1907 conventions formed the legal basis on which the tribunal founded its jurisdiction, but rather UNCLOS. In view of the many misrepresentations in the press, this point deserves special attention. And even though almost all Annex VII arbitrations that were not at a later stage transferred to ITLOS have in fact relied on the registrar services of the PCA, there is by no means a legal obligation, as illustrated by the Southern bluefin tuna case.

EFFECT OF ANNEX VII ARBITRAL AWARDS

As this is a rather new strand of arbitral awards, of which the first award on the merits was only rendered in 2005,⁴⁰ the question as to the effects of this kind of award could be raised. In a little more than a decade, five more awards on the merits have seen the light of day, with three more pending.⁴¹ This means that a good number of states have started to make use of Part XV of UNCLOS in order to solve outstanding law of the sea disputes. These cases cover a number of important issues, ranging from maritime delimitation to navigational rights.

36. Both available at Permanent Court of Arbitration, “Documents and Resources,” <https://pca-cpa.org/en/documents/pca-conventions-and-rules/>.

37. Of the 13 cases that were not transferred to ITLOS at a later stage, 12 relied on the PCA to act as registry.

38. See Table 4.1.

39. Available at Permanent Court of Arbitration, “United Nations Convention on the Law of the Sea,” <https://pca-cpa.org/en/services/arbitration-services/unclos/>. This statement is correct if one does not take into consideration those arbitrations initially instituted under Annex VII of UNCLOS that were later transferred to ITLOS.

40. The case concerns the land reclamation by Singapore in and around the straits of Johor case. The award in the Southern bluefin tuna case dates to 2000, but that was to reach the conclusion that the arbitral tribunal did not have jurisdiction.

41. See Table 4.1.

In international law, which is a horizontal system of law, no hierarchy exists between international courts and tribunals. And even though the International Court of Justice is described as “the principal judicial organ of the United Nations” in its own charter,⁴² this does not imply that it stands at the apex of a hierarchical system of international dispute settlement bodies. Unlike in most national systems, where an appeal system is operational, decisions by international courts and tribunals are in principle final. This implies that all generate the same effect on the development of the law, irrespective of whether the award was decided by a single arbitrator appointed by the parties or rather by the 21 judges constituting ITLOS, or by 23 judges, if both parties appearing in a case before the court moreover fulfill the conditions to appoint a judge *ad hoc*.

What is special about the most recent award in this series of Annex VII arbitral procedures,⁴³ as already alluded, is that the defendant in this case has repeatedly stated that “it will neither accept nor participate in the arbitration.”⁴⁴ China has strongly objected to the jurisdiction of the Annex VII arbitral tribunal and has developed a whole arsenal of legal arguments as to why the tribunal should have declined jurisdiction.⁴⁵ China, however, has consistently refused to defend these legal arguments before the tribunal, which under international law is the only body competent to judge its own competence (i.e., the so-called *compétence de la compétence*).⁴⁶ The tribunal has nevertheless gone out of its way to try to take into consideration the legal arguments advanced by China outside the regular proceedings before it. By considering the December 2014 Chinese position paper as a plea concerning the tribunal’s jurisdiction⁴⁷ under its rules of procedure,⁴⁸ the tribunal was able to respond to the different points raised by China in that document after having organized a hearing on the jurisdiction.

A somewhat similar position was taken by the Russian Federation in the “Arctic Sunrise” case, as Russia also refused to participate in the proceedings before the tribunal. Russia also remained absent before ITLOS when the Netherlands asked for provisional measures in this case. Russia also published a position paper on the website of its Ministry of Foreign Affairs.⁴⁹ At the same

42. Charter of the United Nations, October 24, 1945, Art. 92.

43. In the Matter of the South China Sea Arbitration (Phil.-China), PCA Case No. 2013-19, Award, July 12, 2016, <https://pca-cpa.org/wp-content/uploads/sites/175/2016/07/PH-CN-20160712-Award.pdf>.

44. See, for instance, “Position Paper of the Ministry of Foreign Affairs of the People’s Republic of China,” December 7, 2014, http://www.fmprc.gov.cn/mfa_eng/zxxx_662805/t1217147.shtml.

45. Ibid. See also Chinese Society of International Law, “The Tribunal’s Award in the ‘South China Sea Arbitration’ Initiated by the Philippines Is Null and Void,” *Global Times*, June 13, 2016.

46. For a recent treatment of this topic, see Laurence Boisson de Chazournes, “The Principle of *Compétence de la Compétence* in International Adjudication and Its Role in an Era of Multiplication of Courts and Tribunals,” in *Looking to the Future: Essays on International Law in Honor of W. Michael Reisman*, ed. Mahnouch Arsanjani, Jacob Katz Cogan, Robert D. Sloane, and Sigfried Wiessner (Leiden: Nijhoff, 2010), 1027–1063.

47. Procedural Order No. 4 of April 21, 2015, as stated in the PCA’s “Arbitration between the Republic of the Philippines and the People’s Republic of China” (press release, The Hague, April 22, 2015), <https://pcacases.com/web/sendAttach/1298>.

48. In the Matter of the South China Sea Arbitration (Phil.-China), PCA Case No. 2013-19, Rules of Procedure, August 27, 2013, Art. 20, <https://pcacases.com/web/sendAttach/233>.

49. Ministry of Foreign Affairs of the Russian Federation, “On Certain Legal Issues Highlighted by the Action of the Arctic Sunrise against Prirazlomnaya Platform,” August 5, 2015, <http://www.mid.ru/documents/10180/1641061/Arctic+Sunrise.pdf/bc7b321e-e692-46eb-bef2-12589a86b8a6>.

time, certain differences need to be taken into account. First of all, the Russian position paper did not concern jurisdiction, but was centered on substantive aspects of the case, arguing that the law enforcement measures undertaken by the Russian authorities with respect to the Arctic Sunrise were legal. Second, the timing of its publication proved awkward, coming nine days before the tribunal rendered its award on the merits in the case.⁵⁰ The tribunal, after having underlined the very late stage of the submission of this Russian position paper—following Russia’s consistent failure to participate in the proceedings—and after having stressed that Russia did not consider this paper to constitute a formal submission, disposed of over 40 pages of legal argumentation by simply stating: “The Tribunal is satisfied that the relevant issues are fully addressed in this Award.”⁵¹

CONCLUSIONS

Annex VII arbitrations are a rather recent phenomenon. The final award in the *Philippines v. China* arbitration is moreover the first such arbitration where the defendant refused to participate. A somewhat similar situation occurred in the “Arctic Sunrise” case between the Netherlands and the Russian Federation, but this case is still pending at present.

The high number of Annex VII arbitrations cases that have seen the light of day during the last two decades or so, especially when compared to the cases on the merits decided by ITLOS during this same period, bodes well for this particular dispute settlement mechanism under UNCLOS.

At the same time it cannot go unnoticed that two major countries have recently refused to appear before the Annex VII proceedings instituted against them. It would seem that states only recently started to realize the full potential of the sophisticated dispute settlement provisions of UNCLOS. This certainly seems to be a justified conclusion when one compares the number of such arbitrations instituted during the first decade with those during the second decade.⁵² It might also explain why major powers have apparently started to have second thoughts about the system after having been confronted with the huge potential of Part XV of UNCLOS in practice.

The lessons to be learned so far are that Annex VII tribunals will apparently go the extra mile to accommodate, as far as possible, the legal arguments of the non-appearing party so that they can be still be taken into account, even though the “Arctic Sunrise” case has shown that there are certain limits. At the same time, however, there can be no doubt that the non-appearing party will be bound by the decision of a tribunal, legally constituted under UNCLOS. By becoming a state party to this document, these non-appearing states accepted that such Annex VII tribunals could possibly be established and render decisions without their cooperation.

50. The tribunal rendered its award on the merits on August 14, 2015.

51. “Arctic Sunrise,” Award on the Merits, August 14, 2015, para. 68, <https://pcacases.com/web/sendAttach/1438>.

52. In the period 1997–2007, 6 such procedures were initiated, compared to 11 during the period 2007–2016. See Table 4.1.

Table 4.1. List of Annex VII Arbitrations*

#	Name	Parties	Instituted	Award/Terminated/ Transferred	Registry
1	Saiga	Saint Vincent and the Grenadines v. Guinea	1997	1998 (transferred to ITLOS)	NA**
2	Southern bluefin tuna	Australia v. Japan and New Zealand v. Japan	1998	2000 (award on jurisdiction and admissibility)	ICSID***
3	MOX plant	Ireland v. United Kingdom	2001	2008 (terminated on withdrawal by claimant)	PCA****
4	Land reclamation by Singapore in and around the straits of Johor	Malaysia v. Singapore	2003	2005 (award on agreed terms)	PCA
5	Delimitation of the exclusive economic zone and the continental shelf	Barbados v. Trinidad and Tobago	2004	2006 (award on the merits)	PCA
6	Delimitation of the maritime boundary	Guyana v. Suriname	2004	2007 (award on the merits)	PCA
7a	The Bay of Bengal maritime boundary	Bangladesh v. India	2009	2014 (award on the merits)	PCA
7b	Delimitation of the maritime boundary in the Bay of Bengal	Bangladesh v. Myanmar	2009	2009 (transferred to ITLOS)	NA
9	Chagos marine protected area	Mauritius v. United Kingdom	2010	2015 (award on the merits)	PCA
10	M/V "Virginia G"	Panama v. Guinea Bissau	2011	2011 (transferred to ITLOS)	NA
11	"ARA Libertad"	Argentina v. Ghana	2012	2013 (terminated on agreement of the parties)	PCA

Table 4.1. Continued

#	Name	Parties	Instituted	Award/Terminated/ Transferred	Registry
12	The South China Sea	Philippines v. China	2013	2016 (award on the merits)	PCA
13	Atlanto-Scandian herring	Denmark in respect of the Faroe Island v. European Union	2013	2014 (terminated on agreement by the parties)	PCA
14	"Arctic Sunrise"	Netherlands v. Russian Federation	2013	Pending	PCA
15	"Duzgit Integrity"	Malta v. Sao Tome and Principe	2013	Pending	PCA
16	Delimitation of maritime boundary in the Atlantic Ocean	Ghana v. Côte d'Ivoire	2014	2014 (transferred to ITLOS)	NA
17	"Enrica Lexie" incident	Italy v. India	2015	Pending	PCA

* Listed chronologically according to date of institution of proceedings (if on the same day, alphabetically according to name of the parties)

** Not applicable

*** International Centre for Settlement of Investment Disputes

**** Permanent Court of Arbitration

It is therefore submitted that the legal effect of the Philippines v. China arbitration is no different from any other Annex VII arbitral tribunal's decision, already decided or still to be decided, or from any other court or arbitral tribunal for that matter. If the decision only binds the parties, the legal reasoning developed to arrive at that particular decision clearly surpasses that limited framework. The rulings of Annex VII arbitral tribunals will bear a pronounced influence on the further development of the law of the sea.

The Law Concerning Military Activities on the Continental Shelf in the Aftermath of the South China Sea Arbitration

James Kraska

This chapter explores the state of the law concerning military activities on the continental shelf of the South China Sea in the wake of the Philippine-China arbitration under Annex VII of the United Nations Convention on the Law of the Sea (UNCLOS).¹ In particular, the tribunal exempted certain Chinese military activities from its jurisdiction while also subjecting some Chinese operations to adjudication if they had only tertiary military functions or were of a dual civil-military nature. Relying in large part on Chinese statements of assurance that it was not engaged in military activities concerning construction of artificial islands, installations, and structures on the Philippine continental shelf, the tribunal made detailed determinations on maritime entitlements of features and closely scrutinized some Chinese seabed activities.

The tribunal's approach may encourage future litigants to seek exemption of their activities by calling them "military," and the ruling raises interesting questions on the scope of what constitutes "military activities" on the continental shelf and how the right of the coastal state over artificial islands, installations, and structures on the seabed relates to the military activities exemption from mandatory dispute resolution.

The legal implications of the ruling for military activities on the seabed are especially important since naval forces of numerous states, including the United States and China, operate in close

1. United Nations Convention on the Law of the Sea (UNCLOS), Montego Bay, December 10, 1982, entered into force November 10, 1994, UN Doc. A/CONF.62/122, 21 I.L.M. 1621-1354 (1982), 1833 UNTS 397, www.un.org/Depts/los/convention_agreements/texts/unclos/unclos_e.pdf.

proximity in the South China Sea. As the surface and air domains become increasingly lethal, states large and small are seeking refuge and tactical advantage and operational edge below the waves. Finally, any future prospects for assertion of jurisdiction over seabed military activities by arbitration or the International Tribunal for the Law of the Sea (ITLOS) is a factor in the U.S. debate over accession to UNCLOS.

EXEMPTION OF MILITARY ACTIVITIES

Part XV of UNCLOS is designed so that compulsory dispute resolution is the default mechanism for every dispute that might arise under UNCLOS. While all disputes are subject to mandatory dispute resolution as a general proposition, Article 297 limits jurisdiction in cases arising from the exercise by the coastal state of its discretion to withhold consent over marine scientific research and disputes over fisheries within the exclusive economic zone (EEZ).

States also may elect to forgo the mandatory process and invoke several optional exceptions to jurisdiction in certain narrowly prescribed cases, and they must do so in a written declaration submitted to the United Nations. States party to UNCLOS may declare under Article 298 that they do not accept compulsory arbitration with respect to disputes concerning maritime delimitation, historic bays or titles, military activities, law enforcement activities “in regard to the exercise of sovereign rights or jurisdiction,” and those disputes under consideration by the United Nations Security Council. Such exclusions are effective to all other states parties.

The “military exemption” in Article 298(1)(b) of UNCLOS provides as follows:

When signing, ratifying or acceding to this Convention or at any time thereafter, a State may, without prejudice to the obligations arising under section 1, declare in writing that it does not accept any one or more of the procedures provided for in section 2 with respect to one or more of the following categories of disputes:

. . . (b) disputes concerning military activities, including military activities by government vessels and aircraft engaged in non-commercial service.

With respect to disputes excluded by one party, other parties to the dispute shall not initiate compulsory arbitration. None of the dispute settlement procedures in UNCLOS, including arbitral tribunals under Annex VII or Annex VIII, and cases brought to ITLOS or the International Court of Justice, may assert jurisdiction over disputes properly excluded by one party under the optional exception. On August 25, 2006, China made such a declaration for its military activities.²

The arbitration tribunal has added some fidelity or precision to the scope of the military activities exemption, noting that Article 298(1)(b) applies to “disputes concerning military activities” and not to all “military activities” as such.³ Accordingly the tribunal focused on whether the dispute itself

2. People’s Republic of China, Declaration under Article 298 (August 25, 2006), 2834 UNTS 327.

3. In the Matter of the South China Sea Arbitration (Phil.-China), PCA Case No. 2013-19, Award, July 12, 2016, para. 1158, <https://pca-cpa.org/wp-content/uploads/sites/175/2016/07/PH-CN-20160712-Award.pdf> (hereinafter Arbitration Award).

concerns military activities, rather than whether a party has employed its military forces in some manner in relation to the dispute. The tribunal held that Article 298(1)(b) does not come into play in cases where a state party initiates a case that does not concern military activities, even if one of the states later begins to deploy military forces in relation to the dispute.⁴ The tribunal also found that it had ancillary jurisdiction to prescribe provisional measures in respect to military activities that arise in relation to a nonmilitary dispute that does not itself concern military activities.⁵

During the arbitration case, the Philippines argued that China's island-building activities did not fall within the jurisdictional exclusion for military activities under Article 298(1)(b).⁶ The tribunal agreed and determined that China's construction of massive artificial islands, installations, and structures at Cuarteron Reef, Fiery Cross Reef, Gaven Reef (North), Johnson Reef, Hughes Reef, Subi Reef, and Mischief Reef do not constitute "military activities," within the meaning of Article 298(1)(b) and therefore were justiciable.⁷ On the other hand, the arbitration tribunal decided that it lacked jurisdiction over the maritime standoff at Second Thomas Shoal, which it viewed as a "quintessentially military situation, involving the military forces of one side and a combination of military and paramilitary forces on the other, arrayed in opposition to one another."⁸

The Philippines also suggested that dual-use military-civilian projects and situations, "in which a military unit is used to protect other activities," were not covered by the military activities exception.⁹ More important, the tribunal did not find Chinese artificial island construction to be military in nature since China itself consistently and officially resisted such classifications and affirmed the opposite at the highest levels. During bilateral Philippine-Chinese negotiations in 1995, for example, China stated that the structures constructed on Mischief Reef "are not military [structures], they are wind shelters and Chinese fishermen have long used Mischief [Reef] as [a] wind shelter."¹⁰ Accordingly, the tribunal accepted China's position that civilian uses compromise the primary (if not the only) motivation underlying the extensive construction activities on the seven reefs in the Spratly Islands.¹¹

After the construction, the islands and reefs will be able to provide all-round and comprehensive services to meet various civilian demands besides satisfying the need of necessary military defense. The maritime areas in the South China Sea, where shipping lanes crisscross and fishing grounds scatter around, are far away from the landmass. These areas are prone to marine accidents due to the influence of typhoon and monsoon. Civilian functions and facilities will be included in the construction for ships to take shelter, and for navigation aid, search and

4. Ibid., para. 1158.

5. Ibid.

6. Ibid., para. 893.

7. Ibid., para. 1203(4).

8. Ibid., para. 1161, 1203(6)(a).

9. Ibid., para. 935; see Jeremy Page, Carol E. Lee, and Gordon Lubold, "China's President Pledges No Militarization in Dispute," *Wall Street Journal*, September 25, 2015.

10. Government of the Republic of the Philippines and Government of the People's Republic of China, "Philippine-China Bilateral Consultations: Summary of Proceedings," March 20-21, 1995.

11. Arbitration Award, para. 938.

rescue, marine meteorological observation and forecast, fishery service and administration, so as to provide services to ships of China, neighboring countries and other countries that sail across the South China Sea.¹²

The tribunal found compelling China's numerous public assurances that the artificial islands, installations, and structures were not (and would not be) "militarized" and concluded that Chinese activities at Mischief Reef were not military activities and therefore justiciable.¹³ These jurisdictional findings implicate future military activities of not only China, but other countries that may be interested in naval activities on artificial islands, structures, or installations on the seabed or low-tide elevations (LTEs) of a coastal state. Military forces worldwide have great interest in understanding how the arbitration tribunal considered Chinese military activities on an LTE in a foreign coastal state's EEZ and on its continental shelf.

MILITARY ACTIVITIES AND LTEs

The rules governing the maritime entitlements and foreign rights and freedoms of the seascape of the South China Sea are particularly salient for analysis of the scope and limitation of military activities. Why? Because the nature of the features determines their maritime entitlement in UNCLOS, and different rules apply to military activities in the water and airspace of the territorial sea, EEZ, and on the continental shelf. For example, the region contains numerous insular low-tide elevations and islands (also called "high-tide elevations") and some of them are within the EEZ and on the continental shelf of the Philippines.¹⁴ Rocks are islands or high-tide elevations that cannot sustain human habitation or an economic life of their own.

The tribunal determined maritime zone entitlements for features in the Spratly Islands of the South China Sea, deciding that there is not a single insular feature capable of generating an EEZ or continental shelf. Every feature in the Spratlys was adjudged to be either a rock entitled to a 12-nautical-mile territorial sea (and contiguous zone), or an LTE, which generally is not entitled to a territorial sea (and importantly, not subject to appropriation).

The tribunal determined that Scarborough Shoal, Gaven Reef (North), McKennan Reef, Johnson Reef, Cuarteron Reef, and Fiery Cross Reef are rocks under Article 121(1), entitled to only a 12-nautical-mile territorial sea.¹⁵ Permissible military activities within a coastal state's territorial sea are prescribed in Article 19 of UNCLOS and are relatively straightforward. Military forces are limited to innocent passage in the territorial sea of another state.¹⁶ There is no right of

12. Ministry of Foreign Affairs, People's Republic of China, "Foreign Ministry Spokesperson Hua Chunying's Regular Press Conference," April 9, 2015.

13. Arbitration Award, para. 1027–1028, 1031.

14. Ibid., para. 280.

15. Ibid., para. 1203(6)(B)(3)(b). As a subset of islands, rocks are not entitled to an EEZ.

16. UNCLOS, Art. 19(2). Foreign states also may enjoy a right of assistance entry into the territorial sea in response to cases of force majeure; see U.S. Department of the Navy, Naval Warfare Publication (NWP) 1-14M, *The Commander's Handbook on the Law of Naval Operations* (Washington, DC: July 2007), para. 2.5.2.1.

overflight, and submarines that operate in innocent passage must travel on the surface and show their flag.

Under Article 13 of UNCLOS, LTEs normally do not independently generate a territorial sea.¹⁷ LTEs are also not subject to national appropriation, as they are merely mid-ocean features under no state's sovereignty or reside on the continental shelf of a coastal state and are subject to that state's sovereign rights and jurisdiction in accordance with Part VI of UNCLOS. Some of the LTEs, such as Mischief Reef and Second Thomas Shoal, for example, were determined to be solely within the Philippine EEZ. Subi Reef, Gaven Reef (South), and Hughes Reef were also determined to be LTEs.¹⁸

In the special circumstances when an LTE lies within the territorial sea of the mainland or an island it may generate a 12-nautical-mile territorial sea.¹⁹ One confusing aspect of this provision, however, is that it assumes that the LTE within the territorial sea of a rock is entitled to territorial sea, but this is true only as long as the rock and the LTE are owned by the same state. Subi Reef may acquire a territorial sea by virtue of its position within the territorial sea of Sandy Cay, but only if Sandy Cay is owned by the Philippines and Subi Reef lies within Philippine territorial sea. If China owns Sandy Cay, then Subi Reef, which is not subject to appropriation and resides on the continental shelf of the Philippines, would not be entitled to a territorial sea.

Similarly Gaven Reef (South) may be used by the rock (high-tide) features Gaven Reef (North) and Namyt Island to generate a territorial sea, but only if the state having sovereignty over Gaven Reef (South) also has sovereign rights and jurisdiction over the two associated rocks.²⁰ The same is true for Hughes Reef, which may be used to extend the high-tide features McKennan Reef and Sin Cowe Island.²¹ In short, maritime rights of sovereignty and a subsequent territorial sea for LTEs inure to the coastal state only if they are located within that state's territorial sea generated by another feature. If they lie beyond the territorial sea, coastal state sovereign rights and jurisdiction over LTEs are determined by the maritime zone in which they are located.²²

Mischief Reef and Second Thomas Shoal are especially important in the analysis of military activities because both are LTEs within the Philippine EEZ. As LTEs, the two features are not subject to territorial appropriation and not entitled to a territorial sea. China's military activities on them, and U.S. military activities in waters close to them, are governed by the regime of the high seas set forth in Article 87 of UNCLOS, the same as military activities in the EEZ and on the continental shelf of a coastal state.

In 1995, China unexpectedly occupied Mischief Reef. The Philippines protested the seizure.²³ During the arbitration, the Philippines noted that Mischief Reef "is located within 200 miles" of Palawan and

17. Arbitration Award, para. 1203(6)(B)(3)(c), para. 1203(6)(B)(4).

18. *Ibid.*, para. 1203(6)(B)(3)(c).

19. *Ibid.*, para. 1203(6)(B)(5).

20. *Ibid.*, para. 1203(6)(B)(3)(e).

21. *Ibid.*, note 3, para. 1203(6)(B)(3)(c)–(f).

22. Maritime Delimitation and Territorial Questions between Qatar and Bahrain, Merits, Judgment, International Court of Justice (ICJ) Reports 2001, 102, para. 206.

23. International Boundary Research Unit (IBRU), University of Durham, *IBRU Boundary and Security Bulletin* (April 1995): 65–69.

"not within 200 miles of any other feature claimed by China that is capable of generating an EEZ or a continental shelf."²⁴ The tribunal found that Mischief Reef is indeed located within the EEZ of the Philippines and outside of any possible EEZ or continental shelf claim by China.²⁵ Mischief Reef is 135 nautical miles from Palawan, Philippines. The tribunal also decided that Mischief Reef is an LTE not entitled to a territorial sea or other maritime zones.²⁶ In 1999, the Philippines grounded the warship BRP *Sierra Madre* on Second Thomas Shoal, located just 21 nautical miles from Mischief Reef.²⁷ Chinese Coast Guard ships have maintained a continuous patrol around the BRP *Sierra Madre* since 2013 and even intercepted supply ships to the stranded vessel in March 2014.²⁸

In early February 2015, Philippines Western Command reported that China was engaged in dredging activities at Mischief Reef.²⁹ By early 2015 it was apparent that China intended to transform Mischief Reef from a modest outcropping with two concrete platforms and a handful of hexagon-shaped structures into a major sea base.³⁰ Mischief Reef has been developed by China into a massive artificial island complex nearly 2.3 square miles in area.³¹ The reef has a 1.7-mile-long runway that complements the two-mile-long airstrips at Subi and Fiery Cross Reefs.³²

China's port facilities and airstrip at Mischief Reef comprise a civil-military base and may be designed to buttress a claim that the feature can sustain human habitation. The tribunal, however, was unconvinced, noting that in its natural state the feature was an LTE. Furthermore, the Philippines argued that a mere military presence on a feature, serviced from the outside, does not convert it into another type of feature. For example, stationing troops on a rock cannot convert it into a full-fledged island capable of sustaining human habitation or an economic life of its own.³³

24. Arbitration Award, para. 1016.

25. Ibid., para. 1203(7).

26. Ibid., para. 1025.

27. Jeff Himmelman, "A Game of Shark and Minnow," *New York Times*, October 27, 2013, <http://www.nytimes.com/newsgraphics/2013/10/27/south-china-sea/>.

28. Gregory Poling, "Potential New Runway Presents New Headaches," Asia Maritime Transparency Initiative, September 15, 2015, <https://amti.csis.org/new-imagery-release/>.

29. Philip Shenon, "Manila Sees China Threat on Coral Reef," *New York Times*, February 19, 1995; Manuel Mogato, "Manila Says China Starts Dredging at Another Reef in Disputed Waters," Reuters, February 5, 2015, <http://www.reuters.com/article/us-china-southchinasea-philippines-idUSKBN0L91BF20150205>.

30. James Hardy and Sean O'Connor, "China Starts Work on Mischief Reef Land Reclamation," *Jane's Defence Weekly*, December 3, 2015, 17.

31. "Island Tracker: Mischief Reef," Asia Maritime Transparency Initiative, accessed October 16, 2016, <https://amti.csis.org/mischief-reef-tracker/>.

32. "China's Two New Runways in West Philippine Sea Nears Completion," Manila Livewire, January 17, 2016, <http://www.manilalivewire.com/2016/01/chinas-two-new-runways-in-west-philippine-sea-nears-completion/>; Page et al., "China's President Pledges No Militarization in Dispute."

33. David Anderson, "Islands and Rocks in the Modern Law of the Sea," in *United Nations Convention on the Law of the Sea 1982: A Commentary*, vol. 2, ed. Myron Nordquist et. al. (Leiden, Netherlands: Brill, 2012), 313; R. Platzöder, *Third United Nations Conference on the Law of the Sea: Documents*, vol. 4 (Dobbs Ferry, NY: Ocean Publications, 1987), 222; United Nations, Office for Ocean Affairs and the Law of the Sea, *The Law of the Sea: Régime of Islands: Legislative History of Part VIII (Article 121) of the United Nations Convention on the Law of the Sea, Part 8* (United Nations Publications, 1988), 44–45.

Similarly Vietnam and Malaysia both station troops on LTEs they occupy in the Spratly Islands, yet do not claim them as fully entitled islands.

Consequently, the two features in questions—Mischief Reef and Second Thomas Shoal—are LTEs and therefore are incapable of appropriation. Their legal status is derived from their position within the Philippine EEZ as natural features on the seabed (continental shelf) of the Philippines. The tribunal found that by attempting to unlawfully appropriate an LTE, China acted inconsistently with Article 300, which establishes obligations regarding good faith and abuse of rights.³⁴ Chinese military activities surrounding Second Thomas Shoal to prevent resupply of the BRP *Sierra Madre* are properly considered within the regime of the high seas and EEZ. In this respect, the arbitration tribunal declined to assert jurisdiction, stating that the clashes at sea were “quintessentially” military.

The tribunal did, however, determine the legality of Chinese activities and construction at Mischief Reef, as the military activities were only tertiary or secondary to the overall conduct of China. The award on jurisdiction and award on the merits concerning Mischief Reef presage future disputes over the extent of lawful foreign military activities on the continental shelf of a coastal State.

MILITARY ACTIVITIES ON THE CONTINENTAL SHELF

The analysis concerning military activities by one state on another state’s artificial islands, installations, and structures in the EEZ and on the continental shelf is the seabed analogue of the more familiar debate over military activities in the EEZ.³⁵ Military activities on the continental shelf and seabed of the EEZ constitute a distinct set of legal issues from military activities on the surface, in the water column, and in the airspace of the EEZ. While the issue of military activities in the EEZ has been analyzed extensively in the legal literature,³⁶ this is the first contemporary analysis of foreign military activities on the continental shelf.

Article 56(1)(a) provides that coastal states have certain “sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living” in the EEZ.

Coastal states also have “jurisdiction as provided for in the relevant provisions [of UNCLOS] with regard to ‘(i) the establishment and use of artificial islands, installations, and structures.’” Coastal state jurisdiction over artificial islands and structures is not all encompassing, but rather is limited to jurisdiction “as provided for in the relevant provisions [of UNCLOS].” The relevant provisions of

34. Arbitration Award, para. 1017.

35. See James Kraska, *Maritime Power and the Law of the Sea* (Oxford and New York: Oxford University Press, 2011), 221–290.

36. See Raul “Pete” Pedrozo, “Preserving Navigational Rights and Freedom in the Exclusive Economic Zone,” *Chinese Journal of International Law* (2010): 9; Raul “Pete” Pedrozo, “Responding to Ms. Zhang’s Talking Points on the EEZ,” *Chinese Journal of International Law* (2011): 10; Kraska, *Maritime Power and the Law of the Sea*, 312–330; Raul Pedrozo, “Close Encounters at Sea: The USNS Impeccable Incident,” *Naval War College Review* (Summer, 2009): 101–111; James Kraska and Raul Pedrozo, *International Maritime Security Law* (Leiden, The Netherlands: Koninklijke Brill NV, 2013), 277–312.

the EEZ, of course, relate principally to exclusive coastal state rights and jurisdiction over living and nonliving resources and not any form of sovereignty over the airspace, water column, or the seabed of the EEZ. The coastal state rights are exercised with “due regard” to the “rights and freedoms” of other users of the area, including the high seas freedom of navigation and overflight and other internationally lawful uses of the sea. That is, high seas freedoms apply as long as they do not substantially interfere with coastal state rights over resources. Construction of artificial islands, structures, and installations is one of the high seas freedoms and other internationally lawful uses of the sea permissible in a foreign coastal state’s EEZ and on its continental shelf—but only to the extent that they do not interfere with the coastal state’s resource rights.

The Philippines suggested that China’s construction of artificial islands, installations, and structures on Mischief Reef violated Articles 60 and 80 of UNCLOS. Specifically the Philippines argued that, under Article 60, coastal states enjoy the “exclusive right” to authorize or regulate the construction of structures, a principle that is extended to the continental shelf by virtue of Article 80.³⁷ The Philippines also complained that China failed to seek and receive Philippine authorization to conduct activities on its LTE and therefore violated Articles 56(1)(b)(i), 60(1), and 80 of UNCLOS.³⁸ In this regard, the Philippines goes too far, as foreign states are not forbidden to construct “artificial islands, installations, and structures” *per se*. As long as such activity does not infringe on the coastal state’s rights over resources, Article 60(1)(a)-(b) entitles foreign states to construct installations and structures on the continental shelf, but not artificial islands. Furthermore, China’s island construction was so immense that it dramatically changed the quantity and quality of the living and nonliving resources and caused massive damage to the marine natural environment. In the case of Mischief Reef, it is the vast scope and industrial scale of Chinese activity that violates China’s duties in UNCLOS because China constructed an artificial island on the seabed of the Philippine EEZ. Had China merely constructed an artificial installation or structure on the seabed of the Philippine EEZ, it would have been lawful as long as the purpose was not resource-related. For example, if China had merely emplaced a small, unobtrusive military installation or structure on the seabed or landed a small unmanned aerial vehicle at Mischief Reef as part of occasional military activities, it would not have been afoul of UNCLOS. Such incidental uses of the seabed or LTE, which is part of the seabed, are within the scope of permissible military activity in the same way as emplacement on the continental shelf of a small seabed military device. In each case, foreign states may use the seabed for military installations and structures, and even artificial islands, as these purposes are for other than exploring, exploiting, managing, and conserving the natural resources.

Although commercial activities on LTEs are indeed interference in the coastal state’s sovereign rights and jurisdiction over living and nonliving resources, the same cannot be said for all military activities. Only those military activities that rise to the level or are of sufficient scale and effects to interfere with living and nonliving resources, such as China’s massive island construction, violate the special rights of the coastal state in its EEZ. For China, the violation comes not in the emplacement of an installation or structure on the Philippine continental shelf, but rather in its grossly excessive scope, size, and effect of these activities, which affect the Philippine marine environment.

37. Arbitration Award, para. 1015.

38. *Ibid.*, para. 1016.

Thus foreign military structures and installations may be constructed on the seabed of a coastal state's continental shelf and within its EEZ. Such development is permitted as long as it does not interfere with the coastal state's exclusive jurisdiction over the resources of the area. Where do we draw the line, however, between a trivial presence and negligible interference that is lawful and large-scale disruption of the coastal state's exclusive and sovereign rights in the EEZ, which is unlawful?

Permissible military activities in the water column (submarines) and on the surface (warships) of the EEZ, and in the airspace above it (military aircraft), are subject to the same limitation. Such activities at sea, subsurface, and in the air are permissible as long as they do not interfere with the rights of the coastal state to the living and nonliving resources. Like all legal doctrine, what constitutes genuine interference must be reasonable—that is, not *de minimis* or trivial, but rather a substantial and apparent effect on the resources in the zone.³⁹ Likewise, emplacement of military devices or construction of military installations or structures in the EEZ and on the continental shelf of a coastal state must be judged by reasonableness and not be of such scale or cross a threshold to create such effect that they interfere in a meaningful way with the coastal state's resource rights.

Furthermore, just as military activities in the EEZ may not cause such massive pollution that damages the marine environment, military-related structures and installations must not either. The tribunal ruled that China's land reclamation and construction of artificial islands, installations, and structures at Cuarteron Reef, Fiery Cross Reef, Gaven Reef (North), Johnson Reef, Hughes Reef, Subi Reef, and Mischief Reef had caused severe, irreparable harm to the coral reef ecosystem.⁴⁰ China also failed to coordinate its activities with other states to ensure protection and preservation of the marine environment, and to communicate an environmental impact assessment of its activities to other states, as required under Article 206 of UNCLOS.⁴¹

In short, China's failure to accept its obligations of environmental stewardship concerning its artificial islands breached its obligations under Articles 123, 192, 194(1), 194(5), 197, and 206 of UNCLOS.⁴² The arbitration tribunal accepted China's statements that its artificial islands were not for military purposes and therefore were unlawful because they were not authorized by the Philippines. Assuming China had claimed the installations, structures, and installations were for military purposes, however, what would make them unlawful is not failure to obtain Philippine permission—as none would be needed—but rather the massive scale and effect of the work, which breached China's obligations under Articles 60 and 80 of UNCLOS with respect to the Philippines' sovereign rights in its EEZ and continental shelf.⁴³

China has constructed an aircraft runway on Mischief Reef, which is in the Philippine EEZ. In the wake of the tribunal ruling, suppose the People's Liberation Army Air Force begins to operate tactical flights from Mischief Reef in order to patrol the region's skies, perhaps in support of an Air

39. Kraska, *Maritime Power and the Law of the Sea*, 267–268.

40. Arbitration Award, para. 1203(13).

41. *Ibid.*

42. *Ibid.*

43. *Ibid.*, para. 1203(14).

Defense Identification Zone. Is China's operation of military aircraft from the features a justiciable activity under UNCLOS, or are such "military activities" beyond compulsory dispute resolution?

Article 87 and 58(2) operate in tandem to permit all states to conduct "freedom of navigation and overflight and other internationally lawful uses of the sea associated with the operation of ships and aircraft" in a coastal state's EEZ. The scope of permissible military activities is comprehensive, limited only by the requirement that such operations have "due regard" for the rights of the coastal state. Consequently, the mere operation of military aircraft on or from a low-tide elevation in a coastal state's EEZ is not a priori unlawful, any more than operation of military aircraft from a warship in the EEZ would be illegal. The reason that such military aircraft flights from the runway at Mischief Reef are objectionable and a violation of coastal state rights is the magnitude of activity and its effect on the rights of the coastal state to the living and nonliving resources. Operation by a foreign warship of a small aerial vehicle that lands temporarily on an LTE, for example, would not be unlawful. Likewise, if a naval force emplaced a military payload inside a container and placed it on the seabed of the EEZ—that is, on the coastal state's continental shelf—that would also be a lawful military activity.

CONCLUSION

The issue of military activities in the South China Sea arbitration has implications for the future of the region and naval operations worldwide. The effects will also impact the United States, which has sought to join UNCLOS and adheres to the treaty in any event. Once the United States becomes a state party, it will make a declaration under Article 298 that exempts military activities from jurisdiction of the compulsory dispute resolution process.⁴⁴

First and most obviously, China and other states now have a stronger incentive to categorize their activities as "military activities" if they have issued a declaration under Article 298 and seek to challenge jurisdiction under mandatory dispute resolution.

Second, even though state parties such as China (and one day the United States) may make a declaration under Article 298 to withhold jurisdiction of military activities from dispute resolution, the arbitration tribunal does not regard such a declaration as all-encompassing. While the tribunal declined to assert jurisdiction over Chinese warships attempting to intercept resupply ships to the BRP *Sierra Madre* at Second Thomas Shoal, it did not avoid jurisdiction over China's construction of artificial islands, installations, and structures, even though they may have military utility. The tribunal held that Article 298(1)(b) may be used by states to exempt from adjudication "disputes concerning military activities," but this optional exception does not include all "military activities" as such.⁴⁵ Accordingly, the tribunal only declined jurisdiction over disputes that directly arise from or concern military activities, but was willing to adjudicate disputes in which one party employed military forces in some manner in relation to a dispute, or disputes that involved mixed or "dual-use" dimensions of civilian and military issues.

44. Declarations under Articles 287 and 298, Senate Foreign Relations Committee Executive Report 110-9, December 19, 2007, 11 and 19.

45. Arbitration Award, para. 1158.

Third, the tribunal was perhaps too expansive or cavalier in explaining Philippine rights to LTEs located on its continental shelf. As seabed features that protrude above water at low tide, LTEs may not be appropriated by a state. Mischief Reef and Second Thomas Shoal, for example, are not “owned” by the Philippines and cannot be appropriated by China. Instead these two LTEs are governed by the regimes of the continental shelf and the EEZ of the Philippines. Philippine rights to LTEs and artificial islands are exclusive, whereas its jurisdiction over structures and installations only applies if they relate to the resource jurisdiction of the coastal state.

Military activities involving structures and installations in the EEZ and on the continental shelf of a coastal state are lawful exercises of high seas freedoms of navigation and overflight and other internationally lawful uses of the sea. Future naval operations may deploy to installations and structures on the seabed, including LTEs, in the EEZ of the coastal state. The Defense Advanced Research Projects Agency (DARPA), for example, is exploring the concept of seabed devices called “Upward Falling Payloads” that pre-position naval packages on the seafloor.⁴⁶ These uses of the seabed within a coastal state’s EEZ (continental shelf) are lawful.

Fourth, this analysis does not suggest that China’s artificial islands, structures, and installations it has constructed on Philippine LTEs are lawful because they are military activities. China’s activities are unlawful because the coastal state has exclusive jurisdiction over artificial islands in its EEZ. Furthermore, the massive scale and effect of China’s installations and structures, even if pursuant to military activities, is also unlawful because they have permanently altered the quality and quantity of Philippine living and nonliving resources. It is the scale and effect of the construction of the installations and structures, and not their military character, which has made China’s efforts unlawful. In short, China’s construction of installations and structures in the Philippine EEZ are unlawful because they do not have due regard for the rights of the Philippines in its EEZ. This means that if China’s military activities followed the practice of the United States and other naval forces and had only incidental effect on the Philippine EEZ, they would be permissible. Military activities in the EEZ or on the continental shelf do not need to have zero impact on the marine environment. A submarine, for example, might unwittingly strike a marine mammal or a warship could run aground on a reef. But to be lawful, these activities may impose only a slight or tertiary impact on the quantity or quality of the living and nonliving resources.

46. Grace Jean, “DARPA’s ‘Upward Falling’ Payload Explores Future Maritime ISR Concept,” *IHS Jane’s Defence Weekly*, May 12, 2016.

PART THREE

Military Modernization and Capacity Building

China's Military Modernization and the South China Sea

Timothy R. Heath

A rapidly modernizing Chinese military has added capabilities that could be employed in a variety of scenarios related to the South China Sea. While the PLA Navy's growing array of surface and subsurface forces can be expected to play a large role, aircraft from both the navy and air force will likely play key roles in any contingency. The growing range of Rocket Force missiles adds capabilities that could prove useful as well, especially in contingencies closer to China. Amphibious infantry, principally the PLAN Marines, provide the capability to seize or recover disputed features, although unfavorable geography would make sustained occupation difficult.

These capabilities could give China a considerable advantage over rival disputants Vietnam and the Philippines. However, China's military position in a conflict would weaken considerably in the event of U.S. intervention. Moreover, the sheer distance and geography of the South China Sea poses formidable obstacles to sustained combat operations. To overcome these, the Chinese military will likely need to build more longer-range strike and anti-submarine warfare capabilities.

SOUTH CHINA SEA: A GROWING MILITARY FOCUS

Chinese policy documents and articles by military strategists regard the maritime region as a priority region from which security threats emanate. For example, the 2015 military strategy white paper focused principally on dangers emanating from China's maritime direction—namely, the U.S. rebalance to Asia, Taiwan, Japan, and disputes with neighbors over "China's maritime rights and interests." The white paper also stated that preparations for military struggles now "highlight maritime military struggle." Underscoring this point, it prioritized the development of a "modern maritime military force structure" capable of "safeguarding" China's "national sovereignty and maritime rights and interests."¹

1. "Full Text: China's Military Strategy," *Xinhua*, May 26, 2015, http://news.xinhuanet.com/english/china/2015-05/26/c_134271001.htm.

The *Science of Military Strategy*, published in 2013, similarly said that the “threat from the east is higher than from the west; and the threat from the maritime area is higher than from the land area.” It assessed as the “most likely threat” a “limited military conflict in the maritime direction.”²

While the militaries of Taiwan and Japan feature more robust capabilities than many of China’s southern neighbors, the geography of the South China Sea imposes its own formidable challenges on potential Chinese military operations. The Spratly Islands are roughly 600 nautical miles from Hainan Island, well outside the range of most air defense systems, short-range ballistic missiles, and other key components of China’s anti-access/area denial (A2/AD) capability. Moreover, the Spratly Islands are within range of land-based aircraft in the Philippines and Vietnam. Maritime and air forces operating from Vietnam or the Philippine have closer proximity to home ports and, in Vietnam’s case, to land-based air defense. In the South China Sea, in other words, China faces the challenge of operating at considerable distance and potentially in the face of the A2/AD systems of its neighbors.

This chapter provides an overview of the state of China’s military modernization, focusing in particular on the development of capabilities that could be employed in the South China Sea. After surveying the capabilities, it examines how China could employ these assets to achieve its strategic aims through peacetime-shaping actions and in crisis and conflict contingencies.

MODERNIZATION AND REORGANIZATION

The People’s Liberation Army remains in the middle of a long-standing modernization effort designed to improve the military’s ability to project limited power at longer ranges, in a more joint fashion, and employing more advanced technology. For South China Sea contingencies, the most relevant developments concern the PLA-wide reorganization into a joint command and the modernization efforts of the PLA Navy (PLAN), Chinese Coast Guard (CCG), PLA Air Force (PLAAF), and PLA Rocket Forces (PLARF).

Reorganization and Southern Theater Command

On December 31, 2015, the PLA began its 11th major reorganization since 1952. Among changes, the PLA has revised an outdated military region command system with a joint theater command system featuring five theater commands. It also introduced a national-level Joint Staff Department. PLA forces are now expected to operate under a dual chain of command, with operational command exercised through the five theater commands and administrative control retained by the services. The southern theater command, based in Guangzhou, will be responsible for operations in the South China Sea.³

2. Academy of Military Sciences, Military Strategy Research Department, *Science of Military Strategy* (Beijing: Academy of Military Sciences, 2013), 100.

3. Kenneth Allen, Dennis Blasko, and John Corbett, “The PLA’s Reorganization: What Is Known, Unknown, and Speculation,” *China Brief*, February 4, 2016, http://www.jamestown.org/single/?tx_ttnews%5Btt_news%5D=45069&no_cache=1#.VzCwvau9aoM.

PLA Navy, Chinese Coast Guard, and Maritime Militia

In a largely maritime domain, the PLA Navy's surface, subsurface, and aviation platforms can also be expected to provide the bulk of any force that fights in a combat contingency. The PLA Navy currently has about 300 surface combatants, submarines, amphibious ships, and missile-armed patrol craft. Its modernization program seeks to replace legacy, obsolete platforms with more modern, multimission vessels equipped with advanced anti-ship, anti-air, and anti-submarine weapons and sensors. In 2014 and 2015 alone, China laid down, launched, or commissioned more than 60 naval ships a year. As of 2015, the South Sea Fleet featured two nuclear attack submarines, four nuclear ballistic missile submarines, 16 diesel attack submarines, nine destroyers, 20 frigates, 25 amphibious ships, 38 missile patrol craft, and eight corvettes.⁴

Surface Ships

The PLA Navy's ships have dramatically improved their air defense systems. The PLA Navy has produced six LUYANG II guided missile destroyers (DDGs) equipped with the HHQ-9 SAM (55 nautical miles [nm]) and is now producing the LUYANG III DDG, which has an extended-range version of the HHQ-9 (80nm). These advanced ships appear to feature AEGIS-like radar systems. The PLA Navy also has 20 JIANGKAI frigates that have the vertically launched HHQ-16 (20–40nm). In terms of anti-surface-warfare capabilities, most ships still carry the YJ-83 anti-ship cruise missile (ASCM) with ranges of roughly 65 nautical miles to 100 nautical miles. The newest LUYANG DDG destroyers feature the YJ-62 missile, however, which reportedly has a range of 150 nautical miles. China is replacing its legacy frigates with more capable platforms. It has reportedly built 17 JIANG-KAI frigates with improved hull designs and surface-to-air missiles. The PLA Navy is enhancing the quality of its radars, datalinks, and sensors to target at these ranges.⁵

Especially important for navy work in the South China Sea will be the 1,500-ton JIANGDAO corvette, or light frigate (FFL). Designed to patrol the waters of the East and South China Seas, the JIANGDAO FFL is equipped with four YJ-83 family ASCMs. The Office of Naval Intelligence (ONI) estimates that 20 are already operational and that China may build an additional 30 to 60 platforms to replace various patrol craft. The PLA Navy is also upgrading its amphibious assault fleet. It has built four YUZHAO amphibious transport docks (LPDs) that are used to transport and land troops. These vessels offer greater versatility in the array of missions for which they can support, from disaster assistance to amphibious assault. The YUZHAO can carry four air-cushioned landing craft and four or more helicopters. These could prove useful for ferrying troops to carry out amphibious operations against reefs in the South China Sea.⁶

Submarines

China is also upgrading the quality of its submarine force. The most advanced vessel, the YUAN SSP, features air independent propulsion, enabling the diesel submarine to operate for longer periods

4. Office of Naval Intelligence (ONI), "The PLA Navy: New Capabilities and Missions," December 2, 2015, 13–14.

5. Ronald O'Rourke, "China's Naval Modernization: Implications for U.S. Navy Capabilities: Background and Issues for Congress," Congressional Research Service, March 31, 2016, 30.

6. ONI, "The PLA Navy," 17.

underwater and reducing its vulnerability to detection—an important consideration in the vast distances of the South China Sea. Many of China’s submarines are equipped with long-range ASCMs. Eight of China’s KILO SS carry the SS-N-27 ASCM, which can range ships at a distance of approximately 120 nautical miles. China is also developing an indigenous submarine-launched ASCM, the YJ-18, which reportedly has the same range as the SS-N-27 ASCM and can be fired from the SONG SS, YUAN SS, and KILO SS. Chinese submarines can also carry wire-guided wake-homing torpedoes and mines. China is improving the quality of its nuclear submarines, although these continue to lag Western submarines in stealthiness. The South China Sea fleet likely will feature at least one SHANG attack submarine (SSN), which can fire a land attack cruise missile (LACM). It is also a primary base for JIN ballistic missile submarines (SSBN), capable of carrying the JL-2 nuclear-armed ballistic missile (4,000nm), which could reach the United States.⁷

Coast Guard

The modernization of China’s coast guard provides a powerful instrument for shaping the peace-time environment and coping with crises in the South China Sea. Over the last decade, the CCG has added over 100 new large patrol ships, patrol combatants, and other ships.⁸ The commissioning of massive coast guard ships, such as the two 76mm, rapid-fire gun equipped, 12,000-ton cutter CCG 3901, could serve in a role of intimidation. By contrast, the largest U.S. high-endurance cutter, the National Security Cutter, weighs 4,500 tons. In 2014, *China Ocean News* reported that China intends to deploy a 5,000-ton CCG ship to Sanya City on Hainan Island.⁹

Maritime Militia

China has successfully employed fishermen and motorboats as coercive assets in the South China Sea. China has over 200,000 fishing vessels, although the actual number of participants in the maritime militia remains unclear. These vessels feature communication systems provided by the Chinese government and can coordinate with coast guard and naval ships in crises situations. The militia receive training and have provided support to law enforcement operations. They have also served in logistics and reconnaissance roles in military exercises.¹⁰

Naval Aviation

The PLA Navy aviation force would provide air support to operations in the South China Sea. Starting in 2002, the PLA Navy aviation force acquired 14 Russian SU-30MKK multirole maritime aircraft. These aircraft are designed for maritime strike missions but are capable of air-to-air combat. The PLA Navy is also receiving indigenous J-10A and J-11B aircraft. These airplanes carry the heat-seeking PL-8 (range: 12 miles) and radar-homing PL-12 (range: 60 miles) air-to-air missiles and modern radars.¹¹

7. O’Rourke, “China’s Naval Modernization,” 14–17.

8. ONI, “The PLA Navy.”

9. Yang Shijie, “China Builds World’s Largest Patrol Ship: Report,” *Global Times*, January 22, 2014, <http://www.globaltimes.cn/content/838745.shtml#>.

10. James Kraska, “The Law of Naval Warfare and China’s Maritime Militia,” *International Law Studies* 91 (2015): 450–467.

11. Carlo Kopp, “PLA Air to Air Missiles,” *Air Power Australia*, updated August 2010, <http://www.ausairpower.net/APA-PLA-AAM.html>.

In the South China Sea, the Eighth Fighter Division based on Hainan Island has deployed its J-11 aircraft to Woody Island on occasion.¹² The PLA Navy has a few bombers capable of maritime strike missions. The H-6 BADGER can launch advanced ASCMs against surface ships. ONI estimates that the PLA Navy has about 30 H-6 bombers.¹³

The domestically produced JH-7 FLOUNDER provides a supplementary maritime strike capability, of which the PLA Navy has roughly 200. Both the H-6 and JH-7 reportedly can carry the 120-nautical-mile range YJ-83 ASCM. The PLA Navy is also expanding its maritime patrol, electronic warfare, and early-warning aircraft. These aircraft can carry out missions including maritime patrol, maritime strike, airborne early warning, and various logistics missions.¹⁴

Aircraft Carrier

The commissioning of the LIAONING aircraft carrier opens new possibilities for the PLA Navy to field fighter and other aircraft in the South China Sea.¹⁵ The LIAONING will likely carry the J-15 aircraft, but its ski-jump design will restrict the range of such aircraft due to limitations of the fuel and ordnance loads. Lacking key special-mission aircraft such as early warning that can take off from the LIAONING, the aircraft carrier will thus likely serve principally in a fleet air defense role. The sheer expense and vulnerability of this strategic asset limits its utility in conflict scenarios involving more capable opponents, however.

Rotary Aircraft

Helicopters provide an important capability for the PLA Navy in the South China Sea. The PLA Navy operates three types of helicopters: the Z-9 (a copy of the Eurocopter Dauphin), Z-8, and the HELIX. The PLA Navy has roughly 20 Z-9 variants, some of which can carry a dipping sonar and lightweight torpedo. China relies on the Z-8 for a variety of support roles, including search and rescue, troop movement, and logistics. The HELIX is a Russian built KA-28 exported helicopter designed for search and rescue and other support missions. In 2010, China purchased 10 KA-31 airborne early warning helicopters.¹⁶

Unmanned Aerial Vehicles

ONI assesses that the PLA Navy will become one of the most prolific users of unmanned aerial vehicles (UAV). UAVs can supplement manned aircraft to carry out maritime reconnaissance, patrol, and other missions. The PLA Navy has one UAV regiment that employs the BZK-005 aerial

12. Wendell Minnick, "China Expands Presence with Fighters on Woody Island," *Defense News*, November 8, 2015, <http://www.defensenews.com/story/defense/air-space/strike/2015/11/08/china-expands-presence-fighters-woody-island/75147522/>.

13. ONI, "The PLA Navy," 21.

14. Department of Defense, "Military and Security Developments Involving the People's Republic of China 2015," April 7, 2015, 46.

15. Ridzwan Rahmat, "Beijing 'to Continue to Use Carrier for South China Sea Operations,'" *IHS Jane's Navy International*, January 29, 2016, <http://www.janes.com/article/57566/beijing-to-continue-to-use-carrier-capability-for-south-china-sea-operations>.

16. ONI, "The PLA Navy," 21.

reconnaissance aircraft in the eastern theater. While principally focused on the Senkaku Islands, the UAVs could also support reconnaissance in the South China Sea. In the future, China may develop a larger inventory of ship-based drones.¹⁷

Marine Forces

The PLA Navy maintains two brigades, the First and the 164th, each of which has about 5,000 to 6,000 personnel. Each brigade is organized into three to four amphibious mechanized infantry battalions and includes organic artillery, air defense, anti-tank, and some special forces. The marines have amphibious vehicles that can “swim” across shallow water for several kilometers. These two brigades are the most likely infantry troops to be employed in contingencies in the South China Sea.¹⁸

PLA Air Force

PLA Air Force aircraft can augment and complement PLA Navy aviation force. While the PLA Navy is responsible primarily for maritime strike and air defense over maritime features and assets, the PLAAF’s airplanes can be expected to provide air defense of the mainland and could provide long-range strike, focusing on land targets. The PLAAF may also provide support for maritime strike missions.

Surface-to-Air Missiles

The PLA Air Force operates China’s large inventory of advanced SAMs, including the S-300PMU1/2 (range 120m). The Hongqi-9 (HQ-9) incorporates technology from the SA-10 and has a range of roughly 120 miles. In 2014, China signed a contract for extremely long range S-400PMU, which reportedly can range aircraft and low-flying cruise missiles to 250 miles.¹⁹ In early 2016, China deployed HQ-9 missiles to Woody Island, which is claimed by Vietnam.²⁰

Fixed-Wing Aircraft

In addition to bomber support for strike missions, the PLAAF’s aviation forces can also play a key role in war and nonwar-shaping missions. Its fighter planes, including the J-10 and J-11 family of planes, can augment the PLA Navy aviation units in combat roles. The PLAAF also has transport and special-mission aircraft that could support in a variety of roles. For example, the Guangzhou 13th Transport Division’s IL-76 large transport aircraft have already participated in numerous humanitarian assistance and disaster relief missions in Southeast Asia.²¹ The IL-76 are aging and

17. Elsa Kania and Kenneth Allen, “The Human and Organizational Dimensions of the PLA’s Unmanned Aerial Vehicle Systems,” *China Brief*, May 11, 2016, http://www.jamestown.org/programs/chinabrief/single/?tx_ttnews%5Btt_news%5D=454236&#.Vz8YFje9aoM.

18. Dennis Blasko, “PLA Amphibious Capabilities: Structured for Deterrence,” *China Brief*, August 19, 2010, http://www.jamestown.org/programs/chinabrief/single/?tx_ttnews%5Btt_news%5D=36770&cHash=c6f267557e#.VzHjqqu9bww.

19. Department of Defense, “Military and Security Developments Involving the People’s Republic of China 2015,” 36.

20. Richard Fisher, “China Deploys HQ-9 to Woody Island,” *IHS Jane’s Defence Weekly*, February 17, 2016, <http://www.janes.com/article/58071/china-deploys-hq-9-surface-to-air-missiles-to-woody-island>.

21. Dong Ruifeng, “Sharp Weapons of a Big Power: Visit to the Air Force Strategic Transport Aircraft Unit,” *Outlook* 34 (August 20, 2012): 48–49.

inadequate in numbers, but development of the Y-20 large transport aircraft could help expand capability in this regard. The Y-20 may enter service in 2016.²²

Rocket Forces

The Paracel Islands are close to Hainan Island, but the vast size of the South China Sea limits the utility of short-range ballistic missiles. From the mainland, even medium-range ballistic missiles, including the DF-21D anti-ship ballistic missile (ASBM) (range: 1,100nm), would have limited utility in contingencies south of Hainan Island. Development of the longer-range DF-26 (range: 2,500nm) could prove more useful, as it would range the Spratly Islands. However, the PLA Rocket Forces maintains limited numbers of the missile.²³

Support Force

The vast size of the South China Sea elevates in importance intelligence, surveillance, and reconnaissance assets. Satellite imagery and communications are important. Development of UAVs can supplement manned patrol aircraft in providing situational awareness. Land-based radar and surveillance assets on the artificial reefs would help Chinese forces with tracking and targeting. To guide combat aviation, the PLAAF would likely need to deploy airborne early warning and special-mission aircraft. China operates an over-the-horizon (OTH) radar as well as a growing array of reconnaissance satellites. China's fishing fleet also carries the Beidou satellite system.

EMPLOYING MILITARY FORCES IN THE SOUTH CHINA SEA

The PLA's modernization provides China with considerable forces with which it can manage a variety of contingencies in the South China Sea. The following sections examine how China could employ its military and maritime law enforcement assets to carry out peacetime-shaping activities and to manage potential crisis and conflict scenarios.

Peacetime Missions

Like its predecessors, China's most recent defense white paper, published in 2015 to highlight its evolving military strategy, upheld the "defensive nature" of the country's national defense policy and stated China will "never seek hegemony or expansion." However, it also acknowledged that China's evolving situation has set "new requirements" for the military to help build a "favorable strategic posture" and "guarantee the country's peaceful development." China seeks to achieve this favorable strategic posture through two lines of effort. First, it seeks to build a stable security environment that favors a larger role for Chinese leadership. Second, it seeks the defense of core interests. Chinese policymakers have issued paradoxical directives that aim to consolidate control over disputed features, yet in a manner that avoids war.

22. Richard Fisher, "China's Y-20 May Enter Service in 2016," *IHS Jane's Defence Weekly*, March 1, 2016, <http://www.janes.com/article/58397/china-s-y-20-transport-aircraft-may-enter-service-in-2016>.

23. Department of Defense, "Military and Security Developments Involving the People's Republic of China 2015," 34.

These directives evoke an ambition to build a stable, peaceful Asian security environment in which China plays a leading role and other countries lack the ability or motivation to militarily challenge China over its “core” interests. For the military and coast guard, relevant tasks include patrol, reconnaissance, and security duties to protect Chinese claimed features and harass rival disputants. The development of military capabilities provides China with resources to build a favorable security environment. To shape the international order, the 2015 military strategy white paper outlined requirements to “actively expand military and security cooperation” and “promote the establishment of a regional framework for security and cooperation.”²⁴

Shaping a favorable security order means that the military must be able to demonstrate to countries in the region that Chinese power can be exercised to their benefit. The assets most useful here are ships and aircraft that can be deployed throughout the region to address nontraditional threats and carry out nonwar missions. The IL-76 and, in the future, Y-20 can fly to many countries in the region to carry out humanitarian assistance and disaster relief. Indeed, the PLA has already begun to do this. In 2013, China sent the Peace Ark hospital ship to provide disaster relief to the Philippines following criticism of its initial paltry response.²⁵

But the Chinese military can hope to show its leadership in other ways. It can help patrol maritime shipping lanes to counter threats such as piracy and to aid in search and rescue. The JIANGDAO FFL and various CCG vessels, as well as surveillance and reconnaissance aircraft, can help in this mission. The same assets, along with the Z-8 helicopter, can also assist with search-and-rescue missions in the South China Sea. China has justified the establishment of its artificial islands in part by citing these sorts of missions.²⁶

Defense of core interests involves operations to consolidate control over vital economic resources in the maritime region—namely, fishing and mineral resources. The development of ports and berths on the artificial islands in the South China Sea enables China to host a variety of surface ships, including smaller naval combatants like the JIANGDAO FFL and CCG patrol boats. With an increasingly robust naval, air, and coast guard presence, China will have on hand considerable resources with which it can seek to outmuscle weaker rival claimants through coercive actions below the threshold of combat. Operations to defend core interests include the use of maritime militia vessels and CCG and naval ships to harass rival claimants that send vessels into Chinese-claimed waters. The maritime militia vessels would provide the platforms with the lowest risk of escalation, but the Chinese Coast Guard provides a more capable, nonmilitary option to deter rival vessels through nonlethal actions such as employing water cannons, shouldering, or ramming.

Peacetime duties also include strategic deterrence, a role that calls for ballistic missile submarines. The deployment of JIN-class submarines and their deterrent patrols underscores the importance

24. “Full Text: China’s Military Strategy.”

25. Bruce Einhorn, “After Stingy Typhoon Aid, China Tries Damage Control,” *Bloomberg*, November 20, 2013.

26. “South China Sea Projects Provide Myriad Civic Benefits,” *Xinhua*, January 19, 2016, http://news.xinhuanet.com/english/2016-01/19/c_135025092.htm.

of such patrols.²⁷ Deployment of fighter aircraft and surface-to-air missiles, such as when China deployed the HQ-9 missiles to Woody Island, can support peacetime deterrence by raising the potential risk and cost of conflict.

Crisis Missions

In the event of a serious military crisis, the PLA must be able to manage and control the escalation of a situation in a manner that avoids war but also avoids loss of Chinese control over existing features. Crisis management involves several measures. First, military forces should provide surveillance and reconnaissance of a crisis situation to enable flexible decisionmaking. Second, Chinese forces should have a diverse range of forces of varying levels of military power to provide options to manage the crisis situation. CCG vessels provide a less escalatory capability to manage a maritime confrontation, for example. Third, military forces should be present in sufficient strength on-site to deter adversaries from seeking to exploit a crisis to seize Chinese claimed features.

China has in place, or is rapidly developing, many capabilities that could enable it to carry out each of these missions. The construction of artificial islands in the Spratly Islands greatly enhances China's ability to carry out surveillance and reconnaissance and other missions related to crisis management. These islands offer at least two military grade airfields from which surveillance and reconnaissance aircraft can operate, greatly increasing the potential loiter time, since aircraft no longer have to operate primarily out of Hainan Island. The airfields also allow China to launch and recover fighter and strike aircraft close to anywhere in the Spratly Islands.

The artificial islands also feature ports and harbors, which can provide authorities a broader diversity of naval and coast guard ships and boats to monitor and manage crisis situations. To control the risks of escalation per the mission requirement (mentioned previously), CCG vessels could play an especially important role. Especially useful will be the large, oceangoing coast guard vessels that can intimidate and outmuscle the maritime law enforcement vessels of rival countries. The JIANGDAO FFL corvette could prove very useful in a crisis as well, since it can operate in shallower waters near reefs while packing plenty of combat punch to backstop coast guard and maritime militia operations. The availability of destroyers, frigates, and other combatants on patrol and deployed from various stations throughout the South China Sea provides additional options to deter escalation.

The standoff between Chinese and Vietnamese fishing boats, coast guard ships, and naval vessels over the deployment of oilrig Haiyang Shiyou 981 in May 2014, illustrates how the diversity and sheer number of platforms give Chinese leaders considerable flexibility in managing a crisis. During the standoff, Chinese vessels formed concentric rings around the rig. Maritime militia fishing boats and coast guard vessels rammed and used water cannons to fend off Vietnamese vessels that tried to approach the oilrig. Outnumbered and outgunned, Vietnam faced little hope of preventing the Chinese from deploying the oilrig with fishing boats and law enforcement ships. However, the superior numbers and capabilities of Chinese naval and air forces nearby also

27. "China Dispatched Nuclear Powered Submarine on First Combat Patrol, Report Says," UPI, October 1, 2015, http://www.upi.com/Top_News/World-News/2015/10/01/China-dispatched-nuclear-powered-submarine-on-first-combat-patrol-report-says/1331443713383/.

rendered unpalatable for Vietnam the option of escalating the situation through military attack. Although the incident generated considerable acrimony in the bilateral relationship, in the end China succeeded in controlling the escalation of the tense maritime situation while its oilrig carried out its survey activities in Vietnam's exclusive economic zone waters.²⁸

Conflict Missions

While China seeks to strengthen its control and shape the security environment through peaceful means and, when necessary, through careful management of crisis situations, it is also posturing to carry out combat operations if necessary. The most likely conflict scenarios concern control of disputed features and control of sea lines of communication.

Chinese doctrinal publications outline a number of military campaigns that likely inform PLA thinking and planning regarding South China Sea contingencies. These include "coral reef island seizure" operations and "blockade" and "anti-blockade operations."²⁹ The PLA's "coral island and reef offensive campaign" involves operations aimed at the seizure of coral island and reef areas and is relevant to potential conflicts with rival maritime territorial claimants, such as against the Philippines or Vietnam in the South China Sea.

The "blockade" operations and "anti-blockade" operations likely concern scenarios in which either China seeks to cut off an adversary's sea lines of communication or to maintain the integrity of its own sea lines of communication against the efforts of its adversary. These campaigns regard the seizure of air and maritime superiority as essential to successful execution. They also acknowledge that combat to counter intervention by a powerful country, namely the United States, may be required.

Coral Reef Island Seizure Operations

The PLA has in recent years stepped up training and exercises related to coral reef island seizure scenarios. In July 2015, for example, China debuted the ZUBR-class air-cushioned landing craft (LCAC) in an amphibious exercise on Hainan Island.³⁰ In a conflict over ownership of a reef or island, the militaries of Vietnam or the Philippines would struggle against the Chinese military. The PLA Navy's development of larger numbers of fourth-generation fighter aircraft provides a key advantage over rival disputants. From airfields in the Paracels, Hainan Island, and Spratly Islands, the PLA Navy has a tremendous advantage over smaller and generally less capable regional air forces. Surface-to-air missiles deployed on artificial islands in the Spratly Islands and the Paracels and Hainan Island could help thin out missile strikes and enable the Chinese to seize air superiority, especially in conjunction with SAM-equipped advanced destroyers and frigates. Once the Chinese had established air and maritime superiority, they could seize the disputed reefs.

28. Adam Taylor, "The \$1 Billion Oil Rig That Has Vietnam in Flames," *Washington Post*, May 14, 2014, <https://www.washingtonpost.com/news/worldviews/wp/2014/05/14/the-1-billion-chinese-oil-rig-that-has-vietnam-in-flames/>.

29. Zhang Yuliang, ed., *The Science of Campaigns* (Beijing: National Defense University Press, 2006), 535.

30. Ridzwan Rahmat, "China Debuts ZUBR LCAC in Show of Amphibious Force in South China Sea," *IHS Jane's Defence Weekly*, July 22, 2015, <http://www.janes.com/article/53127/china-debuts-zubr-lcac-in-show-of-amphibious-force-in-south-china-sea>.

Chinese marine forces or special forces troops could also probably easily eliminate any defending ground troops not already destroyed by air and maritime bombardment. However, China would be severely challenged to sustain occupation of any South China Sea feature. Vietnamese submarines could interdict resupplying ships and Vietnamese aircraft, or U.S. aircraft launched from the Philippines could wipe out the exposed, tiny garrisons on the isolated outposts.

The difficulty of seizing and holding coral reef islands would increase dramatically should U.S. forces become involved. U.S. submarines and aircraft operating from the Philippines or nearby aircraft carriers could wreak havoc on Chinese ships and aircraft in the Spratly Islands and easily destroy any facilities or personnel stationed on the Chinese-built artificial islands. Since the Spratly Islands remain well outside the range of the land-based air defense and medium-range anti-ship ballistic missiles, as well as the outer limits of the ranges for land-based fighter aircraft, Chinese forces would remain extremely vulnerable. Although China does possess longer-range intermediate range ballistic missiles (IRBM), the inventory remains limited. Moreover, these missiles may threaten U.S. surface ships, but China would continue to face a limited ability to counter the U.S. undersea advantage or match the potential local air superiority enjoyed by U.S. forces operating from Vietnam.

Blockade and Counter-Blockade Operations

Chinese forces could isolate a reef or island outpost with maritime forces. However, the PLA would be challenged to sustain a blockade operation that targeted the sea lines of communication of a country like the Philippines or Vietnam. The vast distances from the Chinese mainland means China would have to rely heavily on surface and subsurface vessels to enforce such a blockade in critical chokepoints. At such locations, its surface ships could be highly vulnerable to attack from submarines and aircraft, especially against U.S. forces. Aside from the practical challenges of enforcement, the region's dependence on maritime trade could make blockade by any country extremely costly for China and most countries in Eastern and Southeastern Asia, to say nothing of the impact on the global economy.

CONCLUSION

China regards the South China Sea as critical to the nation's security and development. As the country expands its overseas presence and looks to bolster defense of distant interests, it will likely seek greater control over this critical water space as an intermediary region between its near and distant seas. Much of the military's modernization is being carried out with an eye to shoring up the vulnerable "southern flank."

An expanding naval force featuring better sensors and more advanced weapons, large coast guard, and aviation presence provides options for the Chinese to shape the security environment, deal with crises, and fight limited contingencies. The leadership's determination to strengthen control of the South China Sea has raised the imperative for all military services for these mission sets.

While improving, the Chinese military continues to suffer disadvantages. Its forces may surpass in quality those of its neighbors, but the long distances and unfavorable geography of the region pose serious constraints on the ability of Chinese forces to operate in conflict. Many features and islands

remain well outside the range of China's formidable land based anti-access/area denial capabilities. Aircraft and missile systems deployed on the tiny features controlled by China in the South China Sea remain extremely vulnerable. Chinese surface ships operating in the South China Sea, including the aircraft carrier, remain vulnerable to land-based cruise missiles and other forces as well.

In the event of U.S. intervention, Chinese forces operating at distance would face serious disadvantages. To mitigate against such vulnerabilities, China may seek to expand the inventory of long-range strike and anti-submarine warfare capabilities. Even with added capabilities, China will continue to face considerable challenges in executing combat missions. For this reason, Chinese leaders will likely continue to seek incremental improvements in the PLA's overall ability to operate while directing the military to focus principally on peacetime and crisis management missions.

Indonesia's Naval and Coast Guard Upgrades and Jokowi's Global Maritime Fulcrum

Natalie Sambhi

INTRODUCTION

Indonesia is a vast archipelago of approximately 16,000 islands and about 34,000 miles of coast-line. Its waters play a vital role in connecting communities and transporting goods, but are also rich in fish stocks and underwater deposits of gas and oil. Sovereignty is a priority for the country and involves defending some 3 million square miles of territory. Indonesia's navy and coast guard must contend with threats ranging from incursions by foreign vessels to piracy and illegal fishing. Indonesia's maritime defense, however, has been long underfunded and is in desperate need of upgrades.

This challenge was brought sharply into focus by no less than three confrontations in 2016 between Indonesian authorities and Chinese fishing vessels near Indonesia's Natuna Islands. Although the South China Sea has been a site of tension over territorial disputes between several Asia-Pacific states, Indonesia has largely stayed out of these matters as a "non-claimant state." However, Chinese fishing vessels have encroached into the Natuna area, leading to standoffs between Indonesian and Chinese authorities.

Shortly after the latest incident in June 2016, Indonesian President Joko Widodo (Jokowi) sent a strong message to China by holding an emergency cabinet meeting aboard a naval warship in Natuna waters. During the meeting, Jokowi also asked for the navy and coast guard to increase their capabilities.¹ Located along one of the world's most important maritime trade routes,

1. "Jokowi Wants Upgrade of Maritime Defense," *Jakarta Post*, June 23, 2016, <http://www.thejakartapost.com/news/2016/06/23/jokowi-wants-upgrade-of-maritime-defense.html>.

Indonesia and its security forces face additional challenges such as piracy, maritime terrorism, kidnappings, and hijackings.

For the past two years, Jokowi has sought to boost the country's maritime domain awareness. He has emphasized the need to defend Indonesian waters and has placed an even higher demand on the country's police and defense resources by declaring a tough stance on illegal fishing. As a result, we have had two years of a strong association between maritime domain awareness and Jokowi, with the international community watching with great interest to see how Southeast Asia's largest country will tackle one of its greatest challenges. This chapter seeks to illustrate some of the challenges facing Indonesia's plans to further consolidate and upgrade its maritime defenses and the opportunities ahead.

JOKOWI'S GLOBAL MARITIME FULCRUM

In October 2014 Jokowi unveiled his vision, the Global Maritime Fulcrum (GMF), for Indonesia to reimagine itself as a maritime country. The vision is an extension of his pre-election manifesto in which he expressed a desire for Indonesia to rebuild its identity as a maritime nation. The philosophical elements of the GMF highlight the immense value of respecting Indonesia's seas as a source of its wealth and an essential part of its culture. With his vision, Jokowi began a national conversation about the importance of the maritime domain and how the Indonesian people have turned their backs on their seas.

In terms of policy, an important pillar of Jokowi's GMF plan is to develop maritime forces capable of protecting sovereignty. Another is to protect Indonesia's maritime economy by prioritizing the fight against illegal fishing. Early signs of his commitment to this plan included the creation of the position of a coordinating minister for maritime affairs and upgrading the national coordinating body for maritime security into a de facto coast guard (known by the acronym BAKAMLA). The thrust of his plan involves the continuation of naval and air force upgrades as part the military modernization plan started under his predecessor, President Susilo Bambang Yudhoyono. Clear in his vision is an awareness of Indonesia's vulnerability in light of growing military modernization in the region, increased Chinese assertiveness in the South China Sea, and a maritime terrorist threat as well as a slew of nontraditional threats such as transnational crime, natural disasters, and climate change.

MINIMUM ESSENTIAL FORCE

Indonesia's military modernization is a three-stage plan intended to deliver the "minimum essential force" required to defend the archipelago by 2024. As part of the Minimal Essential Force (MEF) plan, the Indonesian navy will develop into a "green water" force able to effectively police Indonesia's exclusive economic zone (EEZ) and undertake limited regional force projection capabilities. Becoming a medium-size maritime power is not just a question of choice for Indonesia or a desire on behalf of its leaders. Its size, geography, and vulnerability demands that it develop a military of a requisite size and capability that can shape its immediate security environment. One of the main challenges for Indonesia is whether the navy can meet the goals established by the MEF plan by 2024.

An important consideration is the defense budget, with modernization contingent on maintaining high levels of economic growth. In response to recent confrontation with Chinese fishing vessels and authorities in the South China Sea, Jokowi has pledged to boost defense spending. Not long after the last challenge from China, the government announced a \$540 million increase in this year's defense budget, bringing the total to \$8.2 billion. However gross domestic product (GDP) growth hovers at 5 percent, rather than the 7 percent required to meet Jokowi's plans to increase defense expenditure to 1.5 percent of GDP. According to the World Bank, Indonesia's economic growth slowed to 4.8 percent in 2015, with consecutive quarters revealing a downward trend.²

Questions also remain whether the Ministry of Defense and the military will spend their budget allocations efficiently. Indonesia has long purchased secondhand equipment from countries such as the United States and Russia. A handful of incidents involving accidents with secondhand platforms, particularly those that were aged and poorly maintained, has led policymakers, including Jokowi, to push for boosting Indonesia's local defense industry and purchasing predominantly new equipment. This could raise capability costs higher than expected.

DEFENSE WHITE PAPER 2015

It is also important to understand the policy context in which Indonesia seeks to upgrade its maritime capabilities. Issued in 2015 but only publicly released in 2016, the new Defense White Paper outlines the Indonesian Defense Ministry's revised strategic outlook.

There are a few features of the English version worth highlighting. First, the words "Global Maritime Fulcrum" are barely found in the document. It is a curious choice on behalf of the Ministry of Defense to omit key policy language used by the president. That said, there is mention of the need to build a strong deterrent capability for an archipelagic and maritime state.³ Second, the threat perception in the paper focuses on the region's major security threats, such as great power rivalry and nuclear weapons. However, the majority of the paper focuses on internal defense, stability, radicalization, and preventing so-called proxy wars. The main themes of the paper are reflective of an army-centric way of thinking about Indonesia's strategic interests. There are legitimate historical and contemporary reasons for emphasizing internal stability; however, the overwhelming sense of the paper does not align with the president's emphasis on maritime awareness.

Without overemphasizing the importance of the white paper, the lack of tight conceptual alignment between the president's vision with the Ministry of Defense's strategic outlook poses questions about priorities within the ministry. Further study would be needed to understand how long-held ideas and habits (in this case, army-centric) would hinder or help the development of a maritime outlook. Nevertheless, the navy's modernization program has made some progress worth surveying, army-centric thinking notwithstanding.

2. World Bank, "Indonesia," 2016, <http://www.worldbank.org/en/country/indonesia>.

3. Iis Gindarsah, "Reviewing Indonesia's New Defense White Paper," *Jakarta Post*, June 16, 2016, <http://www.thejakartapost.com/news/2016/06/16/reviewing-indonesia-s-new-defense-white-paper.html>.

NAVY

Given the limited resources available to the navy, it must be able to adapt to the wide range of traditional and nontraditional maritime threats identified by the 2015 Defense White Paper. According to the MEF, the Indonesian navy should have 274 vessels and 137 aircraft, three Marine Corps forces adding up to a division-size formation, 890 marine combat vehicles, and 11 primary naval bases. The vessels will include 110 combat strike force vessels (including 10 to 12 submarines, 56 frigates/corvettes, and 26 fast attack craft), 66 patrol force vessels, and 98 support force vessels. There have been several positive developments in upgrading the country's surface and subsurface platforms as well as anti-submarine warfare capabilities.

The upgrades to Indonesia's frigates are making progress. With the first steel cut in 2014, the first of two SIGMA 10514 frigates jointly constructed by Dutch company Damen Schelde and PT PAL successfully completed sea trials in September 2016 and is on track to be delivered in January 2017. These will eventually replace six Ahmad Yani-class frigates, formerly operated by the Royal Netherlands Navy, which will be decommissioned at the rate of one per year from 2017 to 2022.⁴ It is the most complex warship ever assembled in Indonesia and a poignant mark of maturity in the country's local defense industry.⁵ The frigate will be employed to conduct anti-air warfare, anti-surface warfare, and anti-submarine warfare roles, as well as in search-and-rescue, patrol, and humanitarian support operations.⁶ Its weapons include an Oto Melara 76-millimeter main gun, launchers for MBDA MM40 Exocet Block II anti-ship missiles, six Euro-torp B515 torpedo launchers, the Rheinmetall Defense Millennium 35-millimeter close-in weapon system, and a 12-cell vertical launch system that can deploy the MBDA VL-MICA surface-to-air missiles.⁷

Another area of focus for the Indonesian navy is patrol vessels optimized for coastal defense. The Indonesian navy currently operates a number of patrol vessels sourced from Australia, Germany, and local manufacturers. Local shipbuilder PT Ciputra Mitra Sejati is currently constructing the Pari-class patrol vessel, the fourth of which was commissioned into the navy in July 2016, as well as a lightly armed variant of the KCR-40 class missile attack craft.⁸

Submarines

A key aspect for realizing Jokowi's plan for maritime defense will be a fully functional submarine fleet. Indonesia currently has two Cakra-class/U290 diesel-electric submarines from Germany

4. Ridzwan Rahmat, "Indonesia to Retire Ahmad Yani-Class Frigates from 2017," *IHS Jane's 360*, February 11, 2016, <http://www.janes.com/article/57928/indonesia-to-retire-ahmad-yani-class-frigates-from-2017>.

5. Ridzwan Rahmat, "Indonesia's First SIGMA 10514 Frigate Completes Sea Trials," *IHS Jane's 360*, September 15, 2016, <http://www.janes.com/article/63745/indonesia-s-first-sigma-10514-frigate-completes-sea-trials>.

6. Richard Tomkins, "Indonesian Shipyard Launches Frigate," UPI, January 19, 2016, http://www.upi.com/Business_News/Security-Industry/2016/01/19/Indonesian-shipyard-launches-frigate/4181453224172/.

7. Ridzwan Rahmat, "Indonesia Begins Sea Trials of First SIGMA 10514 Frigate," *IHS Jane's 360*, July 18, 2016, <http://www.janes.com/article/62335/indonesia-begins-sea-trials-of-first-sigma-10514-frigate>.

8. Ridzwan Rahmat, "Indonesia Begins Work on New 40 m Class Patrol Craft," *IHS Jane's 360*, June 21, 2016, <http://www.janes.com/article/61635/indonesia-begins-work-on-new-40-m-class-patrol-craft>.

and two Chang Bogo submarines from South Korea.⁹ Given its location at strategic chokepoints and status as an expansive archipelago, Indonesia needs more submarines and newer ones. However, Indonesia's journey in upgrading its submarine fleet exemplifies its modernization challenges.

In 2007, the Indonesian government was expected to finalize the purchase of two secondhand Kilo-class submarines from Russia, with plans to acquire eight more.¹⁰ However, the Indonesian government has since vacillated between rejecting the deal and being interested.¹¹ There were signs that the purchase would be revived again after Jokowi met with Russian president Vladimir Putin earlier this year in Sochi.¹² Indonesia is currently cooperating with South Korea to build three Chang Bogo-class subs by 2020. While the first and second were constructed in South Korea, the third will be fully assembled by Indonesian workers in Indonesia.¹³ With plans to build the fourth submarine in Indonesia until up to 12 submarines are locally built, state-owned shipbuilder PT PAL has said it would construct the required infrastructure by September this year, making Indonesia the first Southeast Asian country to do so.¹⁴

Additional costs to this project included the cost of sending 206 workers to South Korea to be trained; the challenge will be to retain these workers in light of potentially more attractive offers in the private industry. As of June, Indonesia was still contemplating Russian Kilo-class vessels, which could be due to delays in the Korean plan. To make matters more complex, Indonesia has also courted France by examining the option of new Scorpene-1000 submarines and of extending the life of one Cakra-class submarine to 2024 through maintenance, repairs, and overhaul work.¹⁵

Understandably, Indonesia is pursuing a strategy to meet its goals of acquiring 12 submarines, mitigating risk from relying on a single source country, and boosting the local defense industry. It will be interesting to see whether Indonesia will put together a submarine force from multiple source countries and whether submarines from South Korea will be delivered on time. Maintaining

9. The second Chang Bogo submarine was launched on October 24 in South Korea, but has not yet been commissioned. Syaiful Hakim, "Kapal selam kedua pesanan TNI AL diluncurkan di Korea Selatan," *Antara News*, October 24, 2016, <http://www.antaraneews.com/berita/591957/kapal-selam-kedua-pesanan-tni-al-diluncurkan-di-korea-selatan>.

10. Peter Hartcher, "Japan Concerned at New Subs for Indonesia," *Sydney Morning Herald*, September 6, 2007, <http://www.smh.com.au/news/national/japan-concerned-at-new-subs-for-indonesia/2007/09/05/1188783320152.html>.

11. Prashanth Parameswaran, "Indonesia to Buy New Submarines from Russia," *Diplomat*, September 25, 2015, <http://thedi diplomat.com/2015/09/indonesia-to-buy-new-submarines-from-russia/>.

12. Tassia Sipahutar, "Indonesia Turns to Russia for Weaponry," *Jakarta Post*, May 21, 2016, <http://www.thejakartapost.com/news/2016/05/21/indonesia-turns-to-russia-for-weaponry.html>.

13. Destrianita Kusumastuti, "Sophisticated Features of Indonesia's Submarine Made in S. Korea," *Tempo.co*, March 24, 2016, <http://en.tempco.co/read/news/2016/03/24/056756747/Sophisticated-Features-of-Indonesias-Submarine-Made-in-S-Korea>.

14. "PAL Indonesia to Launch Submarine Infrastructure," *Tempo.co*, April 8, 2016, <http://en.tempco.co/read/news/2016/04/08/056760839/PAL-Indonesia-to-Launch-Submarine-Infrastructure>.

15. Ridzwan Rahmat, "DCNS Offers SUBTICS Combat System for Indonesian Submarine Overhaul," *IHS Jane's 360*, December 29, 2015, <http://www.janes.com/article/56885/dcns-offers-subticts-combat-system-for-indonesian-submarine-overhaul>.

a fleet from multiple sources mitigates the past risk of deteriorating relations with a source country; however, there are additional considerations in recruiting and training potentially up to three kinds of submariners.

Anti-Submarine Warfare

With many of the Asia Pacific's navies upgrading and expanding their submarine capabilities, Indonesia has taken steps to develop a more sophisticated anti-submarine warfare (ASW) capability. The Indonesian navy once operated British-made Westland Wasp helicopters, but they were grounded in 1998 and have not been replaced.¹⁶ In 2014, Airbus Helicopters was awarded the contract to deliver 11 Panther helicopters by 2018. The aircraft will be outfitted by Indonesia's state-owned aircraft manufacturer PT Dirgantara Indonesia for ASW operations before being handed over to the navy.

There are also options being considered for Indonesia to be flexible in its modernization plans. Given some of the issues related to budgetary constraints, the risk of project cost overruns, and the ambitious nature of Indonesia's MEF plan, defense researcher Koh Swee Lean Collin suggests that the navy should recalibrate its expectations to meet actual operational requirements. Specifically referring to the PKR-10514 program to fill the gap for a frigate/corvette requirement, he argues that rather than procure all 56 PKR-10514 vessels, the navy could consider acquiring a few high-capability PKR-10514 vessels to meet high-intensity operations. It should also consider acquiring more lower-cost versions of the same vessel, with lesser capabilities, to meet more frequent low-intensity threats such as illegal fishing.¹⁷ The model proposed by Koh represents a sensible option to meet the Indonesian navy's urgent needs.

Infrastructure Upgrades

In addition to boosting its capability platforms, Indonesia is investing in the requisite infrastructure for those platforms. The navy plans to build a third submarine base near the largest of the Natuna Islands, chosen for its proximity to the South China Sea, in preparation for the acquisition of additional submarines.¹⁸ A delegation of five senior TNI-AL officers traveled to Washington, DC, in September to explore the possibility of requesting U.S. foreign military funding to pay for the upgrade of bases near the Natuna Islands and Sunda Strait.¹⁹

16. Haryo Adjie Nogo Seno, "Indonesia's Problematic Defence Procurement Priorities," *Strategist*, August 29, 2012, <http://www.aspistrategist.org.au/indonesias-problematic-defence-procurement-priorities/>.

17. Koh Swee Lean Collin, "What Next for the Indonesian Navy? Challenges and Prospects for Attaining the Minimum Essential Force by 2024," *Contemporary Southeast Asia* 37, no. 3 (December 2015): 453–455.

18. Ridzwan Rahmat, "Indonesian Navy Plans for Submarine Base in South China Sea," *IHS Jane's 360*, March 31, 2016, <http://www.janes.com/article/59159/indonesian-navy-plans-for-submarine-base-in-south-china-sea>.

19. Ridzwan Rahmat, "Indonesia Explores Possibility of Obtaining U.S. Aid to Finance Base in South China Sea," *IHS Jane's 360*, September 21, 2016, <http://www.janes.com/article/63976/indonesia-explores-possibility-of-obtaining-us-aid-to-finance-base-in-south-china-sea>.

COAST GUARD

Developments related to Indonesia's coast guard capability have accelerated during Jokowi's presidency, particularly with an increased focus on combating illegal fishing. It is estimated that the country loses between \$672 million to \$25 billion worth of produce annually, with the Ministry of Maritime Affairs and Fisheries calculating 670,000 tons of fish stolen each year.²⁰ Not long after the president's inauguration in 2014, the Maritime Security Coordinating Board (BAKORKAMLA) was upgraded to the Maritime Security Board (BAKAMLA), which acts as a de facto coast guard.

Despite being a critical component of Indonesia's maritime capabilities, the coast guard struggles with challenges to its jurisdiction and capability. For one, many of its law enforcement and patrol responsibilities overlap with those of other government agencies including the navy, national police, Maritime Affairs and Fisheries Ministry, Transportation Ministry, and Finance Ministry (customs department). Some of these issues may resolve over time as the Maritime Security Board eases into its role; in July 2016, it commenced legal proceedings against vessels involved in crimes including illegal fishing and drug trafficking.²¹

The Maritime Security Board is also affected by capability shortages. Although it mans over 100 vessels under subordinate agencies, they are ill-suited to inshore and coast duties.²² The navy had planned to give the Maritime Security Board 10 ships refurbished for civilian use,²³ but the long-term value of this strategy is limited given that both forces are seriously under strength. The limitations of the coast guard are of serious concern in terms of effectively enforcing maritime law as well as providing options in confrontations at sea.

This was best illustrated by the confrontations between Chinese illegal fishing vessels, followed by coast guard vessels, with Indonesian authorities near the Natuna Islands in March, May, and June 2016. The Natuna Islands are one of Indonesia's richest offshore natural resources areas, home to seven oil and gas exploitation fields producing 48.21 million standard cubic feet of gas per day and 25,447 barrels of oil per day. The East Natuna block (block D-Alpha) has Asia's largest gas reserves with 46 million cubic feet.²⁴ The Natuna Seas also produce a high yield of fish and have an EEZ that overlaps with China's so-called nine-dash line claim. It is an area where confrontation is likely. Indeed, on two of the most recent three occasions, Indonesian naval ships were involved and opened fire.

20. Ihda Fadila, "Illegal Fishing, 672.000 Ton Ikan Raib," *Bisnis.com*, March 11, 2015, <http://industri.bisnis.com/read/%2020150311/99/410834/illegal-fishing-672.000-ton-ikan-raib>; Kanupriya Kapoor, "Indonesia Holds 200 Malaysians in Crackdown on Illegal Fishing," *Reuters*, November 19, 2014, <http://www.reuters.com/article/us-indonesia-fishing-idUSKCN0J318O20141119>.

21. "Maritime Authorities Impose Sanctions on 27 Vessels," *Jakarta Post*, July 13, 2016, <http://www.thejakartapost.com/news/2016/07/13/maritime-authorities-impose-sanctions-on-27-vessels.html>.

22. Koh Swee Lean Collin, "The South China Sea's 'White-hull' Warfare," *National Interest*, March 26, 2016, <http://nationalinterest.org/feature/the-south-china-seas-%E2%80%98white-hull%E2%80%99-warfare-15604?page=show>.

23. Nani Afrida, "Navy to Give 10 Ships to BAKAMLA," *Jakarta Post*, March 11, 2015, <http://www.thejakartapost.com/news/2015/03/11/navy-give-10-ships-bakamla.html>.

24. Fedina S. Sundaryani, "RI Explores Asia's Largest Gas Reserve," *Jakarta Post*, July 11, 2016, <http://www.thejakartapost.com/news/2016/07/11/ri-explores-asia-s-largest-gas-reserve.html>.

Navies can prove effective deterrents but they can also intimidate, leaving Indonesia to appear as an aggressor. By having sufficient coast guard assets to deploy in situations such as the Natuna standoffs, Indonesia avails itself of a de-escalatory option, particularly where fishing vessels of the coast guard, and not the navy, of another country are involved. It is critical that Indonesia prioritize the delivery of patrol craft for the coast guard given the continued threat of illegal fishing and the risk for related confrontation around the South China Sea.

In areas such as illegal fishing, the Indonesian government has employed other deterrent policies to mask the shortfall of its coast guard. In late 2014, Jokowi announced the ramping up of a policy to destroy foreign illegal fishing vessels caught in Indonesian waters. Under the policy, 230 vessels have been destroyed,²⁵ and while relations with countries such as Vietnam and China, whose vessels were destroyed, have been strained, the Indonesian government claims the policy as a success. While the policy has mixed reviews from its domestic audience, focusing instead on building capability would provide more flexible policy options for curbing illegal activity in its waters.

There are other capabilities also being developed to complement the naval and coast guard upgrades. Then coordinating minister for political, legal, and security affairs, Luhut Panjaitan, suggested considering drones for use around the Natuna Islands to counter the threat from China.²⁶ The air force is also preparing to deploy the new Skyshield system with special forces on the largest of the Natuna Islands as well as a short-range air defense system.²⁷

OPPORTUNITIES FOR CAPACITY BUILDING AND ENGAGEMENT

As Indonesia continues to develop its naval and coast guard capabilities, these upgrades as well as developments in regional security provide ample opportunities for engagement with foreign partners. For instance, Jokowi has continued Indonesia's long-standing policy of nonalignment between the major Asia-Pacific powers, the United States, and China. However, China's assertive behavior in the South China Sea, particularly in light of the Natuna standoffs, is one factor that could influence Jokowi's preference for defense cooperation with the United States and other partners.

25. "Jakarta Scuttles the Fishing Industry," *Wall Street Journal*, October 20, 2016, <http://www.wsj.com/articles/jakarta-scuttles-the-fishing-industry-1477005847>.

26. David Tweed and Chris Brummitt, "Indonesia Mulls Drones in Response to China's Maritime Flexing," *Bloomberg*, October 8, 2015, <http://www.bloomberg.com/news/articles/2015-10-08/indonesia-mulls-drones-in-response-to-china-s-maritime-flexing>.

27. The weapons system itself consists of two 35-millimeter (1.38 inch) revolver cannons with a rate of fire of 1,000 rounds per minute, a fire control system with sensor unit, and a detached command post. The Skyshield can also use up to two surface-to-air missile eight-cell modules for an expanded air defense capability. The Skyshield is designed for traditional anti-aircraft roles in addition to defense against missiles. Ridzwan Rahmat, "Indonesia to Deploy Skyshield Air Defence System in South China Sea," *IHS Jane's 360*, April 6, 2016, <http://www.janes.com/article/59305/indonesia-to-deploy-skyshield-air-defence-system-in-south-china-sea>.

The first area is capability. As discussed earlier, the Indonesian government has expressed a desire to boost its local defense industry, so foreign military sales for certain platforms could remain modest. However, Indonesia could grow as a defense exporter. Local shipbuilder PT PAL also constructs ships for other customers in Southeast Asia, including the Philippines, for which PT PAL has so far delivered two landing platform dock vessels, the largest ever operated by the Philippines navy.²⁸ However, the Indonesian military is still expected to purchase complex systems. For instance, there are opportunities to support Indonesia's efforts to acquire sufficient surveillance and radar capacity for maritime domain awareness.

The second area is capacity building and institutions. It is critical that Indonesia develop transparent and efficient processes in acquiring modernized platforms. It is also important that the navy and coast guard continue to develop their skills through exercising and training not only with the other branches of the military but with foreign partners as well. In interacting with Indonesian personnel, foreign counterparts can acquire a better appreciation of the challenges in defending Indonesia's maritime domain.

There are many activities that would help strengthen maritime defense capacity. One such way would be to provide support for the establishment of Indonesia's National Maritime Security Information Center, which could form the basis of a joint maritime information-sharing hub.²⁹ The Indonesian government had also planned to open an Academy of Maritime Security and Safety in Surabaya in mid-2015,³⁰ but it is unclear how those plans have progressed. There is an opportunity to support the creation of an educational institution like an academy, which can develop ties over time with regional bodies to share curriculum development and knowledge of key concerns.

There are other activities that provide a more immediate benefit to Indonesia's maritime capacity that should be maintained. For instance, the United States and Indonesian navies conducted an air patrol exercise over the South China Sea last year. Indonesia has also continued its involvement in the U.S. Cooperation Afloat Readiness and Training (CARAT) exercise. The Indonesian and Singaporean navies took part in maritime security exercise Eagle Indopura 2016 during which the two navies also commemorated 40 years of bilateral ties. These are some examples of the maritime-based exercises that contribute further to Indonesia's capacity building as well as regional military interoperability.

Piracy is a key area for this cooperation, particularly among Southeast Asian states. Indonesia, Malaysia, Singapore, and Thailand have just celebrated the 10th anniversary of coordinated patrols

28. Ridzwan Rahmat, "ADAS 2016: PT PAL Launches Philippine Navy's Second SSV, SIGMA Frigate for Indonesia," *IHS Jane's 360*, September 29, 2016, <http://www.janes.com/article/64199/adas-2016-pt-pal-launches-philippine-navy-s-second-ssv-sigma-frigate-for-indonesia>.

29. Ristian Atriandi Supriyanto, "Waves of Opportunity: Enhancing Australia-Indonesia Maritime Security Cooperation," *ASPI Strategic Insights*, November 2014, 5, https://www.aspi.org.au/publications/waves-of-opportunity-enhancing-australia-indonesia-maritime-security-cooperation/SI79_Aus_Indon_maritime_cooperation.pdf.

30. Edwin Fajerial, "Govt to Open Maritime Security Academy," *Tempo.co*, April 10, 2015, <http://en.tempo.co/read/news/2015/04/10/055656862/Govt-to-Open-Maritime-Security-Academy>.

known as the Malacca Straits Patrols, which have expanded to the Malacca Straits Patrol Exercise.³¹ There has been a mixed history of stops and starts to this activity, but all parties have shown commitment over time and there has been a related decline of hijackings in the area to zero incidents so far this year.³² The kidnapping of Indonesian citizens in other territorial waters is also a concern and a driver for cooperation. In June, seven Indonesian sailors were kidnapped by the Filipino militant group Abu Sayyaf in the Sulu Sea. The group had kidnapped 14 other Indonesian crew members in two separate incidents earlier in the year. Spurred by the latest kidnappings as well as hijackings, the Indonesian, Malaysian, and Philippines governments agreed to undertake coordinated patrols in areas prone to the activities.³³

Interactions that foster professionalization and build relationships can be useful. These kinds of interactions will be critical for a newly created body like the Maritime Security Board, which is still developing its institutional norms and habits. One of the advantages of the Maritime Security Board upgrading to become a coast guard is that it now has the mandate to undertake engagement activities. For instance, the Maritime Security Board has commenced coordinated patrols with the Malaysian coast guard.³⁴ Scholar Ristian Atriandi Supriyanto has suggested Australia and Indonesia consider embedding Indonesian liaison officers in Australia's Border Protection Command and the Australian Border Force and placing an Australian liaison officer in the Maritime Security Board.³⁵ This would help expose both sides to internal policy debates and encourage further professionalization. Many of these nascent interactions can form the basis for good working relationships between foreign uniformed personnel in future.

U.S. Maritime Security Initiative

The United States recently expanded its assistance to boost maritime security capacity in Southeast Asian states. Under the Maritime Security Initiative, the United States plans to provide security assistance to Indonesia worth \$10 million in 2016; increase Indonesia's patrol capacity, intelligence, surveillance, and reconnaissance integration, and maintenance capacity; and support the Maritime Security Board's organizational development.³⁶ While the Philippines will receive 85 percent of the funding, there is a strong case for Indonesia to receive additional support. Indonesia's geostrategic location and critical mass relative to its capabilities dictate that the sprawling archipelago be supported in defending critical sea lanes of communication. Further

31. Ministry of Defence (MINDEF), "Fact Sheet: The Malacca Straits Patrol," Singapore Government, April 21, 2016, http://www.mindef.gov.sg/imindef/press_room/official_releases/nr/2016/apr/21apr16_nr/21apr15_fs.html#.V4Rxx5MrKT8.

32. Koh Swee Lean Collin, "The Malacca Strait Patrols: Finding Common Ground," *RSIS Commentary*, April 20, 2016, <https://www.rsis.edu.sg/wp-content/uploads/2016/04/CO16091.pdf>.

33. Budi Satriawan, "Indonesia, Philippines, Malaysia to Coordinate against Militant Pirates," Reuters, May 5, 2016, <http://www.reuters.com/article/us-southeastasia-security-idUSKCN0XW007>.

34. "Indonesia, Malaysia Conduct Joint Sea Patrol," *Jakarta Post*, June 4, 2016, <http://www.thejakartapost.com/news/2016/06/04/indonesia-malaysia-conduct-joint-sea-patrol.html>.

35. Supriyanto, "Waves of Opportunity."

36. "Fact Sheet: U.S. Building Maritime Capacity in Southeast Asia," White House, Office of the Press Secretary, November 17, 2015, <https://www.whitehouse.gov/the-press-office/2015/11/17/fact-sheet-us-building-maritime-capacity-southeast-asia>.

cooperation between the Indonesian coast guard and its more established American counterpart will help provide Jakarta with de-escalatory options in the South China Sea in confrontations with fishing vessels or foreign authorities.

Defense Institutional Reform Initiative

According to the U.S. Department of Defense, the focus of the Defense Institutional Reform Initiative (DIRI) program is to develop “effective, accountable, professional, and transparent partner defense establishments in partner countries that can manage, sustain, and employ national forces.” This is achieved by providing “subject matter experts to work with partner nations to assess organizational weaknesses and establish a roadmap for addressing the shortfalls” at the ministry-to-ministry level.³⁷ In January 2015, Indonesia and the United States signed a memorandum of understanding that allows DIRI to develop strategies designed to assist the performance of the Indonesian military from 2015 to 2019.³⁸ The plan will target institutional reform in the Indonesian Defense Ministry’s directorate general of defense strategy, directorate general of defense planning, and directorate general of potential defense.³⁹ Personnel from all three services are encouraged to participate in the program.

One possibility is to develop programs and strategies that further cultivate a more integrated joint force. Given that Jokowi’s first term is set to end in 2019, it would be a good time to lay out a plan from 2020 to 2024 that seeks to prioritize institutional cooperation among the services and reinforce best practices. The program could also expand current defense planning and budget development programs to include auditing and record keeping.

An Indonesian official has highlighted the need for more transparency in fisheries data and information and measures to improve the rule of law at sea to help avoid conflicts over authority.⁴⁰ Other areas include anticorruption in contracts and transparency in procurement. While corruption in defense procurement was rampant during the Suharto era (that ended in 1998), things have improved. However, more work can be done to make acquisition more transparent. Capability projects can undergo a more rigorous process that evaluates carefully, for instance, the merits of procuring and operating three kinds of submarines.

Strengthening defense engagement between Indonesia and its partners can help mitigate the impact of political changes. For instance, in light of the extensive program of exchanges and assistance programs with Indonesia, there is a level of stability and predictability in the relationship. This stability is bolstered further by the professionalization of the Indonesian military, which refrains from human rights abuses and abstains from direct political involvement.

37. Defense Security Cooperation Agency, “Defense Institutional Reform Initiative,” accessed December 10, 2016, <http://www.dsca.mil/programs/defense-institutional-reform-initiative>.

38. Nani Afrida, “U.S. to Get Involved in RI Military,” *Jakarta Post*, January 8, 2015, <http://www.thejakartapost.com/news/2015/01/08/us-get-involved-ri-military.html>.

39. Ibid.

40. Otniel Tamindaël, “Maritime Security Board Expected to Remove Ego-sectoral among Law Enforcers,” *Antara News*, February 13, 2016, <http://www.antaranews.com/en/news/103091/maritime-security-board-expected-to-remove-ego-sectoral-among-law-enforcers>, accessed 10 July 2016.

CONCLUSION

Indonesia has made considerable progress in developing its capability to defend its waters but still has a long way to go to realize a green-water navy and fully capable coast guard. There is still room for improvement in developing a maritime culture among the services and in encouraging them to work in an integrated and joint fashion.

The Indonesian military retains a strongly army-centric culture that has resulted from a long history of fighting insurgencies and separatist movements. The army has also maintained an expansive territorial presence and experienced 32 years of deep political engagement. Shifting toward a maritime culture will be a slow process of reconfiguring old ideas and habits and translating them into maritime-centric policies. The ability of the forces to work together could also be facilitated by technological advancements.

As mentioned earlier, the construction of the SIGMA frigates symbolizes a maturation of PT PAL's ability to handle sophisticated platforms. As Indonesia's local defense industry continues to grow and its engineers become more skilled, there are opportunities for all services to receive locally made interoperable equipment. With Jokowi's focus on boosting the Indonesian defense industry, it is likely the number of Indonesians being trained by defense companies offshore, such as in South Korea, will increase. Hopefully a focus on prioritizing skills for building maritime platforms remains through Jokowi's term.

Further developments in maritime disputes in the South China Sea will continue to spur Indonesia's maritime modernization. Indonesia has a vested interest in the United Nations Convention on the Law of the Sea (UNCLOS), which recognizes its archipelagic waters as part of its sovereignty. However, the country must maintain a maritime capability to enforce the law. The landmark case of the Philippines v. China, decided by a tribunal established by UNCLOS, also showed that international arbitration to resolve maritime disputes is one part of the picture. Philippines president Rodrigo Duterte has suggested he is willing to set aside the tribunal's findings in favor of bilateral discussions with China, but Manila still remains a treaty ally of the United States. For a nonaligned state like Indonesia, having a strong maritime deterrent forms part of its diplomatic arsenal as well.

Overall, the trajectory is positive. Indonesia's seas form a critical part of its identity, as well as providing the country's livelihood, security, and prosperity. The president has a clear vision of where he wants to take the country; let us hope the navy and coast guard can help sail him there.

Military Modernization and Capacity Building in the Philippines and Vietnam

Carlyle A. Thayer

This chapter focuses on force modernization and capacity building in the Armed Forces of the Philippines (AFP) and the Vietnam People's Army (VPA) from the 1990s to the present. It is divided into five parts. Part one provides a historical background to force modernization in both countries during the period from the 1990s to around 2010 and the role of maritime disputes in the South China Sea as one of the main drivers. Parts two and three discuss current force modernization and capability building in the AFP and VPA, respectively, in the period from 2010 to the present, with a focus on the South China Sea. Part four discusses the role of the United States in capacity building in the Philippines and Vietnam. Part five offers a summary and conclusions.

BACKGROUND

The Philippines

The constitution of the Republic of the Philippines mandates that government spending on education must be greater than government expenditure on defense. During the time that Fidel Ramos served as president (1992–1998), the AFP was largely focused on domestic counterinsurgency.

In late 1994/early 1995 China took control of Mischief Reef in the South China Sea and promptly built a small structure on it. The Philippines was now faced with an external threat that the AFP was ill equipped and trained for. Up until the termination of the U.S. leases on military bases in the Philippines, such as Subic Bay and Clark Air Force Base in 1991–1992, the Philippines relied on the United States to provide defense against external threats.

In 1995 President Ramos sought to transform the military through the AFP Modernization Act. In October 1998, during the administration of Joseph Estrada (1998–2001), China expanded its presence on Mischief Reef by erecting three octagon-shaped structures and two two-story concrete towers. The towers housed electronic intelligence equipment and radar and bristled with satellite communication and high-frequency (HF) antennae. In 1999 the Philippines beached a World War II–era tank landing ship, the BRP *Sierra Madre*, on Second Thomas Shoal to preempt any Chinese moves to repeat its actions on Mischief Reef.

Despite this, the Estrada administration and the subsequent administration of Gloria Macapagal-Arroyo (2001–2010) continued to give priority to internal security. According to Heydarian, the 1995 AFP modernization program failed due to bureaucratic corruption, under investment, misallocation of funds, and priority to counterinsurgency.¹

The Philippines relied mainly on excess defense articles, military assistance, and foreign military sales programs run by the United States to purchase weapons and equipment for external defense.

Vietnam

In the period from the reunification of Vietnam in 1975–1976 to 1989, the VPA was heavily engaged in counterinsurgency operations against the Khmer Rouge in Cambodia and defending its northern border against an attack by China’s People’s Liberation Army. The VPA was overwhelmingly a ground force supplemented by an air force capable of conducting ground attacks and air defense. The VPA navy was largely a coastal force.

In March 1988, Chinese naval forces fought and won a naval skirmish against the VPA navy in the waters near Johnson South and Fiery Cross Reefs. This led to the placement of PLAN troops who erected structures on these features (later they were transformed into artificial islands in 2014–2015).

In September 1989 Vietnam withdrew its last military units from Cambodia and in November 1991 normalized its relations with China. The VPA went through a period of massive demobilization.

In 1992, China passed a Law on Territorial Sea and Contiguous Zone that laid claim to sovereignty over the Paracel and Spratly island archipelagoes.² Both archipelagoes were also claimed by Vietnam. VPA forces in fact seized several features in the Spratly Islands in 1975 from the Republic of Vietnam (South Vietnam) and were permanently garrisoned there from that time.

Chinese assertiveness in the South China Sea in the early to mid-1990s led Vietnam to undertake its first steps toward modernizing its navy and air force for operations in the maritime environment of the South China Sea. The VPA navy was gradually transformed from an inland and coastal defense force into a green-water navy.

In 1994 and 1996, China and Vietnam became embroiled in disputes over oil exploration within Vietnam’s exclusive economic zone (EEZ). This included a confrontation between Vietnamese naval

1. Richard Javad Heydarian, “Catch-up in Manila for Minimum Deterrence,” CSIS Asia Maritime Transparency Initiative, March 18, 2015, <https://amti.csis.org/catch-up-in-manila-for-minimum-deterrence/>.

2. China drove the South Vietnamese armed forces (Army of the Republic of Vietnam) out of the features they occupied in the western Paracels in January 1974.

ships and Chinese-escorted exploration vessels in the Vanguard Bank where China awarded an oil exploration contract to the Crestone Energy Corporation headquartered in Boulder, Colorado.

Toward the end of the 1990s the Vietnamese government announced a series of planned acquisitions of modern platforms and weapon systems and slowly built up a modest naval and maritime air capacity to monitor its territorial waters, continental shelf, and EEZs.³ Vietnam also took steps to develop its national defense industry capacity, with an initial priority on maritime capabilities, in partnership with Russia and India in technology transfer and coproduction arrangements.

Russia is Vietnam's major source of "big ticket" military weapons and equipment procurement. But Vietnam has also turned to India and other countries for assistance in modernizing its air force and navy.

In 1994, responding to developments in the South China Sea, Vietnam signed its first major arms sale contract with Russia since the collapse of the Soviet Union. In October 1998, defense ties were taken to a higher level with a follow-on agreement that provided a framework for continuing and future Russian arms sales and support to Vietnam. The bilateral defense relationship was further strengthened during the February/March 2001 visit by President Vladimir Putin to Vietnam, when the two sides raised bilateral relations to a strategic partnership, Vietnam's first such agreement. Both sides agreed to "strengthen their cooperation in military supplies to meet Vietnam's security demand."⁴

Air Force Modernization

Between 1994 and 2004, Vietnam acquired seven Su-27SK Flanker B single-seat aircraft, three Su-27UBK Flanker C two-seat trainers, and two Su-30Ks. Vietnam's Su-27s and Su-30s were later upgraded so they could operate Kh-31 (AS-17) anti-ship missiles and the Vympel Kh-29 (AS-14) and Kh-59M (AS-18) air-to-surface missiles (see Table 8.1).

Between 1996 and 1998, Russia upgraded 32 single-seat Su-22M4 and two twin-seat Su-22UM3 ground attack aircraft. In January 2009, Vietnam placed an order for eight Su-30MK2 fighters from Rosoboronexport for delivery in 2010–2011.

In March 2000, India and Vietnam signed a major defense cooperation agreement that included provisions for overhauling Vietnam's fleet of MiG-21 aircraft and training assistance for Vietnamese fighter pilots and technicians. In October 2006, India supplied Vietnam with a number of spare parts for its MiG-21 combat aircraft.

Between 1996 and 2005 the Ukraine sold Vietnam 10 L-39 trainers, six MiG-21 UMs, and three Su-22 combat aircraft.⁵ In 2006, Vietnam purchased 40 secondhand Sukhoi Su-22M4 fighter-bombers

3. Carlyle A. Thayer, "Force Modernization: The Case of the Vietnam People's Army," *Contemporary Southeast Asia* 19, no. 1 (June 1997): 1–28.

4. Voice of Vietnam, Hanoi, September 28, 2008.

5. In 1980, Vietnam acquired the first of 24 Aero Vodochody L-39C jet trainers from Czechoslovakia. But due to attrition over the years this number declined to 18 by 2007. In mid-2008 Vietnam acquired four secondhand L-39s from the Czech Republic and 10 new Yak-52 basic trainers from Romania to replace inventory in its aging air training division.

from Poland's Profus Management.⁶ In 2004, Vietnam acquired five SU-22 UM3 combat aircraft from the Czech Republic, including spare parts and ammunition. Vietnam then reached a deal with the Ukraine to upgrade a number of these aircraft so they could serve as platforms for anti-ship missiles.

Air Defense Modernization

Between 2000 and 2004, according to Russia's annual reports to the UN Register of Conventional Arms (UNROCA), it sold "8 missiles and missile launchers" and "20 missiles and missile launchers" to Vietnam. In August 2003, Russia agreed to supply Vietnam with two batteries of the highly advanced S-300PMU-1 surface-to-air missile systems (see Table 8.1). In 2005, Vietnam reported to UNROCA that it had imported 12 missile launchers and 62 S-300 missiles. Defense industry sources confirmed that one S-300PMU-1 battery of 12 missile launchers and 62 missiles was delivered in August 2005. The S-300 is regarded as one of the world's most effective all-altitude regional air defense systems.

In May 2002, Vietnam and the Ukraine signed an agreement on military-technical cooperation up to 2005. Under the terms of this agreement the Ukraine agreed to provide assistance to Vietnam to upgrade its air defense, including radar, communications, and surface-to-air missiles. In 2008 Vietnam acquired four Kolchuga passive sensor systems from the Ukraine, capable of identifying and tracking land, sea, and air threats.⁷

Naval Modernization

Vietnam is clearly seeking to improve its capacity to monitor its territorial waters and EEZ, project naval power into the South China Sea to protect its key offshore oil and gas platforms and the features that it occupies, and develop anti-submarine warfare (ASW) capabilities to meet the potential threat posed by the growing number of conventional submarines operated by China and other regional states. Vietnam's naval procurements appear aimed at developing modest anti-shipping, anti-submarine warfare and mine countermeasure capabilities.

Since the mid-1990s Vietnam has gradually modernized its navy through the acquisition of surface combatants and a small flotilla of conventional submarines all armed with variety of missiles, including cruise missiles.

Surface Combatants

Between 1996 and 1999, Vietnam received four modified Tarantul 2 corvettes from Russia. The ships were armed with twin launchers for the SS-N-2D Styx anti-ship missile, Igla surface-to-air missiles (SAMs), and deck guns.

6. According to Australia's Defence Intelligence Organisation (DIO), Vietnam "purchased 40 secondhand Su-22 attack aircraft." See *Defence Economic Trends in the Asia-Pacific 2007* (Canberra: DIO, 2007), 22.

7. The Kolchuga is classified as an electronic support measure. It can simultaneously triangulate the position of up to 32 targets on land, sea, and air. It has an extended range and is less vulnerable to attack due to its passive operation. Each unit costs \$27 million. See Robert Karniol, "Slow Advance for Viet Army Revamp," *Straits Times*, February 9, 2009.

Table 8.1. Vietnam Missile Procurements, 1995–2012

1995	75 R-73/AA-11 SRAAM	Su-27 combat aircraft
1996	20 P-15M/SS-N-2C anti-ship missiles	Tarantul-1 FAC
1996–1999	80 Strela-2/SA-7 portable SAM	For Tarantul-1 FAC
1999	20 P-15M/SS-N-2C ASM	Tarantul-2 FAC
1999–2014	400 Igla-1/SA-16 portable SAM	BPS-500, Svetlyak PC and Tarantul FAC
2001–2005	30 Kh-35 Uran/SS-N-25 antiship missile	BPS-500 FAC
2002	50 Igla/SA-18 portable SAM	
2004	50-73/AA-11 SRAAM	Su-30 combat aircraft
2004	100 Kh-29/AS-14 Kedge ASM	
2004	20 Kh-31A1/AS-17 ASM/ARM	Su-30 combat aircraft
2005	2 S-300PMU-1/SA-220A SAM	
2005–2006	75 48N6/SA-10D Grumble SAM	
2008–2014	400 Kh-35 Uran/SS-N-25 ASM	Gepard frigates and Tarantul FAC
2009–2011	Two K-300P Bastion-P	Coastal defense system
2009–2011	40 Yakhont/SS-N-26 ASM	Gepard frigates Kashtan CIWS
2010–2012	250 R-73/AA-11 SRAAM	Su-30MK2

Source: Stockholm International Peace Research Institute Arms Transfers Database.

In December 2002, Russia's Almaz Central Marine Design Bureau delivered two Type 14310 Svetlyak-class inshore patrol boats for use by the coast guard. In 2006, Vietnam ordered another four Svetlyak-class patrol craft.

In March 2004, Vietnam signed an agreement for two Tarantul V (Project 1241.8) corvettes armed with SS-N-25 (Kh 35 Uran) missiles. The modified Tarantul V is sometimes referred to as Molinya. They were delivered in late 2007.

Vietnam then reached agreement in December 2006 with Rosoboronexport for the purchase of two Gepard-class (Project 11661) guided missile frigates. This deal was estimated at \$300 million. The construction of both frigates commenced in 2007.

In early 2008 Vietnam and Russia signed a contract for the delivery of several shipbuilding kits and related weapons systems for domestic assembly in Vietnam's Hong Ha shipyard. Reportedly the kits contain a mix of vessels for the navy and coast guard. The contract was valued at \$670 million.

Under the terms of the March 2000 defense cooperation agreement, the Indian navy also agreed to repair, upgrade, and build fast patrol craft for the Vietnamese navy. In June 2005, the Indian navy transported 150 tons of spares to Vietnam for its Petya frigates and Osa-II fast attack missile craft. In December 2007, during the visit to Hanoi by India's defense minister A. K. Anthony, who was accompanied by a delegation that included senior navy officers, India agreed to supply Vietnam with 5,000 essential spares for its Petya-class anti-submarine boats in order to make them operational.

Conventional Submarines

In 1997, Vietnam acquired two Yugo-class midget submarines from North Korea that it subsequently refitted. The acquisition of Yugo-class subs represented the first phase in implementing Vietnam's long-standing interest in developing an undersea-warfare capability.⁸

Under the terms of the March 2000 defense cooperation agreement between India and Vietnam, the Indian Navy agreed to provide training to Vietnamese naval personnel including submariners. In October 2002, Vietnam officially asked India to provide submarine training.

In 2009, in a major development, Vietnam announced that it would procure six conventional diesel-powered *Varshavyanka*-class or Enhanced Kilo-class submarines from Russia.

Maritime Surveillance and SAR

Given Vietnam's long, extended coastline its security forces have a requirement for maritime surveillance and search-and-rescue capabilities.

In October 2003, Vietnam's Ministry of National Defense and Profus Management, a Polish foreign trade company, signed a contract for the purchase of two new Polskie Zaklady Lotnicze (PZL) M28 Skytruck short take-off and landing aircraft. Two Skytrucks were delivered in January 2005 and configured for transport and passengers with provision for medical evacuation equipment. In February 2005, it was reported that Vietnam had purchased four PZL Swidnik W-3RM Anakonda

8. Vietnam had previously expressed an interest in obtaining Kilo-class conventional submarines from the Soviet Union. Reportedly a crew was in training when the Soviet Union collapsed and Mikhail Gorbachev canceled the program. In 2008, Vietnam was reportedly in the market for secondhand submarines from Serbia. This opportunity arose when Serbia and Montenegro split in 2006, leaving Serbia without a coastline. Vietnam explored the possibility of acquiring three full-size submarines and three midgets, all nonoperational. Serbia off-loaded its fleet to Egypt.

maritime search-and-rescue helicopters. The Anakonda was equipped with Wescam forward-looking infrared turrets.

In mid-2008 Vietnam and the Swedish Space Corporation signed a deal to acquire three Spanish EADS-CASA C212 Series 400 maritime control aircraft equipped with MSS 6000 side-looking radar. The cost was estimated at nearly \$3.5 million.

National Defense Industry

Vietnam does not have a modern national defense industry and its capacity is generally limited. Vietnam has sought assistance from abroad. In May 2002, Vietnam and the Ukraine reached agreement on a significant program of military-technical cooperation up to 2005, including assistance from the Ukraine in developing naval test facilities and arms coproduction.

Vietnam's national defense industry, however, is capable of assembling navy patrol boats from kits, production of light aircraft, shipyard repairs, and depot-level reverse engineering of aircraft spares. For example, Vietnam entered into coproduction arrangements with Russia to assemble KBO 2000 corvettes and BPS-500 missile patrol boats. Vietnam successfully assembled two BPS 500 (Project 12418) missile corvettes from a kit provided by a Russian supplier. However, more ambitious plans to build a Russian-designed Project 2100 corvette have been abandoned because the task was beyond local technical capabilities.

Between June 2003 and September 2005, Vietnam manufactured three A-41 (VNS-11) three-seat amphibious aircraft for use in search-and-rescue and forestry patrols.⁹

Vietnam has sought offset agreements involving technology transfers in several of its arms procurement deals. In February 2002, the Russian defense enterprise LOMO announced that it negotiated a contract with Vietnam to assist in the transfer of technology so Vietnam could produce the Igla low-altitude surface-to-air missile (SA-18 Grouse). Russia and Vietnam also signed an agreement that licensed the production of missile launchers. In November 2006, Russia and Vietnam reached agreement on technical assistance in the production of Yakhont ship-to-ship missiles.

FORCE MODERNIZATION AND CAPACITY BUILDING IN THE PHILIPPINES

In 2011, in response to Chinese assertiveness in the Philippines' EEZ and Kalayaan Island group, the administration of Benigno Aquino drew up a new defense strategy focused both on internal security operations and external territorial defense. In March 2011, the Philippine Congress allocated \$450 million for defense spending or about one percent of GDP.

9. One of the planes was observed painted with military markings.

In September 2011, President Aquino announced that about \$118 million would be allocated to top up the defense budget.¹⁰ These funds were earmarked for the purchase of a naval patrol vessel, six helicopters, and other military equipment in order to secure the Malampaya oil and gas project. Between 2010 and 2012, \$648.4 million was allocated to modernizing the AFP.

The major turning point in the force modernization of the AFP came in December 2012 when the Philippine Congress passed the Revised AFP Modernization Act and extended the program for 15 years. The aim of this program was to task the AFP with territorial defense by developing a minimum deterrence.

The Revised AFP Modernization Act is the primary source of funds for arms procurements, while the annual defense budget covers salaries and entitlements for service personnel and maintenance costs for defense equipment.

Force modernization of the AFP started from a very low level. Under the Aquino administration's shift to territorial defense and a minimum deterrent posture, the Philippine navy has expanded modestly with the acquisition of two used Hamilton-class ocean patrol vessels from the United States (with a third to come), five used *Balikpapan*-class landing craft heavy from Australia, and one new Strategic Sealift Vessel landing platform dock constructed by Indonesia.

The most significant force modernization development has been the Philippines' acquisition of fixed wing and rotary aircraft. In 2011, the Philippines acquired 18 Italian SF-260 trainer aircraft. This was a significant development because the Philippines retired its entire combat air wing six years earlier. In 2015 the Philippines took possession of the first two of 12 South Korean FA-50 Golden Eagle FGAs, with the remainder due by 2017. These aircraft will be fitted with EL/M-2032 combat aircraft radar sold by Israel. In 2016 the media reported that Japan might lease the Philippines five Beechcraft TC-90 King Air training aircraft.

In 2014 and 2015 the Philippines vastly improved its ability to transport military personnel, supplies, and equipment throughout the archipelago through the acquisition of two C-130H Hercules transport aircraft from the United States, two C-212 transport aircraft from Indonesia, and three CN-295 transport aircraft from Spain.

Finally, the Philippines acquired a wide variety of rotary aircraft that adds to its capacity for transport, search and rescue, and attack. Between 2011 and 2013 the Philippines acquired 12 Bell-205/UH-1H helicopters from the United States,¹¹ five Bell-205/UH-1D helicopters from Germany, four light helicopters from France, eight W-3 Sokol helicopters from Poland, and significantly 10 to 13 A-109K light attack helicopters from Italy.

The Philippines' capacity for maritime domain awareness has been enhanced by the purchase of the TPS-79 MMSR air search radar from the United States in 2011 and three EL/M-2288 AD-STAR air search radars from Israel in 2015.

10. Agence France-Presse, "Philippines Invests to Protect Spratlys," September 7, 2011, <https://globalnation.inquirer.net/11825/philippines-invests-to-protect-spratlys>.

11. Some sources report that this number included eight Bell-412 utility helicopters.

FORCE MODERNIZATION AND CAPACITY BUILDING IN VIETNAM

The VPA totals 482,00 main forces comprised of the army (412,000), navy (40,000), and air-defense air force (30,000). The armed forces also include a 40,000-strong paramilitary border guard and a reserve force estimated at 5 million.

In January 2011, at the 11th National Congress of the Communist Party of Vietnam, the political report listed among the objectives for the next five years “to further push the development of defense and security technology industry” and “to strengthen scientific research in military and security capable of defeating high-tech wars from enemy forces.”

The political report identified modernization of the armed forces and defense industry as one of the five key national objectives for the next five years (2011–2016). Priority was assigned to ensuring “that the armed forces incrementally have access to modern equipment with priority being given to the navy, air force, security, intelligence, and mobile police forces.”

In his address to the congress Lt. Gen. Ngo Xuan Lich, head of the Vietnam People’s Army General Political Department, specifically identified “armaments, ammunition, and technical means” as key priorities. Speaking on the sidelines of the congress, General Phung Quang Thanh, minister of national defense, included electronic and technical reconnaissance among the priorities for defense intelligence.

According to a defense white paper issued by Vietnam three years after the 11th party congress, priorities for Vietnam’s defense industry include the maintenance, manufacture, improvement, and upgrading of weapons and equipment.

Vietnam’s National Defense Industry

Vietnam has signed a wide number of memoranda of understanding and defense contract agreements with foreign states (see table 8.2). These agreements reveal that Vietnam is seeking assistance, services, and equipment acquisitions in six major areas: storage, maintenance, and upgrading of existing military equipment; modernization of platforms and equipment for the army, navy, and air force; modernization of Vietnam’s defense industry; maritime logistics capacity in the South China Sea; mitigating the effects of natural disasters, notably flooding and storm damage and search and rescue at sea; and training for future involvement in UN-endorsed peacekeeping operations.

Vietnam’s defense memorandums of understanding and defense contract agreements usually contain general clauses on bilateral defense industry cooperation in five priority areas: promotion of defense research and technology transfer; coproduction of weapons; maintenance, upgrading, and repair; technical support; and personnel training.

Vietnam’s arms purchase contracts invariably include provisions for technology transfer as well as training and services. For example, Vietnam approached Russia and India for assistance in coproducing the BrahMos anti-ship cruise missile and for the repair and maintenance of naval vessels.

Table 8.2. Vietnam Arms Procurements, 2008–2016

Air Force	Navy	Coastal
2010–2015 32 Su-30MK/Flanker FGA aircraft Russia	2008–2014 six Project 12418 Tarantul 5 FAC Russia	2009–2011 two K-300P Bastion-P coastal defense system Russia
	2011 two Gepard-3 frigates Russia	2013 three EL/M-2088 AD-STAR air search radar Israel
	2011–2012 six Project-10412/ Svetlyak patrol craft Russia	2014 10 EXTRA guided rocket/ SSM Israel
	2013–2016 six Project-636E/Kilo submarines Russia	
	2017 four Gepard-3 frigates Russia	

Source: Stockholm International Peace Research Institute Arms Transfers Database.

Vietnam also has supported a Malaysian proposal to promote defense industry cooperation among members of the Association of Southeast Asian Nations (ASEAN). Vietnam and Indonesia have discussed coproducing fixed wing transports, maritime surveillance aircraft, and multirole helicopters. Vietnam and the Philippines have discussed cooperation in the manufacture of various types of unspecified military equipment. Vietnam has approached Singapore for assistance in the safe storage of ordnance and munitions.

In October 2011, President Truong Tan Sang made a state visit to India and requested Indian assistance in four areas: submarine training, conversion training for pilots to fly Sukhoi-30s, transfer of medium-size patrol boats, and modernization of port facilities at Nha Trang.¹² The local media reported that India was considering whether to sell Vietnam its BrahMos supersonic cruise missile.¹³ In 2015 India offered Vietnam a \$300 million line of credit to purchase warships built in Indian dockyards.

Vietnam's defense industry is capable of constructing small naval patrol craft. In 2011, for example, the Hong Ha defense shipbuilding company successfully launched Vietnam's first indigenously constructed naval vessels: a 54-meter, 400-ton fast patrol boat (Project TT400TP), and a 72-meter troop transport vessel.¹⁴ The patrol boat was based on a Russian design and constructed by Vietnamese engineers who had been sent to Russia to study shipbuilding.

12. *Hindu*, November 9, 2011.

13. *Business Insider*, September 20, 2011.

14. BBC Vietnamese Service, October 3, 2011.

Table 8.3. Vietnam Missile Procurements, 2011–2015

2011	200 9M311/SA-19 SAM	Su-30MK2
2011–2012	80 Kh-31A1/AS-17 ASM/ARM (including Kh-31P anti-radar version)	
2013–2014	50 3M-54 Klub/SS-N-27 anti-ship MI/SSM (3M14E SS-N-30B land attack)	<i>Varshavyanka</i> -class (Enhanced Kilo) submarines

Source: Stockholm International Peace Research Institute Arms Transfers Database.

In February 2012, Russia announced it would coproduce a modified Uran anti-ship missile (SS-N-25 Switchblade) with Vietnam.¹⁵ The modifications could enable Vietnam to fit the missile to aircraft, helicopters, ships, and coastal batteries.

Arms Procurements

In November 2011, Vietnam announced a \$3.3 billion defense budget for 2012, a reported rise of 35 percent over 2010. According to IHS Jane's, the annual naval procurement budget of Vietnam has increased by 150 percent since 2008, to \$276 million in 2011. The naval budget was projected to rise to \$400 million by 2015.¹⁶

During 2010–2015 (see Tables 8.2 and 8.3), Vietnam stepped up its force modernization program when it took delivery of additional Tarantul 5 corvettes, two Gepard-class guided missile frigates armed with Kh-35E anti-ship missiles with a range of 130 kilometers, and six Svetlyak-class missile patrol boats.¹⁷ In 2011, Vietnam beefed up its coastal defenses by acquiring its second K-300P Bastion-P land-based anti-ship ballistic missile system. Vietnam also acquired Israeli Extended Range Artillery Munitions (EXTRA) ballistic missiles effective beyond 150 kilometers. During this same period Vietnam also took delivery of 36 Su-30MK2 multirole jet fighters equipped with the Kh-59MK anti-ship cruise missile with a range of 115 kilometers and five (of six) *Varshavyanka*-class submarines.

Vietnam has come to the end of its present five-year planning cycle (2011–2015). Later this year new priorities for the next five years (2016–2020) will be announced when the Ministry of National Defense will issue an update of its last white paper released in late 2009.

15. RIA Novosti, February 15, 2012.

16. Quoted in *Economic Times*, November 14, 2011.

17. *Voice of Russia*, June 22, 2011; BBC Vietnamese Service, August 24, 2011 and October 25, 2011; and Interfax-AVN, October 11, 2011.

THE ROLE OF THE UNITED STATES IN CAPACITY BUILDING

The Philippines

Under the Enhanced Defense Cooperation Agreement, the United States will step up the rotational deployment of military forces to five bases in the Philippines and joint exercises with the AFP to promote interoperability and capacity building.

The United States has decided to provide the Philippines with a third U.S. Hamilton-class Cutter under its Excess Defense Articles program.

The U.S. Congress approved \$425 million for the Pentagon's Southeast Asia Maritime Security Initiative (MSI) over a five-year period to be allocated to five countries: Indonesia, Malaysia, the Philippines, Thailand, and Vietnam. Congress approved \$49.72 million for disbursement in FY2016. Follow-on disbursements total \$75 million for fiscal year 2017 and \$100 million each of fiscal years 2018, 2019, and 2020.

Of the \$49.7 million allocated for 2016, the Philippines will receive \$41 million or almost 85 percent. The Philippines is therefore the largest recipient of U.S. maritime security assistance in Southeast Asia.

These funds are to be used for training and improvements in logistical bases for the Philippine navy and coast guard, to improve the ability of the Philippines air force to conduct maritime operation, and finally for naval maintenance, fleet upgrades, interdiction vessels, communications, and aircraft procurement.

For perspective, for 2016, \$50 million is being set aside just for MSI alone, while the Barack Obama administration announced last year that the *total* amount of assistance it would provide for 2016 would be \$140 million, a slight increase from the \$119 million committed in 2015.

Vietnam

In 2007, the George W. Bush administration amended the International Trafficking in Arms Regulations (ITAR) to permit the sale of nonlethal weapons to Vietnam on a case-by-case basis. Restrictions were kept in place on weapons and equipment that could be used by ground forces in crowd control. All lethal weapons and many military services remained banned.

The ITAR ban on the sale of weapons to Vietnam rankled Vietnamese leaders who thought it was discriminatory, a throwback to the Cold War, and an impediment to the full normalization of bilateral relations. For example, when the U.S. secretary of defense, Leon Panetta, visited Hanoi in June 2012, Vietnamese defense minister General Phung Quang Thanh requested that the United States remove all ITAR restrictions.

China's decision to place the HD981 oil drilling platform in Vietnamese waters in May 2014 provoked a six-week confrontation between Chinese naval, maritime law enforcement, and civilian tug boats and fishing trawlers and Vietnam's coast guard and fisheries surveillance force. China's actions undermined strategic trust between Hanoi and Beijing and led to calls in Vietnam "to exit

China's orbit." China's actions created an opportunity for both Vietnam and the United States to step up cooperation in security and defense.

As a result of this crisis, Secretary of State John Kerry announced the partial lifting of the sale of lethal arms to Vietnam on a case-by-case basis in October 2014. Kerry indicated that such weapons would be supplied for maritime security and weapons of a defensive nature suitable for Vietnam's coast guard. Vietnam still agitated for a full lifting of the arms embargo. Kerry announced that the United States would allocate \$18 million to provide patrol boats for Vietnam's coast guard. As noted earlier, with nearly 85 percent of the MSI going to the Philippines in FY2016, not much is left to fund equipment, supplies, training, and small-scale construction in Vietnam.

In June 2015 Secretary of Defense Ash Carter and Minister of National Defense General Thanh signed a U.S.-Vietnam Joint Vision Statement on Defense Relations. This document included 12 areas of defense cooperation. The fourth area read: "expand defense trade between our countries, potentially influencing cooperation in the production of new technologies and equipment, where possible under current law and policy restrictions." This caveat was loosened when President Barack Obama announced the full lifting of ITAR restrictions during his visit to Vietnam in May 2016. Nevertheless, U.S. policy linking arms sales to Vietnam's human rights remained in place.

The ball is now in Vietnam's court. The deputy minister of national defense, Senior Lt. Gen. Nguyen Chi Vinh, revealed in an interview on the sidelines of the 2016 Shangri-La Dialogue that Vietnam had no immediate plans to request weapons or equipment from the United States.

The key to future arms and equipment sales likely lies in the Joint Vision Statement quoted previously: "to expand defense trade between our countries, potentially influencing cooperation in the production of new technologies and equipment." There are several niche area of potential defense trade including coastal radar, satellite and other communications systems, maritime logistics, maritime surveillance aircraft including unarmed drones, naval patrol craft, maintenance, and electronics. More problematic areas of defense trade include air defense missiles, air defense systems for naval ships, anti-submarine warfare technology, and jet fighters.¹⁸

Vietnam has hosted two seminars with leading U.S. defense industries, including Lockheed Martin and Boeing. Lockheed Martin has promoted the possible sale of its Sea Hercules maritime patrol aircraft to Vietnam. Boeing has publicly indicated that it has capabilities in "intelligence, surveillance, and reconnaissance platforms that may meet Vietnam's modernization needs." For example, Boeing could sell its maritime surveillance technology to Vietnam for installation on a business aircraft converted for maritime reconnaissance.

U.S. defense companies are likely to face competition from Japan, rumored to be offering its own maritime patrol aircraft, and South Korea and Europe, where Vietnam is in the market to replace its MiG-21s that were paid off in 2015.

18. In 2002 Vietnam was reported to be considering bolstering its anti-submarine warfare capability by acquiring either the U.S. P-3 Orion or the Spanish Airbus Military C295. *Aviation Week*, February 17, 2012.

SUMMARY AND CONCLUSIONS

Chinese assertiveness in the South China Sea in the 1990s motivated both the Philippines and Vietnam to embark on a modernization of their naval and air forces to respond to likely contingencies in the South China Sea. Both countries had to overcome the legacies of the past when their armed forces were focused mainly on internal security and counterinsurgency. The 1995 AFP Modernization Program was stillborn in the Philippines, while Vietnam took initial steps in the mid-1990s to convert its coastal navy into a green-water force and to acquire fourth-generation jet fighters capable of operating in the maritime domain.

Both Vietnam and the Philippines accelerated their force modernization efforts around 2010. Vietnam ramped up a modernization program that been under way for a decade and a half, while the Philippines began virtually from scratch. Vietnam acquired top of the line Su-30 jet aircraft, highly effective air defense missiles, coastal anti-ship missiles, and a growing number of surface combatants armed with cruise missiles. Most dramatically of all, Vietnam opted to develop a capability for undersea warfare by acquiring six *Varshavyanka*-class Enhanced Kilo-class conventional submarines. These are armed not only with heavy torpedoes and anti-ship cruise missiles but land attack cruise missiles as well.

Today the Vietnamese military faces very different missions and tasks than it did a decade ago. The VPA must now protect its territorial integrity and national sovereignty in the South China Sea. This means that the relative role of the navy and air force has become more important. Vietnam is following regional trends by modernizing its military forces step by step as its economy grows. Vietnam's program of defense modernization is modest and aims to develop defensive capabilities needed in the new regional security environment.

Military modernization is very expensive. It is one thing to acquire new frigates, multirole jet fighters (Su-30s), Kilo-class submarines, and anti-shipping cruise missiles, but it is another thing to effectively integrate these new capabilities into Vietnam's existing force structure. Also the ongoing expense of maintenance and upgrading will prove costly. Vietnam must give serious thought to restructuring its military forces to give priority to the navy and air defense/air force and reducing the size of the standing army. Finally, Vietnam needs to review the roles and missions assigned to the military with a view to divesting the VPA of nonessential missions and roles. The Border Guard, for example, could be turned over to another ministry. Nonessential military enterprises, which were slated for equitization in 2007, should be turned over to civilian control now that the impact of the global financial crisis has waned. Vietnam's military must concentrate on being modern and professional in an era of high-tech warfare.

The Philippines force modernization program has achieved modest results. The Philippine Navy has developed the logistics and transport capacity to operate more effectively in its archipelagic waters. The acquisition of two and soon three former U.S. Coast Guard ocean patrol vessels will provide the Philippine Navy with the capacity for longer maritime patrols. But they are lightly armed.

The Philippines has also made strides in improving its capacity for maritime domain awareness through the acquisition of coastal and air search radar. The acquisition of attack helicopters and

fighter aircraft will enhance to a limited extent the ability to deter a potential opponent when they become fully operational and appropriately armed.

U.S. assistance through its various programs (e.g., Foreign Military Sales, Excess Defense Articles) including the MSI will assist in capacity building in key areas. The Philippines stands to benefit the most because it is the largest recipient of U.S. funding. But U.S. funds appear modest given the challenges that the Philippines—and the region—face.

PART FOUR

The Environmental Question

Destroyed Reefs, Vanishing Giant Clams: Marine Imperialism

E. D. Gomez

INTRODUCTION

It is now about two years since the renewed concern of various sectors in the Philippines and in other countries about what has been variously referred to as “reclamation,” “ocean filling,” or “terraforming” in the “South Sea,” the “East Sea,” the “West Philippine Sea,” or the “South China Sea.” Use of these names and designations depends on where you are coming from. It was European cartographers that used the last name for what may be today’s “hottest” marginal sea in the world, not necessarily in a climate change sense.

Having devoted much of my professional career as a marine biologist concerned with coral reefs and giant clams, I am well versed with the ecological and environmental impact of the destruction of coral reefs^{1,2} and the extirpation of populations of endangered marine invertebrate species.³ Due to this background knowledge, I have been approached by various individuals and institutions, in the Philippines and in other countries, to participate in discussions on the scientific and environmental issues related to activities taking place in the South China Sea.

The title of this chapter is adapted from an article featured in “The Talk of the Town” section of the leading Philippine newspaper, the *Philippine Daily Inquirer*, on May 3, 2015, which may still be accessible on the Internet.⁴ This chapter is an expansion and update of the original essay. Much appeared

1. Lauretta Burke et al., *Reefs at Risk Revisited in the Coral Triangle* (Washington, DC: World Resources Institute, 2012), viii.

2. E. D. Gomez, P. M. Alino, and W.R.Y. Licuanan, “A Review of the Status of Philippine Reefs,” *Marine Pollution Bulletin* 29, no. 1–3 (1994): 62–68.

3. E. D. Gomez and S. S. Mingo-Licuanan, “Achievements and Lessons Learned in Restocking Giant Clams in the Philippines,” *Fisheries Research* 80, no. 1 (August 2006): 46–52.

4. E. D. Gomez, “Destroyed Reefs, Vanishing Giant Clams,” *Philippine Daily Inquirer*, May 3, 2015, <http://opinion.inquirer.net/84595/destroyed-reefs-vanishing-giant-clams>.

in popular and scholarly publications, as the decision on July 12, 2015, of the Arbitral Tribunal on the Law of the Sea concerning the suit brought by the Philippines against China was anxiously anticipated by the world. Rather than focus on that legal case, I intend to address the environmental issues related to the massive destruction of coral reefs and the extirpation of giant clam populations. Attention will also be drawn to the implications of such activities and the related impact on fisheries of the heightened presence of Chinese vessels in the area, whether military or civilian.

The perspective here follows much of what has been published previously about the Spratly Islands region, as exemplified by a coffee-table book entitled *The Kalayaan Islands: Our Natural Heritage*.⁵

THE CORAL TRIANGLE

This chapter is a contribution to the elucidation of the environmental and ecological issues, including fisheries implications, of the decades-long activities that have led to the degradation of a significant area of the western part of what may be referred to as the “Marine Paradise” of the earth, and in recent decades referred to as the “Coral Triangle,”⁶ most of which is presently being conserved by six countries through an initiative that commenced in 2009: the Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (CTI-CFF). Although the CTI formally covers only the six countries of Indonesia, Malaysia, Papua New Guinea, the Philippines, Solomon Islands, and Timor-Leste, recent studies⁷ indicate that the biological basis for the definition of the “Coral Triangle” needs to be extended westward to the nearshore area of Vietnam, to include the southern portion of the South China Sea, which clearly includes the Spratly Islands area. The recent studies referred to have revealed that there are 571 species of stony corals in the South China Sea between the Philippines and Vietnam, much more than the 500 species used as a benchmark for defining the Coral Triangle.

The biodiversity of this marginal sea has been the subject of sporadic studies, often from a national perspective and occasionally through multinational efforts. Two examples may be mentioned. In 2002, scientists from several countries, led by Indonesia and including Malaysia, Singapore, Vietnam, the Philippines, and Chinese Taipei participated in a Track 1.5 initiative referred to as the “Expedition Anambas,” since the study area was the Anambas and Natuna Islands in Indonesia.⁸ The second example was a series of Joint Oceanographic and Marine Research Expeditions (JOMSRE) engaged in between the Philippines and Vietnam the previous decade. Various reports and papers resulted from these cruises between the two countries, with many study sites in the Spratly Islands area.

5. Porfirio M. Alino and Miledel Christine C. Quibilan, eds., *The Kalayaan Islands: Our Natural Heritage* (Quezon City: Marine Science Institute, 2003).

6. J.E.N. Veron et al., “Galaxea,” *Journal of Coral Reef Studies* 11 (2009): 91–100.

7. D. Huang et al., “Extraordinary Diversity of the Reef Corals in the South China Sea,” *Marine Biodiversity* 45 (2014): 157–168. doi:10.1007/s12526-014-0236-1.

8. Peter K. L. Ng, Abdul Gani Ilahude, N. Sivasothi, and C. J. Darren, “Expedition Anambas: An Overview of the Scientific Marine Exploration of the Anambas and Natuna Archipelago, 11–22 March 2002,” *Raffles Bulletin of Zoology*, suppl. 11 (2004): 1–17.

An example of the reporting covering the third cruise is given by von Hoesslin.⁹ Other reports are available, including the more comprehensive publication,¹⁰ “Proceedings of the Conference on the Results of the Philippines-Vietnam Joint Oceanographic and Marine Scientific Research Expedition in the South China Sea (JOMSRE-SCS I TO IV).”

DESTROYED AND DEGRADED CORAL REEF ECOSYSTEMS

In the mid-2015 newspaper essay referred to earlier, it was reported that at least 311 hectares of coral reefs in the Spratlys area had been compromised by ocean-filling activities by the People’s Republic of China (PRC). Sympathizers of that country were quick to raise the point that other countries had also destroyed reefs in the past, and one or another was continuing the process to the present day. In point of fact, besides the PRC, the Republic of China (or Taiwan), Malaysia, the Philippines, and Vietnam had done some “reclamation” in the past, and one or another may be continually doing so at present.

With the availability of satellite imagery to the general public, it is now possible to objectively measure the ocean filling or “terraforming”¹¹ around various islands and reefs in the South China Sea and elsewhere. It might be noted that the “minor players” of Taiwan, the Philippines, Malaysia, and Vietnam started with natural islands that have existed above water for millennia, whereas the PRC started with totally submerged reefs, with the possible exception of a few small, emergent rocks. Mora et al. recently published a summary paper available online discussing the dredging of islands and reefs in both the Paracels and the Spratlys that resulted in environmental damage including coral reef loss.¹²

A recent study by John McManus¹³ summarizes the extent of the man-made ocean filling in the South China Sea over several decades by five political entities, now totaling an area of 14.54 square kilometers, as shown in Table 9.1. Simple arithmetic will reveal that the four smaller countries have been responsible for only 5 percent of the total ocean-filling activities done historically, whereas the frenzied activities in the past two years by the largest country involved have been responsible for some 95 percent of the artificial land areas or artificial islands in the Spratlys and the Paracels.

As regards temporary degradation of coral reef ecosystems, this has two sources—namely, the dredging activities related to island building and the widespread extraction of giant clam shells for the ornamental trade (discussed in a subsequent section).

9. Karsten von Hoesslin, “A View of the South China Sea—From Within: Report on the Joint Oceanographic Marine Scientific Research Expedition (III) in the South China Sea,” *Culture Mandala: The Bulletin of the Centre for East-West Cultural and Economic Studies* 7, no. 1 (2005): art. 4, <http://epublications.bond.edu.au/cgi/viewcontent.cgi?article=1096&context=cm>.

10. A. C. Alcala, *Proceedings of the Conference on the Results of the Philippines-Vietnam Joint Oceanographic and Marine Scientific Research in the South China Sea (JOMSRE-SCS I to IV)* (Dumaguete City, Philippines, 2008), xvi.

11. Christina Larson, “China’s Island Building Is Destroying Reefs,” *Science* 349 (2015): 1434.

12. Camilo Mora, Iain R. Caldwell, Charles Birkeland, and John W. McManus, “Dredging in the Spratly Islands: Gaining Land but Losing Reefs,” *PLoS Biology* 14, no. 3 (2016): e1002422. doi:10.1371/journal.pbio.1002422.

13. John McManus, “Offshore Coral Reef Damage, Overfishing, and Paths to Peace in the South China Sea” (paper presented at the South China Sea: An International Law Perspective Conference, March 6, 2015, Brussels).

Table 9.1. Total Coral Reef Areas (in sq. km.) in the South China Sea Converted to Dry Land by All Countries, as of March 2016

Spratly Islands	
People's Republic of China	12.82
Philippines	0.06
Vietnam	0.26
Malaysia	0.35
Taiwan	0.04
Total, GSI	13.53
Paracel Islands	
People's Republic of China	1.00
Total, South China Sea	14.53

Source: The figures for the PRC are from the Asia Maritime Transparency Initiative while the rest are preliminary measurements from Google Earth by John McManus. GSI=Greater Spratly Islands, including Scarborough Shoal.

ENVIRONMENTAL COSTS

Does the permanent loss of 14.5 square kilometers of coral reef ecosystems matter? To get an appreciation for this, the reader is referred to the valuation of ecosystems and ecosystems services that first came to world attention in a landmark paper on natural capital by Robert Costanza et al.¹⁴ Since that time, economists have begun discussions on giving weight to natural capital and ecosystem services provided by nature, although these are not traded. United Nations agencies and funding institutions have since then begun to give values for these services, although not usually paid for. However, it is now common knowledge that ship groundings, particularly on coral reefs, have had to be paid for by the shipowners to the country concerned (see the Real-World Example in the Philippines in the next section).

Returning to the team that did the initial study published in *Nature*, one of the coauthors, Rudolf de Groot, continued the studies and updated the values arrived at, using additional case

14. Robert Costanza et al., "The Value of the World's Ecosystem Services and Natural Capital," *Nature* 387 (1997): 253–260.

studies.¹⁵ In the study, it turned out that the most valuable natural ecosystems, whether on land or in the sea, are the shallow water ecosystems, particularly the coral reefs. They tabulated the components of the ecosystem services provided by coral reefs and came out with the value of \$352,249 per hectare per year. If we take this figure and multiply the area filled in by the various countries, the total is a startling \$490 million, which can be rounded off to half a billion dollars a year.

What is remarkable is that the country responsible for 95 percent of that officially denies doing anything that is environmentally negative. Scientists are under pressure to toe the official stance and, hence, make statements that are difficult to understand and accept. One example will illustrate the issue. Researchers from the State Oceanic Administration (SOA) First Ocean Research Institute wrote an article in Mandarin posted on a SOA website that may be translated as “The Island and Reef Expansion Project in the Spratly Islands Has Not Impacted the Coral Reef Ecosystem.”¹⁶ They explain that consultations were done prior to the construction activities and the best construction methods were employed. Further, they observe that coral reef ecosystem recovery methods are available nationally and internationally, “proving that as long as one takes effective measures, coral reef communities can be restored.”

REAL-WORLD EXAMPLE: THE USS *GUARDIAN* ON TUBBATAHA REEF

That some countries show their appreciation for the value of coral reefs may be illustrated by the grounding of a U.S. Navy minesweeper, the USS *Guardian*, on a Philippine reef in the Sulu Sea on January 17, 2013.¹⁷ The ship destroyed a total of 2,345.67 square meters (less than one-quarter of a hectare) of coral reef. In compensation, the U.S. government paid the Philippine government a total of \$1.85 million.¹⁸ Using the previous reference values for the ecosystem services of a coral reef, the amount paid seems generous.

Presumably, the money will be used for the rehabilitation of the damaged areas, a process that is still possible because the ship was removed and the damaged reef was not covered with cement. Because the surrounding reef is healthy, it is anticipated that the damaged area will be able to recover after some years. The time will vary, depending on whether there will be

15. Rudolf de Groot et al., “Global Estimates of the Value of Ecosystems and Their Services in Monetary Units,” *Ecosystem Services* 1 (2012): 50–61.

16. Feng Aiping and Wang Yongzhi, “The Island and Reef Expansion Project in the Spratly Islands Has Not Impacted the Coral Reef Ecosystem,” June 10, 2015, http://www.soa.gov.cn/xw/dfdwdt/jgbm_155/201506/t20150610_38318.html.

17. “What Went Before: USS *Guardian* Running Aground Tubbataha Reefs,” *Philippine Daily Inquirer*, October 25, 2014, <http://globalnation.inquirer.net/113430/what-went-before-uss-guardian-running-aground-tubbataha-reefs#ixzz4DPOAf6Nz>.

18. T. J. Burgonio and D. Pazzibugan, “U.S. Agrees to Pay P87M for Damage to Tubbataha,” *Philippine Daily Inquirer*, October 25, 2014, <http://globalnation.inquirer.net/113420/us-agrees-to-pay-p87m-for-damage-to-tubbataha#ixzz4DPKj7iNr>.

any active intervention. The Philippines has relatively greater experience in coral reef rehabilitation techniques.¹⁹

THE FATE OF ENDANGERED SPECIES: THE TRUE GIANT CLAM IN THE SOUTH CHINA SEA

The International Union for Conservation of Nature (IUCN) issues a Red List of Threatened Species of different groups of animals and plants at differing intervals, in part depending on the work of committees in its Species Survival Commission.²⁰ Among the red-listed marine invertebrates are the stony corals (scleractinian corals) and the giant clams. Many species of scleractinian or stony corals have recently been listed, while the giant clams, bivalve mollusks formerly classified in the family Tridacnidae but now subsumed in the Cardiidae as a subfamily, the Tridacninae, have been listed for decades (Table 9.2). Of the dozen extant species of giant clams, the “true giant clam” or *Tridacna gigas*, as it is known scientifically, is the largest shelled mollusk in the world, the shell length reaching a maximum of about four feet. As seen in Table 9.2, the true giant clam is listed as “vulnerable.”

The group as a whole has a limited distribution, being found only in the Indo-Pacific, concentrated in the coral triangle area including the South China Sea.²¹ Unfortunately, these iconic shelled mollusks have become the target of Chinese fishermen, whose extractive activities have contributed greatly to the degradation of the coral reef areas. Organized gatherers from Hainan, China, centered in the town of Tanmen, have been contributing in no small measure to the destruction of shallow coral reefs. The extractive methods used by Hainanese gatherers effectively degrade reefs,²² as addressed in the previous section. The adverse effects of dredging and other sediment disturbances on coral reefs is addressed by Erftemeijer et al.²³ While it might be argued that the extraction of giant clam shells and the extraction of materials for aggregates related to the construction activities for the artificial island building may be considered temporary in terms of decades, the creation of airstrips on reefs is a permanent loss.

What is alarming from another perspective besides the habitat degradation is the depletion, if not outright extirpation, of all species of living giant clam from the whole of the South China Sea. While most of the shells extracted or dug up have long been dead, any living, giant clam has probably been

19. A. J. Edwards, ed., *Reef Rehabilitation Manual* (St. Lucia, Australia: Coral Reef Targeted Research and Capacity Building for Management Program, 2010), ii.

20. IUCN 2016, *The IUCN Red List of Threatened Species. Version 2016-1*, downloaded on July 4, 2016, www.iucnredlist.org.

21. A. S. bin Othman, G. H. Goh, and P. A. Todd, “The Distribution and Status of Giant Clams (Family Tridacnidae): A Short Review,” *Raffles Bulletin of Zoology* 58, no. 1 (2010): 103–111. Based on J. Rosewater, “The Family Tridacnidae in the Indo-Pacific,” *Indo-Pacific Mollusca* 1 (1965): 347–394.

22. Christina Larson, “Shell Trade Pushes Giant Clams to the Brink,” *Science* 351 (2016): 323–324; Farah Master, “South China Sea Reefs ‘Decimated’ as Giant Clams Harvested in Bulk,” Reuters, June 27, 2016, <http://www.reuters.com/article/us-china-clams-idUSKCN0ZD30F>. See also John McManus’s contribution in Chapter 10 of this report.

23. Paul L. A. Erftemeijer, Bernhard Riegl, Bert W. Hoeksema, and Peter A. Todd, “Environmental Impacts of Dredging and Other Sediment Disturbances on Corals: A Review,” *Marine Pollution Bulletin* 64 (2012): 1737–1765.

Table 9.2. Giant Clams and Scleractinian Corals in the West Philippine Sea (SCS) and Their Vulnerability Classified by the IUCN and CITES of Wild Fauna and Flora

Phylum	Scientific Name	Common Name	IUCN Red List Criteria*	CITES Criteria**
Mollusca	<i>Tridacna gigas</i>	True giant clam	Vulnerable	All Tridacnidae species are included in Appendix II of the Convention on International Trade in Endangered Species (CITES) of Wild Fauna and Flora valid from March 10, 2016
	<i>Tridacna derasa</i>	Southern giant clam	Vulnerable	
	<i>Tridacna crocea</i>	Saffron-colored clam	Low risk/least concern	
	<i>Tridacna maxima</i>	Small giant clam	Low risk/ least concern	
	<i>Tridacna squamosa</i>	Fluted giant clam	Low risk/ conservation dependent	
	<i>Hippopus hippopus</i>	Horse's hoof clam	Low risk/ conservation dependent	
	<i>Hippopus porcellanus</i>	China clam	Low risk/ conservation dependent	
	<i>Tridacna noae</i>	Not applicable	Unassessed and not included in the catalog of life	
Cnidaria	Scleractinian corals (many species listed)	Stony corals	Species specific criteria depending on vulnerability	All scleractinian corals are included in CITES (2016) Appendix II

Sources: *The IUCN Red List of Threatened Species. Version 2016-1*, accessed July 4, 2016, www.iucnredlist.org; *CITES of Wild Fauna and Flora*, appendixes I, II, and III, accessed July 4, 2016, <https://www.cites.org/eng/app/index.php>.

* IUCN=International Union for Conservation of Nature

** CITES=Convention on International Trade in Endangered Species

harvested in the Greater Spratly Islands area, including Scarborough Shoal. The ecological or conservation issue is that the extractive activities have contributed to the further reduction of numbers of the vulnerable true giant clam, effectively reducing its geographical range from the westernmost portion of the Pacific Ocean. The South China Sea should represent the western section of the species distribution. Because of this environmental degradation, this area is now devoid of all living

true giant clams outside of the metropolitan area of the Philippines, thus reducing its distribution range perhaps by as much as 20 percent. With low recruitment rates, the true giant clam may be further downgraded from “vulnerable” to “endangered” in the Red Listing of species of the IUCN.

This new trend is the opposite of the efforts of the Philippines to restock the true giant clam throughout its internal waters and exclusive economic zone (EEZ). As may be seen from the efforts of the Marine Science Institute at the University of the Philippines, great strides have been taken to restock reefs throughout the internal waters of the Philippines and beyond.²⁴ Giant clams were restocked at Scarborough Shoal and at Thitu Island.²⁵ Recent reports indicate that all restocked giant clams in the West Philippine Sea have now been poached or have otherwise disappeared. By contrast, many marine protected areas and dive resorts in the metropolitan Philippines now boast of cohorts of healthy, true giant clams.

CIRCULATION AND CONNECTIVITY OF THE SOUTH CHINA SEA

The South China Sea is closely linked to the Pacific Ocean in the north through the Bashi Channel between the Philippines and Taiwan and by the Formosa Straits between mainland Asia and Taiwan. The general circulation is described in Wyrski.²⁶ It is not in the scope of this chapter to describe the physical oceanography in detail but only to highlight the connectivity concerns. In the east, two narrow channels through the Philippine archipelago eventually link it to the Pacific, while to the south, the narrow channels between Indonesia, Malaysia, and Singapore link it to the Indian Ocean. As a semi-enclosed marginal sea, it has peculiar circulation patterns, which are very important for pelagic organisms as well as plankton, including larval stages of many organisms.

Some of the biophysical and genetic connectivities were elucidated in relation to biodiversity conservation by Marie Antonette Juinio-Menez, a Philippine scientist.²⁷ Indeed, studies of genetic linkages of two marine invertebrates, a sea star and the boring giant clam, had been done a decade earlier.²⁸ A paper dealing with a widespread rabbit fish in the Philippines also shows some of the linkages over geological time between the adjacent bodies of water.²⁹

24. Gomez and Mingoa-Licuanan, “Achievements and Lessons Learned in Restocking Giant Clams in the Philippines.”

25. E. D. Gomez, “The Return of the Giant Clam,” in *The Kalayaan Islands: Our Natural Heritage*, ed. P. M. Alino and M.C.C. Quibilan (Quezon City: Marine Science Institute and the Department of Environment and Natural Resources, 2003), 59.

26. Klaus Wyrski, *Physical Oceanography of Southeast Asian Waters: NAGA Report Vol. 2* (La Jolla, CA: University of California Scripps Institution of Oceanography, 1961), 195.

27. Marie Antonette Juinio-Menez, “Biophysical and Genetic Connectivity Considerations in Marine Biodiversity Conservation and Management in the South China Sea,” *Journal of International Wildlife Law and Policy* 18 (2015): 110–119.

28. M. A. Juinio-Menez, R. M. Magsino, R. Ravago-Gotanco, and E. T. Yu, “Genetic Structure of *Linckia laevigata* and *Tridacna crocea* Populations in the Palawan Shelf and Shoal Reefs,” *Marine Biology* 142 (2003): 717–726.

29. R. G. Ravago-Gotanco and M. A. Juinio-Menez, “Phylogeography of the Mottled Spinefoot *Siganus fuscescens*: Pleistocene Divergence and Limited Genetic Connectivity across the Philippine Archipelago,” *Molecular Ecology* 19 (2010): 4520–4534.

The significance of the South China Sea to the Coral Triangle as a source of larvae or propagules was modeled by Kool et al.³⁰ The study also showed other dispersal potentials. The study concludes: “Based on present-day ocean currents, coral reefs in the South China Sea, northern Papua New Guinea and the Solomon Islands are contributing to high levels of diversity in the Coral Triangle.” A more recent and focused study³¹ deals with populations of the widespread branching coral *Acropora millepora*, demonstrating the significance of the Spratlys as the source of larvae for reefs within the South China Sea and beyond.

FISHERIES CONSIDERATIONS

Related to the increasing dominance or control of the South China Sea by China is the eastward advance of its fishing fleets. These moves are being monitored by various entities. As an example, the Center for International Maritime Security (CIMSEC) has a website that tracked the role of Tanmen fishers in the takeover of the Scarborough Shoal by China over the past few years.³²

A contemporary study by doctoral student Rollan Geronimo of night-time fishing lights from the Suomi National Polar-orbiting Partnership Satellite reveals the eastward advance of fishing fleets within the South China Sea.³³ Of significant note is the cluster to the northeast in the 2015 map. In previous years, there were no lights detected at night near the Babuyan Islands of northern Philippines. The most recent image shows a considerable number of fishing vessels that have now encroached well into Philippine waters.

Some of these fishing vessels apparently seek protection and safe harbor in reef features that have been occupied recently by the PRC, such as Mischief Reef. The more recent island-building activities greatly contribute to this expansion. Other, smaller countries bordering the South China Sea fear that their fishing fleets will be prevented from continuing their traditional fishing activities, particularly with the intrusion of more Chinese fishing boats into their EEZs, if not their territorial waters, as exemplified by the clashes at Scarborough Shoal and between Indonesia and China.³⁴

30. Jonathan T. Kool, Claire B. Paris, Paul H. Barber, and Robert K. Cowen, “Connectivity and the Development of Population Genetic Structure in Indo-West Pacific Coral Reef Communities,” *Global Ecology and Biogeography* 20 (2011): 695–706.

31. Jeffrey G. Dorman, Frederic S. Castruccio, Enrique N. Curchitser, Joan A. Kleypas, and Thomas M. Powell, “Modeled Connectivity of *Acropora millepora* Populations from Reefs of the Spratly Islands and the Greater South China Sea,” *Coral Reefs* 35 (2016): 169–179.

32. Connor M. Kennedy and Andrew Erickson, “Center for International Maritime Security Model Maritime Militia: Tanmen’s Leading Role in the April 2012 Scarborough Shoal Incident (CIMSEC 2016),” April 21, 2016, <http://cimsec.org/model-maritime-militia-tanmens-leading-role-april-2012-scarborough-shoal-incident/24573>.

33. R. C. Geronimo, “Fishing Hotspots and Suitable Habitats of Small Pelagic Fishes in the Southeast Asia” (PhD dissertation, University of Hawaii at Manoa, 2016), ch. 1.

34. Pia Lee Brago and Cesar Ramirez, “China Flexes Muscle in Disputed Waters,” *Philippine Star*, updated March 22, 2016, <http://www.philstar.com/headlines/2016/03/22/1565425/china-flexes-muscle-disputed-waters>.

DISCUSSION

From a Philippine perspective, the import of this chapter may be interpreted as a small contribution toward forming world opinion on the issues at stake. A quotation from an autobiography of the former national security adviser of the Philippines, Jose T. Almonte, may be apropos:

China will continue its aggression in the South China Sea. In the end, our weapon against China is world opinion. Even China cannot defy this—they, too, want to be regarded in high esteem in the global arena—and world opinion will incline to the nation that deserves the respect of the world community. It behooves us to work together to earn the world's respect. After all, if we do not fight for what is right, what is our worth as a people?³⁵

As mentioned previously, China has denied that its terraforming activities have caused environmental damage, although more than one spokesperson of the government has repeatedly made innocent pronouncements.

As an example, the following are comments from a fellow professor:

By what stretch of imagination can one say that there is no impact on a reef that has been covered with aggregates and topped over with cement, while the surrounding areas are subjected to stepped-up fishing practices by fleets that did not used to venture so far from their mainland ports? If this pattern continues, then the remaining viable marine ecosystems in the future can only lie farther south and east, well within the internal waters of other Southeast Asian states. Incursions pushed deep into these other inter-island waters have serious implication, not just on the environmental front.

When nonexperts are engaged to make “official” statements in areas where they are not experienced, they are apt to make generalizations and platitudes that make no sense. In the example given earlier (see the Real-World Example), the assertion that coral ecosystems can be rehabilitated, while true in the abstract, does not apply to the 14 square kilometers of buried reefs. Corals do not grow on airstrips and any other above-water features.

Much research has been done in recent years about the rehabilitation of coral reefs. Two significant research programs were undertaken by the Global Environment Facility of the World Bank and by Framework 6 of the European Union in the past decade. I was heavily involved in both of these programs, and so I am not a neophyte in coral reef rehabilitation. Much of the work was reported in two publications,³⁶ plus many journal articles.

35. Jose T. Almonte, *Endless Journey: A Memoir* (Quezon City: Cleverheads Publishing, 2015), v, and ch. 28, “Lost Lighthouses,” 302–308.

36. A. J. Edwards and E. D. Gomez, *Reef Restoration: Concepts and Guidelines: Making Sensible Management Choices in the Face of Uncertainty* (St. Lucia, Australia: Coral Reef Targeted Research and Capacity Building for Management Programme, 2007), iv; Edwards, *Reef Rehabilitation Manual*, ii.

A more recent editorial further elaborates the challenges about the claims in the South China Sea.³⁷ It is a short account about the present challenges in what the author, Brian Morton, refers to as “China’s pond,” allegedly. He brings up the issue of the unsupported claims about the South China Sea, something that other authors, notably Philip Bowring,³⁸ have written about. The statement is to the effect that “far from China having historical sovereignty over the South China Sea,” it was “seafaring merchants from . . . elsewhere—the Austronesians—[who] ruled these seas and that the South China Sea is, in reality, international waters.”

For those interested in looking into the background of the ancient seafarers of Southeast Asia and beyond, referred to as the Nusantara by some, a book by Wilhelm Solheim on archaeology will give an idea of the areas traversed by these people over thousands of years.³⁹ The connectivities, while focusing on Southeast Asia, extend to Korea and Japan to the north and eastward into Polynesia. No doubt other research over time will unravel more pertinent facts that will elucidate further the international nature of the contested South China Sea.

37. Brian Morton, “China’s Pond: South China Sea. There’s Going to Be Tears!,” *Marine Pollution Bulletin* 106 (2016): 1–3.

38. Philip Bowring, “China’s South China Sea Claims Are Not Supported by Its Own Historical Records,” *South China Morning Post*, last updated May 20, 2016, <http://www.scmp.com/comment/insight-opinion/article/1812054/chinas-south-china-sea-claims-are-not-supported-its-own>.

39. Wilhelm G. Solheim II, *Archaeology and Culture in Southeast Asia: Unraveling the Nusantara* (Quezon City: University of the Philippines Press, 2006), xvi.

Offshore Coral Reefs and High-Tide Features of the South China Sea: Origins, Resources, Recent Damage, and Potential Peace Parks

John W. McManus

INTRODUCTION

International tensions over disputed coral reef areas of the South China Sea (SCS) have been increasing rapidly within the last decade. Most of the media attention has focused on the aspects of political one-upmanship, military strategy, threats to the globally vital shipping routes through the area, and the apparently mistaken predictions of vast oil and gas reserves among the reefs.¹ For most of the approximately 270 million people along the coastline of this semi-enclosed sea,² the major issue is fisheries. Coral reefs are highly integrated ecological, hydrological, and geological systems that serve as machines to produce some of the highest known concentrations of fish biomass. As discussed here, the tug-of-war over fisheries in general, and control of the highly productive fishing grounds of the coral reefs in particular, have been largely responsible for a serious decline in the productivity of these resources and the increasing likelihood of major stock collapses.

1. U.S. Energy Administration Agency, "Contested Areas of South China Sea Likely Have Few Conventional Oil and Gas Resources," April 3, 2013, <http://www.eia.gov/todayinenergy/detail.cfm?id=10651#>.

2. Transboundary Water Assessment Programme (TWAP), "LME 35—Gulf of Thailand," 2015, http://onesharedocean.org/public_store/lmes_factsheets/factsheet_35_Gulf_ofThailand.pdf; TWAP, "LME 36—South China Sea," 2015, http://onesharedocean.org/public_store/lmes_factsheets/factsheet_36_South_China_Sea.pdf; L. Talaue-McManus and M. Estevanez, "Socio-economics: Examining Socio-economic Dimensions of Risk and Vulnerability among Coastal Inhabitants of Large Marine Ecosystems," in *Large Marine Ecosystems: Status and Trends* (Nairobi: UN Environment Programme, 2016), 21–61.

To better understand some aspects of the dispute and disagreements over what exactly the present threats are, it is important to understand some basic principles about the coral reefs of the South China Sea, their associated low- and high-tide features, their fisheries, and the relationships of their fish to those of the open sea. This chapter provides a background on these and related topics, based on current but evolving knowledge, and expands on earlier calls for joint resource management and the establishment of peace parks within the South China Sea.

HOW DID THE CORAL REEFS OF THE SOUTH CHINA SEA FORM?

The geomorphology of modern coral reefs generally reflects ecological processes occurring within a framework of hydrodynamics and sedimentation, as well as the influence of underlying, ancient reefs on which the modern ones have often grown.

Although the current rise of sea level is occurring at rates unprecedented for many thousands of years, sea level has varied considerably over terms of hundreds of thousands to millions of years. Major drops in sea level have happened during periods of widespread glaciation. Sea level approached approximately its present height roughly 6,000 to 7,000 years ago, after a downward dip to roughly 100 meters, which ended some 120,000 to 130,000 years ago. Coral reefs deposit layers of limestone as they grow. During low stands of sea level, this limestone was subjected to erosion from freshwater and acidic soils—often leaving rims, basins, and stream channels. As the sea level began to rise again, some coral reefs initially grew and fell behind, becoming dead reefs with no shallow water life surviving. Closer to modern sea levels, some reefs grew on ancient (antecedent) ones, either keeping up, catching up, or staying at some depth where coral reefs could survive but not reach the surface.³

Most ring-shaped coral reef atolls began as fringing reefs surrounding mountains—often volcanoes. A combination of subsidence and sea level rise left them far below the surface. As this happened, each fringing reef continued to grow upward, especially along its outer edge, forming barrier reefs with lagoons surrounding the mountain, such as can be seen today at Bora Bora in French Polynesia. If the mountain kept sinking and/or sea level kept rising, it may have eventually disappeared under the sediments accumulating within the lagoon, leaving a ring- or oval-shaped atoll. The process generally stopped and started multiple times as the local, relative sea level rose and fell.⁴

Within the Spratly and Paracel Islands (Figure 10.1), one can see both classic atolls, such as Mischief Reef, and subsurface atolls. The structure known as the Union Banks is an example of a large, elongate atoll, most of which did not keep up with local sea level. Portions that did keep up, including Johnson South Reef, have formed smaller atolls and partial atolls (sometimes called

3. A. C. Neumann and I. G. MacIntyre, "Reef Response to Sea Level Rise: Keep Up, Catch Up, Give Up," in *Proceedings of Fifth International Coral Reef Symposium* (Tahiti, 1985), 3:105–110.

4. P. Blanchon et al., "Postglacial Fringing-Reef to Barrier-Reef Conversion on Tahiti Links Darwin's Reef Types," *Scientific Reports* 4, no. 4997 (2014).

Figure 10.1. Map of the South China Sea



Source: Created by author.

Note: Offshore reefs are shown as circles (only wave-breaking reefs are shown).

“platform” or “table” reefs if they lack a distinct bowl-shaped lagoon). The deeper portions of the very large Union Banks atoll are generally 10 to 20 meters below the surface and show distinct ridges and valleys, called “spurs” and “grooves”—a clear sign of vitality.⁵

Similar patterns, like necklaces with widely spaced décor, are common in the area, including the Tizard Banks underlying Itu Aba (Taiping) Island, Loaita Bank underlying Menzies Reef, Thitu Reefs underlying Thitu (Pagasa) Island and its surrounding reef, and North Danger Reef underlying Northeast Cay and Southwest Cay with Philippine and Vietnamese bases respectively. The Fiery Cross Reef, now almost completely covered with a large artificial island, is actually one of three wave-breaking reefs rising from a mostly subsurface reef also sometimes referred to as Fiery Cross Reef.

Satellite images generally do not show details much below the depth of 20 meters, even in clear seawater. Shallow-water reef building corals in clear seawater can proliferate at depths exceeding 50 meters.⁶ From bottom sampling and sonar measurements on numerous expeditions, it is known that large areas of the many banks in the South China Sea are covered with coral reefs. This includes the Macclesfield Bank near the Paracels, the Reed Bank east of the Spratlys, the Rifleman Bank amid the western Spratlys, and many others. Additionally, there is evidence that large areas of the shelves along southern China, Vietnam, Palawan, Borneo, and elsewhere are covered in coral reef ecosystems or low banks of similarly calcareous ecosystems dominated by calcareous algae.⁷

The species associated with coral reefs or similar ecosystems vary somewhat by depth. Species associated with wave-protected reef flats and lagoons are often only found among the reefs that break the surface. Along the slopes and subsurface reef structures within the upper 20 meters of depth are many species not found at, say, 30 meters, where the number of species drops off considerably. Many species of fish and invertebrates found on these deeper reefs are unique to those depths.⁸ Thus, a loss of living reef area in a given depth range may be much more important than it would seem, considering the total extent of coral reefs and similar ecosystems in the region. While surface-breaking reefs are being subjected to the most damage by a wide range of threats, the poorly charted subsurface reefs are often impacted by trawling, which is done increasingly close to reefs as desperation to find dwindling fish supplies increases—to the detriment of both the reefs and the gear.

5. Observations based on Google Earth imagery and depth markings on numerous charts.

6. P. Esmaquel, “Filipinos Conquer New Territory: Benham Rise,” *Rappler.com*, May 31, 2014, <http://www.rappler.com/nation/59316-filipinos-conquer-new-territory-benham-rise>.

7. J. W. McManus, “Coral Reefs of the ASEAN Region: Status and Management,” *Ambio* 17, no. 3 (1988): 189–193; J. W. McManus, “Tropical Marine Fisheries and the Future of Coral Reefs: A Brief Review with Emphasis on Southeast Asia,” *Coral Reefs* 16 (1997): S121–S127 (especially fig. 3).

8. J. C. Sy, F. S. Herrera, and J. W. McManus, “Coral Community Structure of a Fringing Reef at Mactan Island, Cebu, Philippines,” in *Proceedings of the Fourth International Coral Reef Symposium* (Manila, 1981), 2:263–269.

CORAL REEFS AND ZONATION WITHIN THE SOUTH CHINA SEA

As one approaches a wave-breaking atoll from the outside, one first sees wave-adapted species on the upper portions of the outer reef slope (Figure 10.2). Moving down the reef slope below about 10 meters, one sees myriad species (fish, hard corals, soft corals, gorgonians, sea fans, mobile macroinvertebrates, etc.) that are less wave-adapted. These species will also be found on the subsurface reef areas described previously. From one or more meters below the sea surface to several meters downward, one generally finds stripe-like spurs and grooves—the spurs being downward-sloping ridges that alternate with grooves filled with sand and gravel slowly flowing downward. Near the surface again, one crosses the reef crest, which is often a pockmarked pavement made of microscopic layers of crustose coralline algae alternating with depressions filled with wave-resistant hard corals and various other encrusting species. Behind the crest is often a thin back-reef zone with corals that may or may not be distinct from the next zone, the reef flat.⁹ While reef flats in many parts of the world are dominated by sand or seagrass with sparse patches of coral, those in the Spratlys are, at least in the few well-known cases, densely covered in small branching and platy corals with scattered boulder-like “massive corals”¹⁰ (Figure 10.3). The latter term refers to the shape, not the size, though some massive corals can be many meters across. In the shallow, nearly intertidal waters of the back-reef and reef flat, these boulders are often truncated at the top just below low-tide levels. These usually have a slightly raised ridge of living coral surrounding a large dead “bald” spot with algae or sediment, thus constituting what is known as a “micro-atoll.”¹¹

The reef flat may extend across the reef to the other side. Whereas reef-generated “coral” cays and islands in the central Pacific are often found along the outer edges of atolls, those in the South China Sea are often (with some exceptions) somewhat central within a continuous reef flat.¹² Sharper slopes are characteristic of bowl-shaped lagoons of depths generally 2 to 10 meters at mid-tide or deeper. While most of a lagoon bottom is covered with sand and coral gravel, patches of living corals and their associates are scattered about (see Figure 10.2a). These serve as “oases” housing both diurnally and nocturnally active fish and mobile invertebrate grazers and predators that trade places within the coral patches at dawn and dusk.¹³ The soft sediments

9. J. W. McManus, “Coral Reefs,” in *Encyclopedia of Ocean Sciences*, ed. J. H. Steele, S. A. Thorpe, and K. K. Turekian (London: Academic Press, 2001), 524–534.

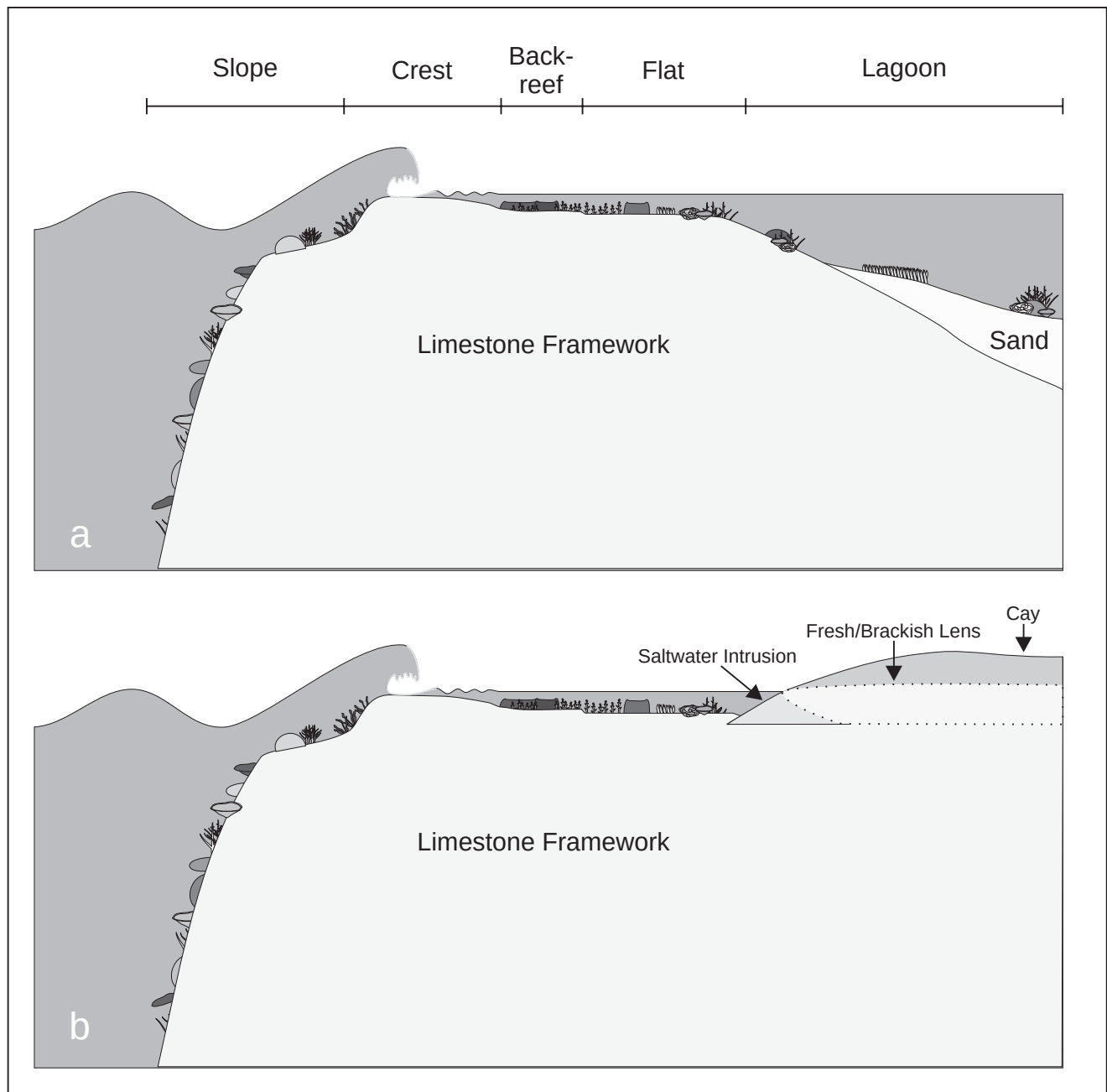
10. Author’s observations at Thitu Island, Teishi Island, and the unnamed checkmark-shaped reef between them, February 2016; Q.-S. Meng et al., “Characteristics of Rocky Basin Structure of Yongshu Reef in the Southern South China Sea,” accessed December 13, 2016, <http://www.tandfonline.com/doi/abs/10.1080/1064119X.2013.764553>; M. X. Zhao et al., “Coral Communities of the Remote Atoll Reefs in the Nansha Islands, Southern South China Sea,” *Environmental Monitoring and Assessment* 185 (2013): 7381–7392.

11. McManus, “Coral Reefs,” 2001.

12. Apparent from Google Earth imagery.

13. I. Nagelkerken et al., “Day-Night Shifts of Fishes between Shallow-Water Biotopes of a Caribbean Bay, with Emphasis on the Nocturnal Feeding of Haemulidae and Lutjanidae,” *Marine Ecology Progress Series* 194 (2000): 55–64; and author’s observations at Bolinao, Philippines.

Figure 10.2. Idealized Reef Profiles



Source: Created by author.

Note: (a) Zonation on a reef with a lagoon; (b) zonation with a vegetated cay naturally built on the reef flat.

The reef flat has grown upward since the initiation of the cay, which shows seawater intrusion and a brackish or freshwater lens.

tend to be filled with invertebrates such as sea stars, sea urchins, sea cucumbers, crabs, octopuses, bivalves, gastropods, crustaceans, and myriad types of worms—most serving as food for fish, when they can be captured. The sands and gravel beds throughout the reef host dense assemblages of demersal plankton that rise up into the water and retreat downward into the

Figure 10.3. Small Massive-Shaped *Porites* Coral Head amid Fast-Growing Branching *Montipora* Corals on the Northeastern Outer Reef Flat of Thitu Island



Source: Photo by author.

sediments at various times of day—also essential sources of food for larger species.¹⁴ Both reef flats and lagoons often support beds of seaweeds and several species of seagrass along with their characteristic flora and fauna. Calcareous parts of certain seaweeds, along with the shell-covered, single-celled forams (Foraminifera) that grow on or among them, join broken corals and shells as major components of the sand and gravel, some of which either build cays or end up cemented together to form the reef structure itself. This cementing process is poorly understood, but may include both spontaneous cementation associated with local dissolution and accretion as well as potentially some assistive microbial activity and adhesion via encrusting algae.¹⁵

14. J. W. Porter and K. G. Porter, "Quantitative Sampling of Plankton Migrating from Different Coral Reef Substrates," *Limnology and Oceanography* 22, no. 3 (1977): 333–336.

15. C. T. Perry and L. J. Hepburn, "Syn-depositional Alteration of Coral Reef Framework through Bioerosion, Encrustation, and Cementation: Taphonomic Signatures of Reef Accretion and Reef Depositional Events," *Earth-Science Reviews* 86 (2008): 106–144.

The hydrodynamics of the reef is crucial to both reef accretion and ecosystem survival. Waves striking a reef crest tend to break forward, with wave energy driving water currents behind the crest. The resulting currents circulate across the reef flat, into and out of the lagoon, and pass back out to sea through channels in the reef crest and down through the spur-and-groove structures of the outer reef slopes. Even amid fairly heavy wave action outside an atoll, there is surprisingly little wave action over the reef flat and lagoon. It has been shown that the reef structure can reduce wave energy by 97 percent, with 86 percent accounted for by the small, tough bump of a ridge that is the reef crest¹⁶—generally less than a meter high.¹⁷ This capacity to defend the shallow portions of the reef from wave action may change radically in cases where the reef crest does not keep up with sea level, whereupon the reef itself may break down in succeeding cyclones.¹⁸ The chances of this happening increase dramatically in cases of widespread damage to the reefs by human activities.

HOW DID THE NATURAL AND NEW ARTIFICIAL ISLANDS ON THESE REEFS FORM?

Until at least mid-2016, it had sometimes been claimed that the process of building artificial islands used by the People's Republic of China (PRC) in the Spratlys not only did no ecological harm, but it "simulated" the natural process of island growth on coral reefs.¹⁹ This may have been a prelude to claiming that these islands fit the criteria of natural islands and rocks under UNCLOS, as opposed to the category of "artificial island" in the same document. The relevant statement in UNCLOS is:

Article 121 Regime of Islands

1. An island is a naturally formed area of land, surrounded by water, which is above water at high tide.
2. Except as provided for in paragraph 3, the territorial sea, the contiguous zone, the exclusive economic zone and the continental shelf of an island are determined in accordance with the provisions of this Convention applicable to other land territory.
3. Rocks which cannot sustain human habitation or economic life of their own shall have no exclusive economic zone or continental shelf.²⁰

16. F. Ferrario et al., "The Effectiveness of Coral Reefs for Coastal Hazard Risk Reduction and Adaptation," *Nature Communications* 5, no. 3794 (2013), <http://www.nature.com/ncomms/2014/140513/ncomms4794/abs/ncomms4794.html>.

17. H. J. Wiens, *Atoll Environment and Ecology* (New Haven, CT: Yale University Press, 1962), 57–58.

18. R. R. Graus and I. G. MacIntyre, "Global Warming and the Future of Caribbean Coral Reefs," *Carbonates and Evaporites* 13, no. 1 (1998): 43–47.

19. S. Tiezzi, "South China Sea Ruling: China Caused 'Irreparable Harm' to Environment," *Diplomat*, July 15, 2016, <http://thediplomat.com/2016/07/south-china-sea-ruling-china-caused-irreparable-harm-to-environment/>.

20. United Nations Convention on the Law of the Sea (UNCLOS), Montego Bay, December 10, 1982, 66.

An artificial island may be surrounded with a “safety zone” generally not to exceed 500 meters except “as authorized by generally accepted international standards or as recommended by the competent international organization.”²¹ It differs from naturally formed rocks and islands in that:

8. Artificial islands, installations and structures do not possess the status of islands. They have no territorial sea of their own, and their presence does not affect the delimitation of the territorial sea, the exclusive economic zone or the continental shelf.²²

As of the release on July 12, 2016 of the findings of the Permanent Court of Arbitration in the case of the Philippines v. China, it has become clear that it is highly unlikely that any feature modified deliberately to appear to be a natural rock or fully qualified island (one worthy of an exclusive economic zone) would ever be accepted as such in an arbitration case.²³ However, this does not prevent a nation from trying to convince its citizens otherwise.

It is important to understand how natural structures above high tide among the offshore atolls of the South China Sea are likely to have formed. There are three kinds of such features: large boulders, sand cays and rubble cays, and vegetated islands. Rubble, which includes broken coral and shells in unconsolidated or partly consolidated forms, is sometimes known as “shingle.” Cays constructed of this material are sometimes known as “motus.”²⁴ In this chapter, the term “island” (generally a large cay) is used in the common sense of a vegetated piece of land surrounded by water, whether it is to be considered a rock or fully qualified island under UNCLOS. While islands associated with coral reefs in some parts of the world are often remnants of earlier mountains around which the coral reefs have grown, such as in the cases of Tahiti and Bora Bora, all of the islands on offshore atolls in the South China Sea are believed to be made primarily of calcareous sand and gravel generated by the reef itself and are termed “coral islands.”²⁵ References in the current “Sailing Directions” to the presence of dark brown volcanic materials on Johnson South Reef are worthy of further investigation. They may be erroneous, possibly due to confusion with dark-colored rubble from the widely abundant blue coral (which sometimes has a weathered, brownish hue), with portions of highly weathered coral boulders covered in brownish encrusting algae or with various forms of beach rock.

The boulders that occasionally extend above high tide are actually large ancient coral heads and/or parts of reef substrate. Only one such boulder extends above high tide at Fiery Cross Reef. This boulder, a large coral head (probably genus *Porites*), is believed to have been pulled up alive from the reef slope by a storm or tsunami in the 1400s.²⁶ Studies of other displaced boulders and

21. Ibid., Art. 60(5), 45.

22. Ibid., Art. 60(8), 45.

23. In the Matter of the South China Sea Arbitration (Phil.-China), PCA Case No. 2013-19, July 12, 2016, <https://pca-cpa.org/wp-content/uploads/sites/175/2016/07/PH-CN-20160712-Award.pdf> (hereafter Arbitration Award).

24. H. Yamano, H. Kayanne, and M. Chikamori, “An Overview of the Nature and Dynamics of Reef Islands,” *Global Environmental Research* 9, no. 1 (2005): 9–20.

25. P. S. Kench et al., “Coral Islands Defy Sea-level Rise over the Past Century: Records from a Central Pacific Atoll,” *Geology* 43, no. 6 (2015): 515–518.

26. K.-F. Yu et al., “Storm Cycles in the Last Millennium Recorded in Yongshu Reef, Southern South China Sea,” *Palaeogeography, Palaeoclimatology, Palaeoecology* 210 (2004): 89–100; K.-F. Yu, J.-X. Zhao, Q. Shi, and Q.-S. Meng,

chunks of reef substrate at that reef (now possibly buried within the artificial island), along with sediment analyses, indicated that they were moved during large storms or tsunamis from the eleventh to the nineteenth centuries A.D. at intervals ranging from 110 to 240 years.²⁷ Boulders from 17 other reefs ranged in age from roughly 1,800 to 300 years since displacement, which would have been in the second to eighteenth centuries.²⁸ However, only a small percentage of existing displaced boulders are reported to extend above high tide.

Sand cays and rubble cays on coral reefs have been found to be formed in a variety of ways in the existing studies from around the world. Many have been formed thousands of years ago. Although sea level reached roughly its current height approximately 7,000 to 6,000 years ago, in some areas the level relative to local land masses reached a high point followed by a decline, whereupon some modern coral cays and islands appear to have been initiated. This occurred at different times in different regions, such as 2,000 years ago in the Marshall Islands and 1,250 years ago in the Tuamotu Archipelago. This decline in sea level seems to have provided a gradually deepening condition on reef flats that favored cay development. In other regions, island development is believed to have begun without this process.²⁹ Many existing cays and coral islands have been shown to be subjected to processes of erosion and growth, the latter via constant additions of calcareous sand from broken corals, bits of calcareous algae, or barely visible forams.³⁰

Forams are small one-celled organisms, similar to amoebas but which form a calcium carbonate shell.³¹ They are particularly common on reef crests and reef flats, often growing on algae or seagrass.³² Several studies have demonstrated that they can play a key role in maintaining some coral cays and islands.³³

Beach rock refers to various combinations of sand and gravel that have been cemented together, often over hundreds to thousands of years, via processes that are still under investigation. Some beach rock forms within the sand just below sea level and may ultimately be exposed as dark plate-like slabs tilting slightly toward the water edge. In either this position, or once mixed within

"Reconstruction of Storm/Tsunami Records over the Last 4000 Years Using Transported Coral Blocks and Lagoon Sediments in the Southern South China Sea," *Quaternary International* 195 (2009): 128–137.

27. Yu et al., "Storm Cycles in the Last Millennium"; Yu, Zhao, Shi, and Meng, "Reconstruction of Storm/Tsunami Records."

28. Yu et al., "Storm Cycles in the Last Millennium."

29. Yamano et al., "Overview of the Nature and Dynamics of Reef Islands."

30. K. Takahashi et al., "The Topographic Change Mechanism of Coral Cays," *Coastal Engineering Proceedings* 34 (2014), <http://dx.doi.org/10.9753/icce.v34.sediment.86>.

31. D. J. Patterson, "Amoebae: Protists Which Move and Feed Using Pseudopodia," Tree of Life Project, 2000, http://tolweb.org/accessory/Amoebae?acc_id=51.

32. C. Glenn et al., "Distributions of Living Foraminifers on a Portion of Apo Reef, Mindoro, Philippines," in *Proceedings of the Fourth International Coral Reef Symposium* (Manila, 1981), 2: 775–780; K. P. Severin, "Spatial and Temporal Variation of *Marginopora vertebralis* on Seagrass in Papua New Guinea during a Six Week Period," *Micropaleontology* 33, no. 4 (1987): 368–377.

33. T. Hosono, P. Lopati, F. Makolo, and H. Kayanne, "Mass Culturing of Living Sands (*Baculogypsina sphaerulata*) to Protect Island Coasts against Sea-level Rise," *Journal of Sea Research* 90 (2014): 121–126.

the layers of sediment of which the island is comprised, these structures are believed to help stabilize coral islands, providing protection from storms.³⁴

Bird guano is usually common on the boulders and cays on these atolls. On many cays, it provides an important source of nutrients for vegetation. When mixed within the sediments of an island, it may also help to stabilize it as a form of “glue” that holds sediments together. As with the development of beach rock, the accumulation of enough bird guano within the sediments to substantially impact island stability would be expected to take hundreds to thousands of years.³⁵

Until recently, freshwater lenses have often been believed to be important in establishing whether an island is habitable. These are reserves of freshwater that build up within an island over time, provided it is large enough to overcome total saltwater intrusion (see Figure 10.2b). Saltwater is denser than freshwater, and the latter is thus pushed upward by the adjacent saltwater. However, mixing of the salt- and freshwater bodies tends to be vertical and limited so as to preserve fresh or brackish water centrally.³⁶ Both of the two largest natural islands in the Spratlys, Itu Aba Island³⁷ and Thitu Island,³⁸ have fresh to slightly brackish water in such lenses. It is likely that some other islands have this as well. The degree of salinity is likely to vary among islands and among seasons within each island depending on factors such as usage, storm disruptions, and rainfall. Where present, true freshwater tends to float on the overall lens, where it can sometimes be skimmed off within wells.

While most studies of coral islands globally have indicated histories of hundreds to thousands of years, some small cays have been initiated within the last century following large storms. It is not certain when, if ever, any of these would grow to become vegetated and eventually be suitable for sustaining communities of people. Some of the less-consolidated cays have been shown to move considerably. For example, Zhu et al.³⁹ studied the slow wandering and swinging movements of the small natural comma-shaped sand cay at Gaven Reef and showed that its position was strongly influenced by the strength of east winds, relative to those from the north or west. The Philippine base at Flat Island consists of buildings on pilings built over the sand. Satellite images from Google Earth Pro/Digital Globe indicate considerable variation in shape, with areas of 2.1 square kilometers (February 24, 2006) to 2.7 square kilometers (May 28, 2012) to 3.2 square kilometers (October 14, 2014). The considerable translocation, and successive broadening and narrowing, left one of the buildings standing over water in the 2012 image.

34. J.-W. Shen et al., “Carbonate Sedimentary Characteristics of the Beach Rocks around Qilian Islets and Cays, Xisha Islands: Implication for Coral Reef Development and Decline,” *Palaeogeography, Palaeoclimatology, Palaeoecology* (May 6, 2016), <http://dx.doi.org/10.1016/j.palaeo.2016.05.005>.

35. S. Hamylton, “Will Coral Islands Maintain Their Growth over the Next Century? A Deterministic Model of Sediment Availability at Lady Elliot Island, Great Barrier Reef,” *PLoS ONE* 9, no. 4 (2015): e94067. doi:10.1371/journal.pone.0094067.

36. T.F.M. Chui, J. P. Terry, “Modeling Fresh Water Lens Damage and Recovery on Atolls after Storm-wave Washover,” *Ground Water* 50, no. 3 (2012): 412–420.

37. Arbitration Award, 240.

38. Author observations.

39. H. Zhu, X. Jiang, X. Meng, Q. Feng, S. Cui, and C. Liang, “A Quantitative Approach to Monitoring New Sand Cay Migration in Nansha Islands,” *Acta Oceanologica Sinica* 35, no. 3 (2016): 102–107.

The artificial islands recently built by the PRC involved processes far removed from those described previously for natural island formation. The following description is based on my examination of high-resolution satellite imagery from Google Earth (including historical imagery), supplemented with images sent to me by various other workers and discussions in publications.⁴⁰ Satellite images indicate that the sediments were dredged primarily from nearby portions of coral reefs, either from the outer fore-reef slopes of the reef being built on, or from, natural deposits in grooves or lagoons of adjacent or connected subsurface atolls. The islands were initiated by piling up sand and gravel from these areas (Figure 10.4). The dredgers were apparently associated with the CCCC Tanjian Dredging Company of PRC. All of this company's vessels are believed to be large, with drafts on the order of three to five meters.⁴¹ This restricts sediment gathering to deeper areas, precluding gathering on reef flats that are generally no deeper than two to three meters.⁴² The company includes vessels equipped for a variety of dredging types, including some that suction up materials from midship or behind the ship into storage "hoppers." From here they are transported to the island-building location either directly or via transfer to smaller barges. Flexible, floatation-laden pipes then transfer the sediments into piles for distribution via earthmoving equipment, or the sediments are "rainbowed"—sprayed upward in an arc to spread them out.

Most evident on the images are the large cutter-suction dredgers. Contrary to some claims,⁴³ the cutter-suction dredging method is not at all unique to the PRC but widespread elsewhere, especially in cases where channels in rivers require deepening.⁴⁴ This technique involved spinning a sphere with diagonal grooves lined with metal teeth in front of a suction hose. This ground up hard materials, such as corals and reef substrate, to add to the sand and gravel being suctioned up. Once a substantial amount of material had been piled up and distributed, walls (apparently of concrete) were constructed around the projected areas of the artificial islands, into which much more sediment materials were then loaded. The deposited sediments were then smoothed out, forming a base for pavements and building construction. In some cases, large storage facilities were buried within the sediments.⁴⁵

40. See, for example, V. R. Lee, "Satellite Images: China Manufactures Land at New Sites in the Paracel Islands," *Diplomat*, February 13, 2016, <http://thediplomat.com/2016/02/satellite-images-china-manufactures-land-at-new-sites-in-the-paracel-islands/>.

41. Data from numerous industry websites with statistics on commercial vessels.

42. Author's observations from Thitu and the two reefs immediately to the east, extrapolated to shallow reefs across the South China Sea via similarity of ecosystem patterns visible on satellite imagery.

43. J. Borton, "Managing the South China Sea: Where Policy Meets Science—The Marriage of Policy and Science Is Essential to Navigating These Waters," *Diplomat*, April 30, 2016, <http://thediplomat.com/2016/04/managing-the-south-china-sea-where-policy-meets-science/>.

44. J. B. Herbich, "Estuary and Coastal Dredging," in *Handbook of Dredging Engineering*, 2nd ed. (New York: McGraw-Hill, 2000), 8.4–8.25.

45. Lee, "Satellite Images."

Figure 10.4. Dredging and Island Construction



Source: Google Earth/Digital Globe.

Note: (Left) A large cutter-suction dredger, such as those used in the construction of the artificial islands; (right) a similar dredger grinding and pumping gravel and sand up to from a lagoon to form an extension of the artificial island at Fiery Cross Reef.

Note that there are procedures, such as the deployment of sediment curtains held up by large buoys, that would have limited the spread of some of the sediments stirred up during dredging.⁴⁶ There was no sign of these on any images seen by this author. Because the dredging was in waters below three meters' depth, the impacts of the dredging on local organisms have been difficult to quantify via the available satellite imagery. An exception is for the dredging within lagoons at Fiery Cross, Subi, and Mischief reefs, where large plumes of sediments, combined with general knowledge of lagoon-dwelling organisms has been used for minimal damage estimation (Table 10.1). Dredging has been highlighted as one of the most thoroughly damaging of the many ways that reefs are degraded,⁴⁷ and so one can be sure that the unseen damage below the view provided by the satellite images was very considerable.

It is worth noting that plans are under way in Japan to stimulate "natural" coral island formation by planting large areas of coral, and possibly forams, on the substrates at Okinotorishima. The idea is apparently to permit the many large storms and typhoons that hit this atoll each year to break up these organisms, forming an abundance of gravel, which may then be piled up by some later storms into one or more gravel cays.⁴⁸ Over time, these cays may develop freshwater lenses, support vegetation, and eventually support human communities. Okinotorishima is arguably the

46. J. C. Ogilvie et al., "Silt Curtains: A Review of Their Role in Dredging Projects," in *Proceedings, CEDA Dredging Days 2012* (Abu Dhabi, UAE, December 12–13, 2012), http://eprints.hrwallingford.co.uk/618/1/HRPP560_Silt_curtains_-_a_review_of_their_role_in_dredging_projects.pdf.

47. C. Mora, I. R. Caldwell, C. Birkeland, and J. W. McManus, "Dredging in the Spratly Islands: Gaining Land but Losing Reefs," *PLoS Biology* 14, no. 3 (2016): e1002422. doi:10.1371/journal.pbio.1002422.

48. University of Tokyo Ocean Alliance, "Ecological Engineering Maintenance of Okinotorishima against Sea Level Rise," 2011, accessed August 11, 2016, <http://www.oa.u-tokyo.ac.jp/learnocean/researchers/okinotori/post-34.html>; J. Ryall, "Build-up on Remote Japanese Atoll Raises Strategic Questions," *South China Morning Post*, June 19, 2013, <http://www.scmp.com/news/asia/article/1263840/build-remote-japanese-atoll-raises-strategic-questions>.

Table 10.1. Damage to Reefs in the Spratly Islands, Paracel Islands, and Scarborough Shoal Quantified

Type of Damage	Number of Reefs		Area Damaged (km ²)	
	PR China	Total	PR China	Total
Island Building and Reinforcement	16	31	14	15
Materials Dredging	3	7	39	40
Channel/Harbor Dredging	13	27	2	3
Giant Clam Chopper Boat Damage	41	41	104	104
Total	—	—	159	162

Source: Based on imagery available in Google Earth Pro as of March 2016.

Note: PR China=People's Republic of China. Total damage accounts for damage by PR China, Vietnam, Malaysia, and the Philippines (from the 1970s). Clearly identifiable reef damage by Taiwan was too small for accurate determination. Because of overlapping types of damage, the total number of reefs is omitted, as is the area damaged by chopper boats but later covered by artificial islands.

most heavily storm-impacted atoll in the world, and it is this anomalously high frequency of storms that provides some hope among its proponents for its success. If successful, this would be much closer to the process of natural coral island development than the sand and gravel piling method exhibited by the PRC. On the other hand, it will be interesting to see whether some future international court or arbitration organization will consider this “loading of the dice” (planting of calcium-carbonate producers) by Japan as a violation of the “naturally formed” criteria necessary to justify the currently claimed EEZ around this atoll.

DREDGING FOR CHANNELS AND HARBORS: IMPACTS FROM UNNATURALLY SUSPENDED SEDIMENTS

Coral reefs are self-assembling adaptive systems. Reef accretion, ecology, and hydrodynamics codevelop over time to produce the reefs one sees. Changing any one of these factors on a reef may or may not be accommodated within the system without widespread side effects.

Although calcareous sand and silt are crucial to the development of the reef and strongly influence the distributions and abundances of species and ecological communities, they become highly lethal when stirred up unnaturally into the water column. Because reef sand and silt are made via the breakdown of skeletal and reinforcing material from algae, corals,

mollusks, forams, and many other groups, they tend to have highly intricate structure at a microscopic scale. This structure not only makes them travel much farther than other sands and silts, such as those made from silicate rocks, but causes them to cling tightly and be highly irritating to living tissues.

There can be widespread coral mortality as the sediments overwhelm the mechanisms whereby the colonies normally remove unwanted materials, such as by passing particles from polyp to polyp until disposing of them on the surrounding substrate. Some corals, such as the important massive *Porites* corals, often remove sediment by exuding copious amounts of mucus.⁴⁹ The extent to which this works depends on the amounts and types of sediments, as well as on the local currents that wash away the mucous sheets. If there is too much sediment-laden mucus for the local currents to carry away at the time of the deposition, the result is a mat of sandy-silty mucus that sticks to the coral head and kills the polyps beneath it.⁵⁰

If there are very strong currents, such as those associated with wave action or channel flow, the suspended sand can “sand-blast” away coral tissue.⁵¹ Virtually all other reef species can be killed as the sediment lands in substantial quantities on outer tissues, parts of the digestive tract, or gills. Some may simply be buried and unable to survive beneath the sediments. Organisms that do not die right away may subsequently develop diseases. For example, hard corals may form lesions or diseases. They are also likely to prevent the settlement of young corals and other bottom-dwellers. The displaced sediments may be subject to resuspension during storms for many years after initial deposition.⁵²

Many coral reefs within the Spratly and Paracel island groups have been subject to channel and harbor building. During construction, these processes have invariably led to the degradation of reef ecosystems locally and downstream. In addition to the release of sediments into the water column, there may also be impacts from blasting or the loud noises emanating from dredging using large rotating cutters, grabs, backhoes, or chisels, such as direct mortality in benthic species like coral colonies or increases in their susceptibility to diseases. The sensitivity of fish to blasting depends particularly on the kind of swim-bladder characteristic of a species. Some have no swim-bladder, while others have bladders with a range of sensitivities to the blasting.⁵³ Thus, a single blast may kill certain fish many hundreds of meters away from the blast. Frequent blasting or exposure to loud noises may also modify the behavior of fish, sea turtles, and nearby marine mammals.

49. X. Li et al., “Coral Community Changes in Response to a High Sedimentation Event: A Case Study in Southern Hainan Island,” *Chinese Science Bulletin* 58, no. 9 (2013): 1028–1037.

50. Author’s observations under high silt conditions at Marinduque (mine tailings) and Ambil (siltation related to annual hill burning to hunt wild boar) islands in the Philippines, indicated by pancake-like layering of coral growth in response to pulses of silt, or colony death in low-current or extreme silt and heavy conditions.

51. Wiens, *Atoll Environment and Ecology*.

52. Mora et al., “Dredging in the Spratly Islands.”

53. S. B. Saila, V. L. Kocic, and J. W. McManus, “Modelling the Effects of Destructive Fishing Practices on Tropical Coral Reefs,” *Marine Ecology Progress Series* 94 (1993): 51–60.

Most of the damage may be temporary, if not repeated frequently over subsequent years. In some cases, with fortuitous hydrodynamics, the floors of these channels and harbors may develop new, albeit deeper-adapted ecosystems. However, while natural channels on reefs tend to be self-clearing, those created by people may not be. They may radically change hydrodynamic and erosion processes, draining reef flats or lagoons of sand that have been accumulating for many thousands of years. It has been estimated that sand and reef accretion within the Spratly Islands has occurred at rates of hundreds to thousands of years per meter.⁵⁴ This outflowing sand may constantly fill the new channels and harbors, leading to a need to clear them frequently, year by year. Under these circumstances, the temporary impacts may become chronic, leading to stirred-up sediments clouding the water and killing reef organisms over large areas. This may be a problem not only for fisheries, but also for the processes of reef accretion, which determine if a reef can keep rising with sea level or fall prey to severe storm damage as sea level rises above the reef crest.

While not as extensive, there has been significant damage to reef flats by Vietnam in its efforts to reinforce the naturally formed islands on which the country has constructed military bases. These reef flats show distinct, rectangular dredging marks. Given the shallow nature of these reef flats, the most likely cause is the use of “grab,” “dipper,” or “backhoe” earthmovers mounted on shallow-draft barges or rafts.⁵⁵

GIANT CLAM “CHOPPER BOAT” DAMAGE

Many coral reefs within the region have shown unnatural patterns of arcs across their reef flats for several years. These were initially attributed by this author to cutter-suction dredging. These dredgers typically swung back and forth, aided by large pin-like spuds mounted on the stern. Moving the boat forward while one of these spuds is stuck into the bottom causes it to swing in that direction, while deploying the other spud reverses the direction of swing. In contrast, the harvesting of giant clams has historically normally involved someone spotting the clam from a boat and one or more people jumping in to retrieve it.

However, in December of 2015, BBC journalist Rupert Wingfield-Hayes posted footage of PRC giant clam harvesting on the unnamed checkmark-shaped reef just east of Thitu Reef. This showed that considerable amounts of sediment were being stirred by the propellers of small boats, which appeared to be straining against a stern rope. In January 2016, writer Victor Robert Lee published an article, largely based on studies of satellite images and material on numerous PRC websites, in which he alleged that small PRC giant clam boats were being swung laterally against their stern anchors and anchor lines with the propellers turning—a process he labeled “prop chopping.” Lee had found satellite imagery indicating that hundreds of these “chopper boats” had been operating on at least two dozen reefs in the Spratlys,

54. K.-F. Yu, J.-X. Zhao, P.-X. Wang, Q. Shi, Q.-S. Meng, K. D. Collerson, and T.-S. Liue, “High-precision TIMS U-series and AMS 14C Dating of a Coral Reef Lagoon Sediment Core from Southern South China Sea,” *Quaternary Science Reviews* 25 (2006): 2420–2430.

55. Determined by the author from Google Earth imagery from Central Reef, Pearson Reef, Sand Cay, and Sin Cowe East Island (the latest imagery available on Google Earth as of August 19, 2016).

causing major ecological damage to the reefs. Scarborough Shoal has also been clearly damaged. The shells are worth up to \$12,000 each and can bring in up to \$106,000 when carved; the hub of the trade was Tanmen, China, where the collection of giant clams has recently been banned.⁵⁶

Lee's article led to further investigations. He accompanied a documentary team into the Spratly area and was able to conduct skin-diving transects covering one to two kilometers each on three reefs, primarily heading SSW to NNE or the reverse. After roughly accounting for tidal heights, all the reef flats ranged from approximately 0.5 to 1.5 meters in depth. Overfishing was indicated on each by a distinct absence of predators exceeding 10 centimeters and by large abundances of bristletooth surgeonfish (*Ctenochaetus striatus*)—all juveniles at approximately 7 centimeters in total length—probably indicating a lack of predators impacting a large-scale recruitment event.

The protected reef flat adjacent to Thitu Island showed high seagrass cover near shore, punctuated with frequent coral clumps, and high coral cover within the outer 300+ meters horizontally from the reef crest. The corals were primarily small branching or foliose individual colonies of the relatively fast-growing genus *Montipora*, with some species of *Acropora* and slower-growing micro-atolls of *Porites*, *Heliopora* (blue coral), and other species.

Two reefs each showed very clear evidence of chopper boat damage on available satellite imagery from April 14, 2014 (the latest available on Google Earth as of August 1, 2016). The unnamed "checkmark" reef to the east was severely disturbed; this reef showed active chopper boat operations (streams of sand and silt emanating from small boats). From NNE to SSW for nearly a full kilometer, no living macroinvertebrates of any kind were seen. Dead coral was mixed with sand in arc-shaped bars throughout. Beyond this, sea urchins, gorgonians, and hard corals gradually increased in abundance to approximately 20 percent cover amid dead corals just at the southern reef crest. A channel-like east-west lagoon feature across this reef was two to three meters deep as crossed approximately halfway east to west.

Further to the east, Tieshi Reef showed very little sand and exposed oddly shaped chunks of hard substrate (up to approximately three meters in largest diameter) resting unsteadily on a hard substrate. Many of these dark-gray calcareous chunks appeared to be very old. Given the arrow-shape of the reef, it is possible that the sand, having been piled up unnaturally, was washed away in strong storm-related convergent, turbulent currents—leaving previously buried or top-sitting chunks of hard material from many years of coral growth and death sitting on a very firm calcareous base. Scattered live branching and tabular (*Acropora*) corals on these chunks indicated re-growth from within two to four years, based on known growth rates. Some of these had grown on unstable chunks that had subsequently been knocked over, leaving branching corals to grow upward again from now-horizontal portions. Total coral cover was no more than a few percent. Observations on coralline mounds within deeper portions of the large underlying subsurface atoll, down-current approximately 500 meters from the shallow Tieshi surface atoll, showed considerable coral mortality (depths 10 to 15 meters, with elongate mounds typically 6 to 10 meters in cross-width section extending upward to 2 to 3 meters depth). This damage may have been from sands washing off the shallow reef and scouring the corals.

56. Larson 2016.

Later online studies of the CCCC dredging vessels used by PRC in artificial island construction indicated that they typically had drafts of 3 to 5 meters—too deep to account for the damage within the shallow reef flats observed. The latter reef flats appear from satellite imagery to be ecologically, and thus probably depth-wise, similar to most reef flats on wave-breaking reefs within the Spratly and Paracel areas and Scarborough Shoal (studied by the author in a trip in the late 1980s). This tended to confirm the conclusions of Victor Robert Lee. Based on use of the imagery and area-measurement tool from Google Earth Pro, it was determined that chopper boats had resulted in at least 104 square kilometers of severely damaged reef flats across the Paracels, Spratlys, and Scarborough Shoal (Table 10.1).

RECOVERY RATES OF THE CORAL COMMUNITIES

In a meta-analysis of rates of change in coral cover following major disturbances of 48 reef sites from the Caribbean, eastern Pacific, and central Pacific, Graham et al.⁵⁷ showed that Pacific reefs recovered significantly faster than those of the other geographic regions, averaging 4.7 percent per year. Faster coral cover growth was found in areas with lower initial values following the disturbance. Hughes et al.⁵⁸ gave typical coral cover value from the Spratly Islands at 64 percent. Thus, recovery rates after major disturbances can be expected to be on the order of a decade. This is consistent with a study in Guam included in the global analysis, in which recovery following extensive damage by an unusually dense outbreak of the coral-tissue-eating crown-of-thorns starfish occurred within 12 years to levels comparable to a similar but undisturbed reef, including one reef zone growing in cover from 0.9 percent to 65.9 percent.⁵⁹

The corals found on reef flats in the Spratly Islands tend to be of two types. Most are small colonies, a few inches high or wide, consisting of branching or plate-like corals of the genera *Acropora* or *Montipora*. These corals grow relatively quickly, are very fragile, and can reproduce either sexually via eggs and sperm, which form waterborne planktonic planulae, or from broken fragments. Other corals are strong boulder corals that are often flattened on top due to the shallowness of the water.⁶⁰ These “micro-atolls” and other boulder corals can lose outer tissue via scouring with sandy waves and currents during storms. However, as with recovery from coral-eating organisms, they can often “re-sheet” afterward,⁶¹ as tissue protected in crevices or on the leeward side of the colony grows to spread back over the colony. These corals are thus storm adapted and are capable of

57. N. A. J. Graham, K. L. Nash, and J. T. Kool, “Coral Reef Recovery Dynamics in a Changing World,” *Coral Reefs* 30 (2011): 283–294.

58. T. P. Hughes, H. Huang, and M. A. L. Young, “The Wicked Problem of China’s Disappearing Coral Reefs,” *Conservation Biology* 27 (2013): 261–269.

59. M. W. Colgan, “Coral Reef Recovery on Guam (Micronesia) after Catastrophic Predation by *Acanthaster planci*,” *Ecology* 68, no. 6 (1987): 1592–1605.

60. Author’s observations at Thitu Island, Teishi Island, and the unnamed checkmark-shaped reef between them, February 2016; Meng et al., “Characteristics of Rocky Basin Structure of Yongshu Reef”; Zhao et al., “Coral Communities of the Remote Atoll Reefs in the Nansha Islands.”

61. P. W. Glynn, and I. C. Enochs, “Invertebrates and Their Roles in Coral Reef Ecosystems,” in *Coral Reefs: An Ecosystem in Transition*, ed. Z. Dubinsky and N. Stambler (New York: Springer, 2011), 273–325.

unusually high rates of recovery. However, the highly efficient killing of corals by suspended sediments and mechanical disruption from giant clam chopper boats, along with the associated destabilization of substrates, is likely to delay maximal recovery at least a decade beyond the expected time of less than 10 years. In particular, having stable sediments or hard substrates on which corals can proliferate is important.⁶² The coral communities will need to build up layers of dead corals, which will need to be cemented together via processes such as the slow horizontal spreading of encrusting “crustose” calcareous algae.⁶³ There will be some recovery on hard substrates, such as on overturned large dead micro-atolls, within a year or two. The recovery will be very patchy, but enough to support significant numbers of fish and other species early on. Therefore, while the chopper boat action has severely reduced coral reef functioning and its supply of ecoservices such as fishery production, it is not likely to be a permanent loss everywhere. Some portions of a given damaged reef may never recover. For example, numerous coral patches were removed from Kaneohe Bay in Hawaii by dredging in 1939, and they have never recovered.⁶⁴ There was considerable damage to coral communities in Bermuda in 1940 in association with airfield construction, and much of the coral cover has not returned.⁶⁵ However, overall it is anticipated that one-time damage from chopper boat activity would eventually show significant recovery.

The same will likely be true for many of the areas in reef flats and lagoons, and on subsurface reefs, from which coral heads have been cut and gravel and sand suctioned up to build artificial islands and extensions to existing natural islands. Depending on the amount of disruption to the substrates, one can expect initial recovery within a few years and major recovery within a decade or two. The large areas adjacent to these operations and to the filling operations that have been damaged from plumes of sediments will also largely recover within a decade. However, the approximately 15 square kilometers of reef flat area that have been buried under tons of sand and rock in building and reinforcing islands will never recover. Ultimately, within a half to a full century, these areas will likely fall prey to rising sea levels and the increasing storm damage associated with climate change. As they become submerged, the sediments will be washed away and the areas will gradually join the subsurface reefs now present in the Spratly and Paracel areas. However, the ecologically much different communities of those reef flats will have been lost forever.

IMPLICATIONS FOR REGIONAL FISHERIES

The human population within 100 kilometers of South China Sea, exclusive of the Gulf of Thailand, exceeds 270 million people, with an average of 355 people per square kilometer. More than 127 million of these people are rural, and nearly 38 million live in poverty. Overall, fish provides

62. L. J. Raymundo, A. P. Maypa, E. D. Gomez, and P. Cadiz, “Can Dynamite-blasted Reefs Recover? A Novel, Low-tech Approach to Stimulating Natural Recovery in Fish and Coral Populations,” *Marine Pollution Bulletin* 54 (2007): 1009–1019.

63. J. Mallela, “Calcification by Reef-building Sclerobionts,” *PLoS ONE* 8, no. 3 (2013), 2013PMC3610694.

64. Mora et al., “Dredging in the Spratly Islands.”

65. Ibid.

approximately 28 percent of available protein.⁶⁶ While the focus of this chapter is not specifically on fisheries, the state of overfishing is briefly reviewed here to provide a context for the implications of coral reef loss to this vital industry.

A simple model for explaining fish yields and profits versus fishing effort is the Gordon-Schaefer Model (Figure 10.5). As fishing effort increases from zero in an idealized single-species fishery, yields tend to climb steeply at first and then slow down at about the point at which the rate of mortality of fish equals the rate of replacement (the maximum sustainable yield, or MSY). This point is achieved when the species population has been reduced and is being maintained at about 50 percent of natural levels (a situation that would cause most ecologists considerable concern about whole-ecosystem impacts). Beyond MSY, the adult population cannot produce enough young to keep up with the fishing. Meanwhile, the effort the fishing fleet or community puts into fishing has a total cost that climbs as more and more fishing takes place—costs such as fuel, labor, and the purchase and upkeep of boats and gear. In the simple case where the price of the fish does not vary with supply, the yield curve is converted to represent gross profit. At any given level of fishing, the net profit is the difference between the fishing group's gross profit and the group's total cost. Thus, it makes sense to fish at the level of effort at which net profit is maximized (the maximum economic yield, or MEY). This is at a lower effort than MSY and may mean fishing at a level where the fish stock might be at 60 to 70 percent or so of natural levels, which is clearly ecologically better than fishing at MSY. However, if the fishery is open access in a situation where there is an excess labor force with no better employment alternatives than fishing, the fishing tends to increase until the group makes almost no net profit—a “scramble point” or “bionomic equilibrium point.” At this point, the average person fishing is usually barely surviving. The fishing effort is at roughly twice what it should be, and the fish stock might have been reduced to roughly 30 to 40 percent of natural levels.⁶⁷

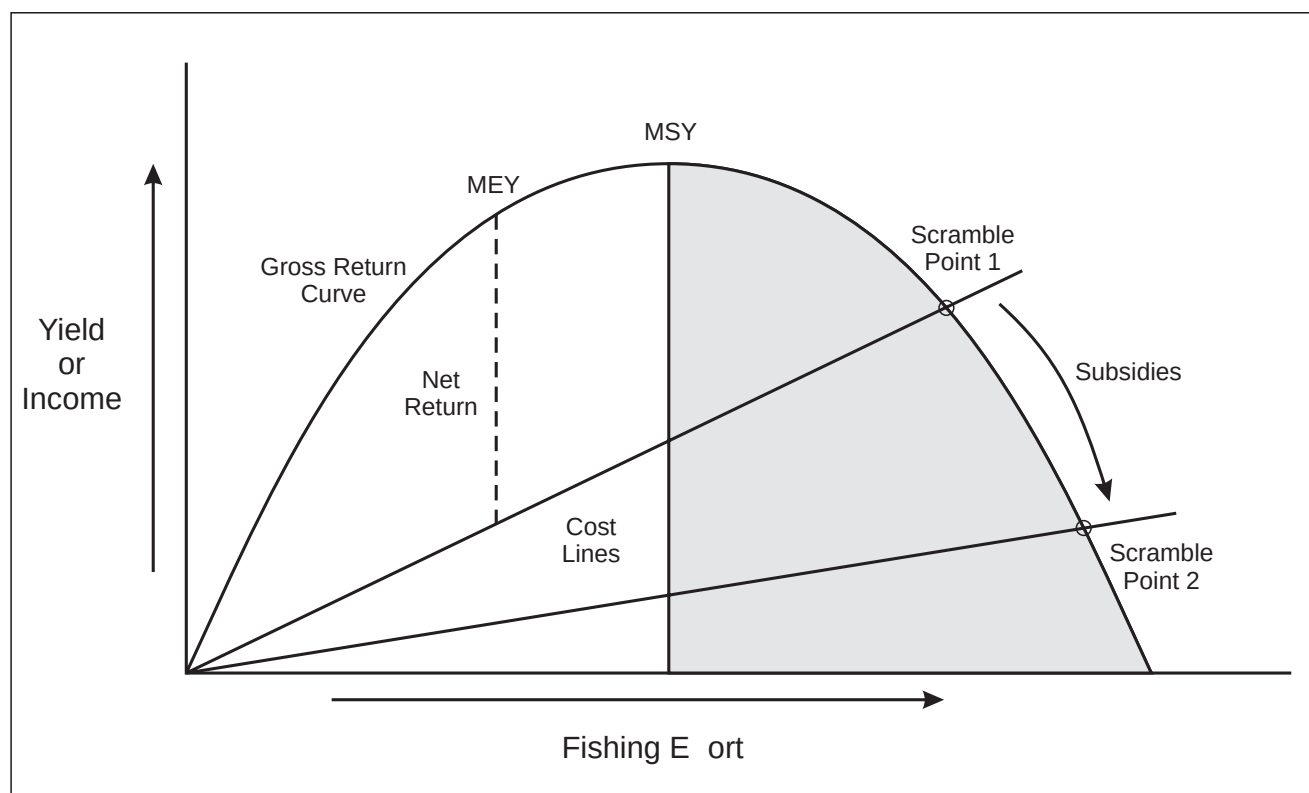
In the real world, uncertainty adds precautions to the application of this model. The farther the effort moves beyond the MSY point, the more the diminished stocks tend to fluctuate and the greater the chance of a population collapse. The shape of the Schaefer curve may depart from symmetric. Thus, MSY is considered by the United Nations Food and Agriculture Organization (FAO) to be a “limit point,” a dangerous situation where immediate action should be taken to reduce fishing. Being far to the “lower effort” side of MSY, MEY is a commonly used “target reference point.”⁶⁸ However, it is generally difficult to steer an open-access fishery to that point. More often in overfished situations, governments respond by subsidizing fuel, gear, or boats. This lowers the cost of fishing, leading to more people entering the fishery and pushing the scramble point to the right and down and the fish populations to increasingly lower and more dangerous levels. Fishers themselves, especially under situations of competition among ethnic groups, often use

66. TWAP, “LME 35—Gulf of Thailand”; TWAP, “LME 36—South China Sea”; and Talaue-McManus and Estevanez, “Socio-economics: Examining Socio-economic Dimensions of Risk and Vulnerability among Coastal Inhabitants of Large Marine Ecosystems.”

67. J. W. McManus, C. Nañola, R. Reyes, and K. Kesner, “Resource Ecology of the Bolinao Coral Reef System,” *ICLARM Studies and Reviews* 22 (1992), http://pdf.usaid.gov/pdf_docs/PNABP611.pdf.

68. Ibid.

Figure 10.5. The Gordon-Schaefer Model



Source: Created by author.

Note: This simplified model illustrates basic principles of fishing. Yield at a constant price can thus represent gross income, which increases as fishing effort (e.g., numbers of boats or fishers, total hours of fishing applied, etc.) increases to the theoretical maximum sustainable yield (MSY) and then decreases as harvest exceeds the ecological capacity to replace lost fish. The chance of the stock collapsing increases rapidly as one moves to the right of MSY. A line representing the total cost supporting the fishery increases along with the effort. The greatest vertical distance between the gross income and cost is the maximum economic yield point, which represents the greatest net income to the group of fishers and is an ecologically relatively safe level of fishing. The intersection of the gross income and the cost line is the “scramble point” or “bionomic equilibrium.” In an open access fishery combined with an otherwise unpaid labor force, fishers tend to enter the fishery until the average net income per fisher approaches zero. Anything that lowers the cost of fishing, such as the use of blasting devices or the provision of government subsidies, generally lowers the scramble point (e.g., point 1 to 2), thereby endangering the stocks and often lowering total catch. Most of the fisheries of the South China Sea are at or near a scramble point.

destructive fishing methods such as blasting or poisoning to lower the cost line, resulting in the same issues plus that of damage to fish habitats.

Most of the low-income fishers along the coastline around the South China Sea are already operating near or on a scramble point, a situation tied to overpopulation known as Malthusian overfishing. This entices them to take increasing levels of risk to obtain more fish.⁶⁹ It has become common to see images of ships towing strings of up to a dozen small coastal craft

⁶⁹. Ibid.

from the Philippines or Vietnam into the midst of the Spratly Islands. In addition to the obvious hazards to life, this leads to overexploitation within shallow reef areas that otherwise would be less impacted by fishing from more seaworthy craft. Meanwhile, PRC is heavily subsidizing the construction of fishing craft and fuel, sometimes with the proviso that a subsidized craft can be pressed into military service as needed. Attempts by China to impose a unilateral seasonal fishing ban among the Spratly Islands were met not with compliance by other countries, but instead by efforts to encourage fishers in the Philippines and Vietnam to violate the ban.⁷⁰ Any such unilateral management strategy will generally meet with opposition, lest each country appear to recognize another's authority. Unilateral decisionmaking actually worsens the overall fishing situation.

Fishing was already heavy enough that by 2000, most SCS fish stocks at high trophic levels, such as tuna, mackerel, snappers, jacks, groupers, and shark, appeared to have dropped in abundance from levels at 1960 by roughly 50 percent.⁷¹ Now we have seen 16 years of accelerating fishing effort at all levels. It is highly likely that the region will witness a fisheries collapse similar to the economically devastating cod collapse in the Northeast Atlantic of the 1980s, but with many more species and far more serious consequences. In an area where the dominating PRC economy is already far from stable, and in which approximately 38 million coastal poor are heavily dependent on fisheries and have generally no hope of government compensation to make up for the loss in food and income, this kind of collapse will likely cause widespread starvation, severe economic downturns, and increasing security issues.

JOINT FISHERIES MANAGEMENT AND PEACE PARKS

The highly mixed nature of the SCS and the wide-ranging migration paths of some fish species result in wide fish stock boundaries. If multiple groups of people are fishing from the same stock, then more rapid fishing by one will often result in less fish for the others. This is true regardless of the fact that the groups may fish from different parts of the stock range. This situation, plus the ineffectiveness of unilateral controls on fishing, point to the need for joint fisheries management to head off major fish stock collapses. Clearly there is a need for a SCS-wide joint fisheries authority.

Groups of coral reefs in the SCS, such as the reefs among the Spratly Islands, require both joint fisheries management and uniform environmental protection. One approach would be to follow the example of the Antarctic Treaty System. Antarctica had seven claimant nations by 1943. Although most claims were mutually recognized among the claimants, there were overlaps involving the

70. See, for example, G. Cabacungan, R. D. Anda, and T. Quismundo, "Kalayaan Mayor Urges PH Fishers to Defy China," *Inquirer.net*, January 11, 2014, <http://globalnation.inquirer.net/96275/kalayaan-mayor-urges-ph-fishers-to-defy-china>.

71. V. Christensen, L. R. Garces, G. T. Silvestre, and D. Pauly, "Fisheries Impact on the South China Sea Large Marine Ecosystem: A Preliminary Analysis using Spatially Explicit Methodology," in *Assessment, Management, and Future Directions for Coastal Fisheries in Asian Countries. WorldFish Center Conference Proceedings 67*, ed. G. Silvestre, L. Garces, I. Stobutzki, M. Ahmed, R.A. Valmonte-Santos, C. Luna, L. Lachica-Aliño, P. Munro, V. Christensen and D. Pauly (Penang, Malaysia: WorldFish Center), 51–62, <http://www1.worldfishcenter.org/trawl2/publications/assessment/pdf/Chapter-03-FA.pdf>.

claims of the United Kingdom, Argentina, and Chile. Five other countries were considering making claims (and preserve this intention or right to claim to the present). A treaty was signed in 1959 by 12 countries, including the seven claimants, and later by others to a total of 53 countries. It set Antarctica aside as a scientific preserve.⁷² A "Madrid Treaty"⁷³ signed in 1998 extended the scope to a natural reserve for peace and science. Thus, Antarctica is essentially a multinational, transboundary peace park. Three of the key elements in the original treaty, responsible for much of its relatively high levels of success, are (1) a freeze on claims (no modifications or additions to existing claims are allowed), (2) a freeze on claim-supportive activities (nothing a claimant does during the time of the treaty can be later used in support of a claim), and (3) joint resource management.⁷⁴

An application of this approach to the Spratly Islands area was proposed in 1992 and in several follow-up publications.⁷⁵ The idea has found support in several other publications.⁷⁶ Other authors have proposed a similar arrangement based on the Red Sea Peace Park⁷⁷ or the current Arctic agreements.⁷⁸ Should Spratly Island Peace Park be established, there would be substantial financial savings to the countries that currently support approximately 40 military bases in the area. Some of these could be converted to ranger stations, while others could be decommissioned. A joint resource management commission could set annual regulations for fisheries and uniform environmental protection standards.

A more immediate and urgent need is to apply a similar arrangement to Scarborough Shoal. As recognized in the 2016 Award from the Permanent Court of Arbitration, this reef is a traditional fishing ground for multiple countries.⁷⁹ Primary users have been the Philippines and PRC. The reef is unusually picturesque, having in its lagoon many mounds of organ-pipe coral (*Tubipora musica*).⁸⁰ The reef's attractiveness and its location within a half day's travel by boat from Luzon make it of particularly high value for tourism based on live-aboard vessels. There is currently a lot of interest in seeing bilateral talks resume between these two countries. This may be an ideal time

72. Secretariat of the Antarctic Treaty, accessed August 19, 2016, http://www.ats.aq/index_e.htm and associated webpages.

73. The Madrid Treaty, accessed August 19, 2016, <http://www.antarctica.gov.au/law-and-treaty/the-madrid-protocol>.

74. Antarctic Treaty (Washington, DC, December 1, 1959), 402 UNTS 71 (in force June 23, 1961).

75. J. W. McManus, "The Spratly Islands: A Marine Park Alternative," *Naga, the ICLARM Quarterly* 15, no. 3 (1992): 4–8; J. W. McManus, "The Spratly Islands: A Marine Park?," *Ambio* 23, no. 3 (1994): 181–186; J. W. McManus and L.A.B. Meñez, "The Proposed Spratly Island International Marine Park: Biological Considerations," *Proceedings of the Eighth International Coral Reef Symposium* (Panama: n.p., 1997), 2:1943–1948; J. W. McManus, K.-T. Shao, and S. Y. Lin, "Toward Establishing a Spratly Islands International Marine Peace Park: Ecological Importance and Supportive Collaborative Activities with an Emphasis on the Role of Taiwan," *Ocean Development and International Law* 41 (2010): 270–280.

76. See, for example, Hughes et al., "The Wicked Problem of China's Disappearing Coral Reefs"; Zhao et al., "Coral Communities of the Remote Atoll Reefs in the Nansha Islands"; Mora et al., "Dredging in the Spratly Islands."

77. D. V. Toán and V. H. Đăng, "Establishing Peace Park in Trường Sa," *Tia sang Journal* 1 (2016), <http://tiasang.com.vn/Default.aspx?tabid=116&CategoryID=42&News=9342>.

78. R.T.-H. Tai, N. S. Pearre, and S.-M. Kao, "Analysis and Potential Alternatives for the Disputed South China Sea from Ocean Governance in the Polar Regions," *Coastal Management* 43, no. 6 (2015): 609–627.

79. Arbitration Award.

80. Author's personal observations in 1991.

to establish a Scarborough Shoal Peace Park. In addition to lessening international tensions, providing for important tourist income for both countries, and protecting valuable fisheries locally and, via larval transport, along the coasts of Luzon and southern China, this park could serve as a step toward the larger Spratly Islands Peace Park.

CONCLUSIONS

While claimant nations have been involved in attempts to bolster their cases for sovereignty within disputed areas of the SCS, a great deal of damage has been done to the reefs and fisheries—among the most important resources under dispute. The recent award from the tribunal in the *Philippines v. China* case has served to clarify many legal issues and highlight much of this damage. A major step toward ending this needless and highly counterproductive damage would be to work toward coordination of fisheries across the SCS, as well as to establish peace parks to protect and optimize benefits from Scarborough Shoal and, ultimately, the Spratly Islands. In any case, a freeze on claims and claim-supportive activities, coupled with joint resource management, would open the door to a wide range of potential actions to reduce international tensions, protect shipping lanes, and provide for sustainable and profitable use of the South China Sea.

Marine Biodiversity at Spratly Islands and Proposal for Establishing Marine Protected Areas

Kwang-Tsao Shao

GEOGRAPHICAL FEATURES AND LEGAL ASPECTS OF THE SPRATLY ISLANDS

The South China Sea is a marginal sea partially enclosed by the People's Republic of China (PRC), the Republic of China (ROC, referred to as Taiwan), the Philippines, Malaysia, Brunei, Indonesia, Singapore, and Vietnam. It covers an area of 800,000 square kilometers and contains more than 200 identified islands, islets, reefs, shoals, sand cays, and banks, and four major archipelagos from north to south named the Pratas Islands (Dongsha), Paracel Islands (Xisha), Macclesfield Bank (Chungsha), and Spratly Islands (Nansha). The Pratas are occupied by Taiwan and the whole atoll was designated as a Marine National Park and no-take area in 2007. The Paracel Islands and Macclesfield Bank are occupied by China and, unlike the Spratlys, do not have many territorial disputes.

The water area of the Spratly Islands is substantial, encompassing approximately 160,000 to 360,000 square kilometers, depending on how limits are chosen. Based on the study results of fish fauna and biogeographical distribution, I have proposed that the northern boundary of the South China Sea should be the Tropic of Cancer, which crosses the southern waters of Pescadores Islands in the Taiwan Strait, while the southern boundary is the equator.¹ The Spratlys, part of the Tizard Bank in the South China Sea, include approximately 150 named landforms and innumerable unnamed spits of land, but only 13 islets with vegetation. The majority of the Spratlys are rocks,

1. K. T. Shao et al., "A Checklist of the Fishes of Southern Taiwan, Northern South China Sea," *Raffles Bulletin of Zoology*, suppl. 19 (2008): 233–271.

reefs, sandbanks, or other types of partially submerged landforms. The rest of the islands are primarily partially submerged coral reef atolls, ranging in length up to approximately 40 kilometers.

CURRENT POLITICAL AND ECOLOGICAL STATUS OF ITU ABA ISLAND

Itu Aba (Taiping) Island is the largest naturally formed feature in the disputed Spratly Islands and the only territory controlled by Taiwan in the Spratlys. It has freshwater and natural vegetation, an area of 0.49 square kilometers, a length of 1,289 meters, a width of 366 meters, and an altitude of less than 5 meters. Itu Aba Island is at present under the administration of the municipality of Kaoshiung City, Qijin District. There are several facilities on the island, one of which is a fisherman service station. Taiwan established its Coast Guard Administration (CGA) in January 2000. In the same year, the CGA established a Nansha Command with the address of No. 1, Nansha, Qijin Dist. Kaoshiung City. The CGA took over the management and defensive mission of the island from the original Taiwanese soldiers to signal the peaceful motivation of the government and to decrease military tension in the Spratlys.

As to the natural environment, the terrestrial flora of Itu Aba Island belongs to the Malesian floristic region, and it is home to many tropical plant species unseen in other parts of Taiwan. Furthermore, the small island is a rest stop for many migratory birds and is an important nesting site for the green sea turtle. A green turtle reserve on Itu Aba Island was established in 2007 by the Kaoshiung City government to protect their spawning site on the beach.

On Itu Aba Island's southeast side, about six kilometers away, is the Ban Than Reef (Zhongchou Reef) (10°23'10"N, 114°24'49"E). It is an uninhabited coral cay of approximately 2,000 square meters, formed by the accumulation of coral fragments over a coral reef platform. Many seabirds, such as terns, roost and breed on the reef.

Although Itu Aba Island is a relatively distant 850 nautical miles from Taiwan, it is protected by the coast guard and fishing is strictly prohibited in its surrounding fringing reef. Any intruding fishing boats from PRC, Philippines, or Vietnam will be expelled. As a result, the marine ecosystem is still very pristine and biodiversity is very rich compared to other places, including Taiwan itself.

TAIWAN'S EFFORT ON RESEARCH AND MARINE CONSERVATION IN SCS

The South China Sea (SCS) is one of the waters harboring the world's richest marine biodiversity and has abundant fishery resources. The northern boundary of the South China Sea contains South Penghu Marine National Park, which was established in 2014 and is Taiwan's ninth national park. In the middle of the sea is Dongsha (Pratas Islands) Marine National Park, Taiwan's seventh national park, established in 2007. In 2012, the Construction and Planning Agency of the Ministry of Interior (CPAMI) together with the Ministry of Science and Technology established a Dongsha

Atoll Research Station, which officially began to operate in 2014. These are important milestones in Taiwan's policy of promoting research and conservation in the South China Sea.

Unfortunately, territorial disputes have continuously plagued the islands surrounding Itu Aba due to their ideal location and the enormous potential for the oil and gas reserves in adjacent waters. To resolve the disputes and jointly conserve the treasure for everyone, Taiwan began in 2009 to investigate the biodiversity of the area and evaluate the feasibility of establishing Itu Aba as a marine protected area. (MPA).¹ Actually, the establishment of a no-take zone, an important wildlife habitat, a national marine park, and an international marine peace park have all been proposed and encouraged by the collaborating researchers in the 2010 report. However, the authorities have yet to approve any of these in order to avoid possible protests from other countries in dispute. In 2014, another "Biodiversity Study of Taiping (Nansha) Island" project was conducted by the same team and the results of the ecological surveys were compiled and published in a research report.² A Chinese-English guidebook and DVD entitled "A Frontier in the South China Sea: Biodiversity of Taiping Island, Nansha (Spratly)" were produced in 2015.³ These can be used as an important medium of communication between Taiwan and other South China Sea countries. Additionally, the work highlights the accomplishment and strength in the marine biological research by Taiwan.

Whether or not a marine protected area or a marine peace park can be promoted or established in the Spratlys, another good way to set aside the disputes is to promote bilateral or multilateral research collaboration on marine biodiversity in the area. My fellow researchers and I recommended the following research opportunities in the South China Sea and Spratlys:⁴

- (1) Topology, hydrology, geology, and water quality study.
- (2) Taxonomy and compilation of fauna and flora of the South China Sea.
- (3) Long-term ecological research and monitoring program, including a centralized information portal which makes all data widely accessible in a Geographic Information System format with real-time remote sensing data, links to on-site sensors and video systems, and the ability for users to explore scientific hypotheses and management action scenarios via online simulation systems.
- (4) Community studies for both terrestrial and marine organisms as well as their meta-population (group of spatially separated populations of the same species) relationships, such as the dependence of one reef system on the larvae washed in from a downstream reef (connectivity).

2. K. T. Shao et al., "Biodiversity Study of Taiping (Nansha) Island," Construction and Planning Agency, Ministry of Interior (hereafter CPAMI), 2014.

3. K. T. Shao and H. J. Lin, "A Frontier in the South China Sea: Biodiversity of Taiping Island, Nansha Islands," CPAMI, April 17, 2015, http://www.cpami.gov.tw/english/index.php?option=com_content&view=article&id=18667&Itemid=3. The DVD is available at http://www.cpami.gov.tw/english/index.php?option=com_youvideo&view=vdetail&catid=264&id=48&Itemid=24.

4. K. T. Shao et al., "The Feasibility Study for Establishing Taiping Island as a National Park," CPAMI, 2010, 282pp.

(5) Phylogeographical (study of the historical processes that may be responsible for the geographic distributions of individuals) studies on selected groups of organisms (e.g., the relationships among taxonomic groups and their spatial distributions).

(6) Population and restoration studies for certain important species in the South China Sea.

(7) Fishery resource analyses and simulations to guide sustainable use and conservation biology.

(8) Other database integration, including links to the Catalog of Life, Barcode of Life, Encyclopedia of Life, Tree of Life, ReefBase, FishBase, Ocean Biogeographic Information System, Global Biodiversity Information Facility, and expert's name lists.

(9) Coral development and sea level rise.

(10) Effect of climate change on humanity, social-economic, paleontology, sediment, and marine geology.

RICH BIODIVERSITY IN ITU ABA ISLAND

Due to the remote distance and limited accessibility to Itu Aba Island, only a few surveys have been conducted during the past few decades. The earliest Taiwanese ecological inventory in Itu Aba Island was led by K. H. Chang with a group of experts from the Institute of Zoology, Academia Sinica, in 1980. They recorded 33 families and 173 species of fish within an 800 square meter sea area south of Itu Aba Island and published a fish guidebook and a fish checklist in a scientific journal.⁵ In 1994, a group led by the National Museum of Marine Biology and Aquarium recorded 399 reef fish species from 49 families, 190 coral species from 69 genera from 25 families, 99 mollusk species, 91 invertebrate species from 72 genera, 27 crustacean species, 14 polychaete species, 4 echinoderm species, and 109 terrestrial vascular plant species.

Fifty-nine bird species were observed, which indicates that Itu Aba Island is a major stop for migratory birds in East Asia.⁶ Both the green turtle (*Chelonia mydas*) and the hawksbill turtle (*Eretmochelys imbricata*) were often reported to be nesting even on islands inhabited by military personnel in the Pratas and Spratly Islands, though their numbers have gradually declined.⁷ The richness of marine biodiversity, spectacular coral reefs, and green turtles together add considerable value to Itu Aba Island as a future conditional ecotourism reserve.

5. K. H. Chang, R. Q. Jan, and C. S. Hua, "Scientific Note on Inshore Fishes at Tai-pin Island (South China Sea)," *Bulletin of the Institute of Zoology, Academia Sinica* 20 (1981): 87–93; K. H. Chang, R. Q. Jan, and C. S. Hua, *Fishes of Itu Aba Island in South China Sea* (Taipei, Taiwan: Academia Sinica, 1982).

6. L. S. Fang and J. C. Lee, "Terminal Report for Ecological Environmental Studies in South China Sea," *Council of Agriculture* (1994): 471.

7. Cheng I. Jiunn, "Sea Turtles at Dungsha Tao, South China Sea," *Marine Turtle Newsletter* 70 (1995): 13–14.

Because of the Spratly Islands' high diversity of marine organisms, the islands are considered a priority area for marine conservation and management.⁸ The "Policy Guideline for the South China Sea" was approved and declared by Taiwan's Executive Yuan in 1993, in which the importance of the "establishment of an environmental database" was clearly stated. The establishment of a database is fundamental and crucial to the assertion of Taiwan's sovereignty over Itu Aba Island and the surrounding waters. Since 1994, the Taiwan government has organized expeditions to Itu Aba Island to conduct surveys on the biodiversity of the island.

The teams of both the 2009 and 2014 projects, coordinated by this author, have gathered an extensive amount of firsthand ecological data, including both terrestrial and marine ecosystems. With the effort of 10 and 12 specialists in the 2009 and 2014 projects, respectively, and their assistants specializing in different disciplines or organisms and coming from five different research institutions, a total of 1,000 species were recorded in a few surveys conducted over two to four days. Among them, many species are newly recorded in the South China Sea. The total species numbers of different groups of organisms are: 106 terrestrial plants, 17 terrestrial invertebrates, 19 birds, 43 marine plants including sea grass and algae, 33 zooplankton, 26 phytoplankton, 145 corals, 53 crustaceans, 85 mollusks, 362 fishes, 12 other marine invertebrates, and one sea turtle. Their species names and temporal and spatial distribution data, as well as their images, were all incorporated into a database set up by the Biodiversity Research Center, Academia Sinica (authorized by CPAMI in 2009). This database was also integrated into other national databases such as the Catalog of Taiwan (<http://col.taibif.tw>), Taiwan Biodiversity Information Facility (<http://www.taibif.tw>), and Taiwan Encyclopedia of Life (<http://eol.taibif.tw>). These databases were all set up by the Biodiversity Research Center and authorized by the Ministry of Science and Technology and the Forestry Bureau, Council of Agriculture, and can be freely accessed online.

THREATS TO MARINE BIODIVERSITY IN THE SCS

The Spratly Islands is one of the most disputed areas and has some of the most overlapping claims in the world. No single country has the absolute power to control the South China Sea, nor are there any mutually trustful relations or friendships among the countries. The causes of the conflicts in the South China Sea and Spratlys include nonrenewable resources of hydrocarbon (oil and gas), shipping routes (Asia, Europe, and Africa), national defense, and renewable economic resources (ecotourism and fisheries).

The Southeast Asian seas annually yield approximately 7 million tons of fishery resources. The annual value of this catch exceeds \$6.5 billion. The Southeast Asian nations export nearly \$1 billion worth of fish products annually. Areas adjacent to the Spratly Islands are particularly productive (e.g., the annual catch from the reef-studded waters of the Sabah-Palawan area is about 10,000 tons, valued at approximately \$15 million).

8. A. White, "Priority Areas for Marine Resource Management," in *Atlas for Marine Policy in Southeast Asian Seas*, ed. Joseph Morgan and Mark J. Valencia (Berkeley: University of California Press, 1984), 141.

The main threats in the Spratly waters, however, are overfishing and illegal fishing methods such as the use of explosives and poison (China, Philippines, Vietnam, and Malaysia). From 2011 to March 2016, Taiwan's coast guard expelled 775 foreign fishing vessels from restricted or forbidden waters around the Itu Aba Island. For example, on March 23, 2016, a 300-ton fishing boat from China, with 41 fishermen on board, was caught by the coast guard. It had illegally harvested 1.5 tons of various corals, 400 kilograms of shellfish, and three green turtles, and carried 40 kilograms of poisoning chemicals.

Additionally, the world's busiest shipping lane passes by the Spratly archipelago, linking together Asian, European, and African countries. Many events, including ship accidents and oil spills, would be detrimental to the ecosystems of the islands. The area is the subject of overlapping territorial claims by its six surrounding countries, five of which maintain military outposts among the islands and reefs. The activities at these outposts can cause physical disruption of native flora and fauna and the overexploitation of natural resources such as the collection of guano, turtle eggs, corals, fishes, and giant clams, as well as create environmental pollution and damage ecotourism. The El Niño and La Niña conditions in 1998–1999 and 2007–2008 caused coral bleaching and subsequent coral mortality.

The possibility of an outbreak of the crown-of-thorns starfish was investigated after a quite high density of this echinoderm was observed in 2009. Fortunately, it did not happen that time. The most serious damage to marine biodiversity in recent years has come from reclamation, especially the large-scale reef dredging activities and filling operations. These operations of defensive structures have been shown to be highly deleterious to coral reefs.⁹ On Itu Aba Island, in an effort to make the island more inhabitable, an airplane runway was constructed in 2008 that more or less deforested almost one-eighth of the vegetation and affected part of the terrestrial ecosystem. The construction of a new harbor, which can moor a 3,000-ton ship, to replace an old small wharf was a wise decision since the coral coverage in the southwestern corner of the island is the lowest. The opening ceremony for the new Itu Aba Island wharf was held in December 12, 2015.

Because of these threats and the need to protect one of the world's richest hotspots of marine biodiversity, the most urgent action and top priority in the South China Sea now is to protect its marine resources and island ecosystems (i.e., to conserve the fishery resources by establishing marine protected areas or marine peace parks).

PEACE INITIATIVE FROM TAIWAN GOVERNMENT

As a matter of fact, Taiwan's "South China Sea Policy Framework" conducted in 1993 already actively promoted mutual collaboration, peaceful dispute solution, and marine ecosystem protection in the South China Sea.¹⁰

9. P. L. A. Erftemeijer, B. Riegel, B. W. Hoeksema, and P. A. Todd, "Environmental Impacts of Dredging and Other Sediment Disturbances on Corals: A Review," *Marine Pollution Bulletin* 64 (2012): 1735–1765; C. Mora, I. R. Caldwell, C. Birkeland, and J. McManus, "Dredging in the Spratly Islands: Gaining Land but Losing Reefs," *PLoS Biology* 14, no. 3 (2016): e1002422.

10. ASEAN, 2002.

Former Taiwanese president Chen Shui-Bian (2000–2008), who belongs to the Democratic Progressive Party, proposed “The Spratly Initiative” in 2008, which included the following points:

- (1) Accepting the spirit and principle derived from the Declaration on the Code of Conduct on the South China Sea, Taiwan insists on a peaceful approach to solve the conflict over sovereignty issues.
- (2) In the face of the threat of global warming and consequent rising of the sea level, ecological conservation and sustainable development should be given priority over exploration for natural resources in the South China Sea. Taiwan urges relevant countries to prioritize a marine conservation area, rather than invoking further exploitation activities.
- (3) Taiwan will invite international ecologists and representatives of major environmental groups to visit Taiwan’s islands in the region, including Itu Aba and the Pratas Islands, for survey and research purposes.
- (4) To prevent sensitive sovereignty issues from impeding cooperation, a nongovernmental South China Sea research center should be established and international symposiums should be conducted regularly in order to ease the situation in the region.

The same policy was followed by former president Ma Ying-jeou (2008–2016). He announced the “South China Sea Peace Initiative” on May 26, 2015, which called on all claimants to temporarily shelve their disagreements to enable negotiations on sharing resources. In the “Resolution Supporting Taiwan’s Peace Initiative in the South China Sea” adopted by the U.S. Republican National Committee on August 8, 2014, Ma’s “East China Sea Peace Initiative” was also recommended for promoting “peace and stability by providing political and economic cooperation and common ground for all parties and bringing economic vitality to a troubled zone.” However, Taiwan’s situation is somewhat awkward and difficult because it is not recognized by the United Nations and does not have diplomatic relationships with most countries. As a result, Taiwan cannot employ official channels to initiate mutual exploitation of the idea. Moreover, Taiwan cannot collaborate with China on these issues. In doing so, Taiwan will be going against other South China Sea countries and the United States, and it will lose its independence and identity.

Many people think that harvesting fish is another way to claim the sovereignty of their territorial waters or exclusive economic zone (EEZ). But the South China Sea, including Itu Aba Island, is one of the richest marine biodiversity areas in the world and any fishing activities should avoid fragile coral reef systems. Taiwan also suggested that each country involved in the disputes should establish local marine protected areas at the sites currently under their control. For example, the Pratas Islands were established as a national park by the Taiwan government in 2007, and the whole atoll was designated as a no-take zone. But this suggestion seems to arouse no interest in any of the surrounding countries with disputes. Alternatively, ecotourism promotion, replacing land reclamation and fishery resource exploitation, can create a win-win situation in both political jurisdiction and ecological conservation for everyone involved. Massive

ecotourism with no strict control of the number of tourists or effective enforcement, nevertheless, will quickly and easily destroy marine biodiversity, even if the area is designated as a marine protected area or marine peace park.

My 2010 work for CPAMI¹¹ mentioned the limitations of opening Itu Aba Island for ecotourism. Those limitations include:

- (1) The island is too remote and requires four days of travel each way by cargo ship, making forecasting the weather for the whole trip difficult.
- (2) All food and supplies are brought in by ship, resulting in high costs. Water and power are also limited. The maximum capacity is 20–50 visitors per day.
- (3) If agreements are not signed among claimant countries, security concerns remain, such as piracy prevention, emergency rescue efforts, and stowaways from other countries.
- (4) Potential ecological threats exist from inappropriate ecotourism.

TAIWAN'S ECOFRIENDLY ISLET IN THE TROUBLED SOUTH CHINA SEA

The coconut tree-covered Itu Aba Island, although it has not been established as a marine protected area, is totally protected by the coastal guard. In recent years, Taiwan officials have focused on making the islet a low-carbon base for humanitarian aid. For example, it is reducing air pollution as a solar-powered electricity system that now provides 16 percent of its energy needs, instead of the 32,000 liters of diesel fuel used last year. Solar panels will provide electricity to a five-bed hospital that admits people of any nationality when needed for injuries sustained during a storm, for example, which happens about 10 times per year. Nonetheless, most scholars, especially ecologists, and nongovernmental organizations hope the next step will be to establish the island as a marine protected area or marine peace park and to set conservation as the top priority.

On January 28, 2016, former president Ma visited Itu Aba Island to let the world know that Itu Aba is an "island" and not a "rock," as the Philippines claimed at the Permanent Court of Arbitration in The Hague. On March 23, 2016, a group of foreign journalists were invited to tour Itu Aba to witness a well with freshwater, a coconut plantation, vegetable gardens, and a temple. All these features demonstrate the land mass can "sustain human habitation or economic life on its own," which is required by international law to categorize a land mass as an "island" and not a "rock" or "reef." On the contrary, Okinotorishima, located on the Palau-Kyushu Ridge in the Philippine Sea, is a Japanese uninhabited atoll. Its dry land area is mostly made up of three concrete encasings. China and Taiwan dispute the Japanese claim of an EEZ around the atoll, stating that the atoll is not an island and therefore cannot have an EEZ.

11. Shao et al., "The Feasibility Study for Establishing Taiping Island as a National Park."

AN INITIATIVE FOR A MARINE PROTECTED AREA IS MUCH EASIER THAN A MARINE PEACE PARK IN THE SPRATLY ISLANDS

Based on the analysis of natural resources, energy exploitation, biodiversity, and the strategy of management in the South China Sea, John McManus¹² first suggested that the ecological conservation of the South China Sea needs high levels of cross-boundary collaboration. Establishing a marine protected area or marine peace park is the most feasible and plausible way. McManus and others¹³ illustrated several reasons, in detail, that the Spratly Islands should be established as a marine peace park to avoid overfishing or illegal fishing and to restore fishery resources for the whole South China Sea and its peripheral countries. The main reasons include:

1. From the scientific point of view, the Spratly Islands supply regional fish stocks for neighboring overfished countries. The high biodiversity in the Spratly Islands can serve as a “savings bank” in the South China Sea because seasonal changes in the directions of currents can allow larvae to disperse to different countries. Along the coasts of the sea, many coral reef fisheries are heavily overfished and harvests of adult fish have continuously declined. The coastal fish populations are periodically renewed via the influx of pre-settlement stages of pelagic juveniles. Klaus Wyrski¹⁴ determined that a cyclonic (counterclockwise) circulation predominates across the basin in the winter and an anticyclonic circulation (clockwise) is caused by the annual shift in monsoon starting from the south in summer. McManus¹⁵ determined that the seasonally shifting currents of the South China Sea could disperse pre-settlement fish from the Spratly Islands throughout the coasts of the sea. This finding indicates the importance of the water area of the Spratly Islands for conservation.
2. In economic and humane considerations, establishing a Spratly Island international marine protected area or marine peace park can reduce conflict among disputed countries, alleviate the isolation and costs of maintaining military outposts on many of the islands, and protect and utilize sustainably the natural resources of South China Sea, creating a win-win situation.
3. From the marine conservation aspect, the marine protected area ratios in the East China Sea, South China Sea, and Philippine Sea regions are the lowest among the 62 eco-regions or large marine ecosystems in the world’s oceans. In addition to establishing more marine protected areas (MPAs), including Itu Aba Island, in order to increase the numbers and size of MPAs, Taiwan needs to create a marine protected area network to protect the coral reef

12. J. W. McManus, “The Spratly Islands: A Marine Park?,” *Ambio* 32, no. 3 (1994): 181–186.

13. J. W. McManus and L. A. B. Menez, “The Proposed International Spratly Island Marine Park: Ecological Considerations,” *Proceedings of the Eighth International Coral Reef Symposium Vol. 2* (Panama, June 24–29, 1996); J. W. McManus, K. T. Shao, and S. Y. Lin, “Toward Establishing a Spratly Islands International Marine Peace Park: Ecological Importance and Supportive Collaborative Activities with an Emphasis on the Role of Taiwan,” *Ocean Development and International Law* 41 (2010): 270–280.

14. K. Wyrski, *Physical Oceanography of the South East Asian Waters: NAGA Report Vol. 2* (La Jolla, CA: University of California Scripps Institution of Oceanography, 1961).

15. McManus, “The Spratly Islands: A Marine Park?”

ecosystems among Spratly Islands, Kenting National Park, and other marine protected areas via the Pratas Islands.

The International Union for Conservation of Nature (IUCN) defines “Parks for Peace” as trans-boundary protected areas that are formally dedicated to the protection and maintenance of biological diversity and of natural and associated cultural resources, and to the promotion of peace and cooperation. Referring to a site as a “peace park” does not necessarily imply that the nations involved were previously in conflict. In the April 2008 issue of *MPA News*, the Spratly and Pratas Islands were listed as candidate sites for a marine peace park and transboundary research.

Peter Mackelworth¹⁶ recently published a book, *Marine Transboundary Conservation and Protected Areas*, which provides insights into the development of marine transboundary conservation initiatives, looking at the effectiveness of international rules, international norms and discourse, market forces, and direct access to policymaking. Examples in the book cover a wide range of jurisdictions, including territorial seas, continental shelves, exclusive economic zones, and areas beyond national jurisdiction. Case studies include initiatives in the Coral Triangle, West Africa, Central America, the Wadden Sea, the Red Sea, and the Mediterranean Sea.

The marine environment does not naturally respect arbitrary international boundaries. However, the establishment and management of transboundary marine protected areas present major governance challenges. As an alternative, it is suggested that each of the claimant countries should establish local marine protected areas at sites currently under their control and encourage international collaboration in academia and transportation as well as mutual help related to humanitarian aid at the sites.

Since the Spratly Islands are located at the boundary of the Coral Triangle, the largest hotspot of marine biodiversity in the world (coral reef, mangrove, sea grass, etc.), measures such as international collaboration in academic research, data sharing, and enforcement of marine protected areas are the best strategy not only to restore the declining fishery resources and marine diversity in the South China Sea, but also to let the sea be peaceful and be used sustainably in the future.

Therefore, we hope that all the countries in the South China Sea dispute can agree to work together to “set disputes aside and develop the area collaboratively, but it must keep conservation as a first priority.” The Antarctic Treaty is a good example from which to learn. Nonetheless, countries, including Taiwan, may not want to propose and accept this idea since it will indirectly recognize the sovereignty of other claimant countries. If the United States or other countries outside the dispute can help to promote this idea it will help ease the military tension in the area regardless of the ruling on the South China Sea of the Permanent Court of Arbitration in The Hague in July of 2016.

On this matter, China’s minister of foreign affairs at international conferences sometimes expresses Beijing’s policy for the South China Sea as involving peaceful actions, dialogue and assistance, no military threats, openness and tolerance, and win-win collaboration, not a zero-sum game. This also implies that China, the South China Sea’s most powerful country, and especially its scholars may agree to the idea of establishing a marine peace park or marine protected area there. For example, on November 26, 2009, the Third Cross-Strait Coral Reef Conference on Coral Reef

16. P. Mackelworth, *Marine Transboundary Conservation and Protected Areas* (New York: Routledge, 2016).

Biology and the South China Sea Protected Area was held at Kenting National Park on the southern tip of Taiwan. The meeting's conclusion, which was proposed from the academic communities across the Strait, stated this goal: "To set aside disputes and develop the area collaboratively, but conservation must be kept as a first priority."

Establishing a marine protected area or no-take zone on each occupied island or reef is the best way to benefit the whole world. As Mo Yan, recipient of the 2012 Nobel Prize in Literature, very wisely said to journalists about the disputed Senkaku/Diaoyutai Islands over which Japan, China, and Taiwan all claim sovereignty: "Disputes should be set aside and MPAs established. No one should go there. Let the fish swim by and the fish will say thank you."

About the Editors and Contributors

Jay L. Batongbacal is the director of the University of the Philippines (UP) Institute for Maritime Affairs and Law of the Sea. He teaches courses on property, obligations and contracts, and law of the sea and natural resources. In addition to being a graduate of the UP College of Law, Batongbacal holds a master's degree in marine management and a doctorate in the science of law from Dalhousie University in Canada. His doctoral research examined the relationship between ocean energy development and its effects on adjacent coastal communities from the viewpoint of ecological social justice. Batongbacal was also a member of the technical team that prepared and defended the Philippines' claim to a continental shelf beyond 200 nautical miles in the Benham Rise Region made in a submission filed with the Commission on the Limits of the Continental Shelf (CLCS).

Conor Cronin is a research associate with the CSIS Asia Maritime Transparency Initiative. Previously, he was a research associate with the Southeast Asia Program at CSIS. He conducts research and writes on maritime disputes in East and Southeast Asia and U.S. foreign policy in Southeast Asia. From 2007 to 2009 he served as a Peace Corps Volunteer in Cambodia. He holds an MA in international relations and economics with a concentration in Southeast Asia Studies from the Johns Hopkins School of Advanced International Studies (SAIS) and a BA in English from Georgetown University.

Erik Franckx is a professor of law at the Vrije Universiteit Brussels and director of its Department of International and European Law. His research focuses on international law in general and the law of the sea in particular. He has been appointed by Belgium as member of the Permanent Court of Arbitration, The Hague. He has also been appointed by Belgium as an expert in marine scientific research for use in special arbitration under the 1982 UN Convention on the Law of the Sea. He represents Belgium in the Advisory Body of Experts on the Law of the Sea within the Intergovernmental Oceanographic Commission of the UN Educational, Scientific, and Cultural Organization. He has served as a consultant to governments—Belgian, international, supranational—and to nongovernmental organizations.

E. D. Gomez is a marine biologist with more than 30 years of experience in his native Philippines. He specializes in coral reefs, marine ecology, mariculture, education, and resource management.

His primary focus is on marine ecosystem and coastal conservation. Gomez has worked in academia for many years, first serving as dean of student affairs at La Salle University in Bacolod City before joining the faculty of the University of the Philippines-Diliman. Prior to holding his current position as professor of marine biology at the Marine Science Institute, he was an assistant professor, associate professor, and director at the Marine Science Institute at the university.

Timothy R. Heath is a senior international defense research analyst at the RAND Corporation and member of the Pardee RAND Graduate School faculty. Prior to joining RAND in October 2014, he served as the senior analyst for the United States Pacific Command China Strategic Focus Group for five years. He worked for more than 16 years on the strategic, operational, and tactical levels in the U.S. military and government, specializing on China, Asia, and security topics. Heath has authored numerous articles and one book. Fluent in Mandarin Chinese, he has extensive experience analyzing China's national strategy, politics, ideology, and military, as well as Asian regional security developments. He earned an MA in Asian studies from George Washington University and a BA in philosophy from the College of William and Mary.

Murray Hiebert serves as senior adviser and deputy director of the Southeast Asia Program at CSIS. Before joining CSIS he was senior director for Southeast Asia at the U.S. Chamber of Commerce, where he worked to promote trade and investment opportunities between the United States and Asia. Hiebert joined the Chamber of Commerce in 2006 from the *Wall Street Journal's* China bureau. Prior to his Beijing posting he worked for the *Wall Street Journal Asia* and the *Far Eastern Economic Review* in Washington and, before that, for the *Far Eastern Economic Review* in Bangkok, Hanoi, and Kuala Lumpur. Hiebert is the author of two books on Vietnam, *Chasing the Tigers* (Kodansha, 1996) and *Vietnam Notebook* (Review Publishing, 1993).

James Kraska is Howard S. Levie Professor in the Stockton Center for the Study of International Law at the U.S. Naval War College in Newport, Rhode Island. He is also a distinguished fellow at the Law of the Sea Institute, University of California Berkeley School of Law, and senior fellow at the Center for Oceans Law and Policy at the University of Virginia School of Law. He is also a member of the Council on Foreign Relations and a senior fellow at the Foreign Policy Research Institute. Previously, he served as an endowed visiting scholar at Duke University Marine Laboratory and fellow in residence at the Marine Policy Center, Woods Hole Oceanographic Institution.

Rear Admiral Michael McDevitt (USN Ret.) is a senior fellow at CNA Corporation, a nonprofit federally funded research center in Washington, DC. He has been involved in the formulation and analysis of U.S. security policy and strategy in the Asia-Pacific region for the last 25 years, in both government policy positions and, following his retirement from the U.S. Navy, for the last decade as an analyst and commentator. His most recent research focus has been maritime security issues along the Indo-Pacific littoral and the maritime dimension of China's national strategy.

John W. McManus, PhD, is a professor of marine biology and fisheries and director of the National Center for Coral Reef Research (NCORE) at the Rosenstiel School of the University of Miami. In 2007, he chaired the Five-Year Review of the National Oceanic and Atmospheric Administration Coral Reef Conservation Program, which led to major changes in its structure and activities. As the former leader of the Aquatic Environments Program of the WorldFish Center in Southeast Asia (formerly ICLARM), he was the founder of ReefBase, the Global Coral Reef Database, and the

International Coral Reef Action Network (ICRAN). He is known for innovative approaches to science in support of coastal and watershed management, ranging from simple approaches by which villagers can assess their resources to cutting-edge science and technology.

Elina Noor is director of foreign policy and security studies at Institute of Strategic and International Studies Malaysia. She was previously a key team member of the Brookings Institution's Project on U.S. Relations with the Islamic World in its formative years post–September 11, 2001 and has researched weapons of mass destruction and terrorism at the Center for Nonproliferation Studies of the Monterey Institute of International Studies in Washington, DC.

Gregory B. Poling is director of the Asia Maritime Transparency Initiative and a fellow with the Southeast Asia Program at CSIS. His research interests include disputes in the South China Sea, democratization in Southeast Asia, and Asian multilateralism. Poling is author of *The South China Sea in Focus: Clarifying the Limits of Maritime Dispute* (CSIS, 2015) and coauthor of a number of works, including most recently *Building a More Robust U.S.-Philippines Alliance* (CSIS, 2015). He received an MA in international affairs from American University and a BA in history and philosophy from Saint Mary's College of Maryland, and he studied at Fudan University in Shanghai.

Natalie Sambhi is a research fellow at the Perth USAsia Centre, where she writes on Indonesian foreign and defense policy as well as Southeast Asian security. She was most recently an analyst at the Australian Strategic Policy Institute (ASPI) from 2012 to 2016 and managing editor of ASPI's blog, *The Strategist*. She worked previously at the Australian Department of Defense and the University of Canberra. In January 2016 and in May 2014, Sambhi was a visiting fellow at the Center for a New American Security in Washington, DC, where she presented on Indonesian civil-military relations. She is currently president of the Australian Institute of International Affairs, having served as vice president from 2013 to 2015. She hosts "Sea Control: Asia Pacific," a podcast series on Asia-Pacific security for the U.S.-based Center for International Maritime Security.

Kwang-Tsao Shao, PhD, is a senior research fellow and the executive officer at the Systematics and Biodiversity Information Division, Biodiversity Research Center, Academia Sinica and an adjunct professor at the Institute of Marine Biology of National Taiwan Ocean University (NTOU). From 1991 to 1994, Shao was the first director of the NTOU Institute of Marine Biology, and from 1996 to 2002, he served as director of the Institute of Zoology at Academia Sinica. In 2004, he established the Biodiversity Research Center at Academia Sinica and served as acting director from 2004 to 2008. He received his BS from the Department of Zoology at the National Taiwan University (NTU), his MS from the NTU Institute of Oceanography, and his PhD from the Department of Ecology and Evolution at the State University of New York at Stony Brook.

Carlyle A. Thayer, PhD, is Emeritus Professor of Politics at the University of New South Wales and director of Thayer Consultancy, an organization that provides political analysis and research support on regional security issues. Thayer has taught at the Australian Defence Force Academy, Asia-Pacific Center for Security Studies, Australian Command and Staff College, and Centre for Defence and Strategic Studies, Australian Defence College. He writes a weekly column on South-east Asian defense and security affairs for the *Diplomat* and has authored over 500 publications. Thayer studied political science at Brown University and received an MA in Southeast Asian Studies from Yale and a PhD in International Relations from the Australian National University.

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