When Politics, the Environment, and Advocacy Compete–Environmental Security in the South China Sea

Wiley C. Thompson

"Victory will be based on the full support of a prosperous and contented population while engaging in strategic diplomacy in step with military preparations."

Geopolitics and the Dragon's Advance: An Exploration of the Strategy and Reality of China's Growing Economic and Military Power and its Effect Upon Taiwan

"Environmental scarcity has insidious and cumulative social impacts, such as population movement, economic decline, and weakening of states. These can contribute to diffuse and persistent sub-national violence. The rate and extent of such conflicts will increase as scarcities worsen."

Environmental Scarcities and Violent Conflict: Evidence from Cases

Dr. Thomas Homer-Dixon

Abstract Island building in the South China Sea by China and other neighbors continues at a destructive and unprecedented rate. China now occupies more than 3000 acres of artificially constructed island space and has built land at a pace that is 17 times greater in recent years than all other claimants have built in combined efforts over the past 40 years. While calls for accountability by some national actors have been insistent, voices from non–governmental actors are largely absent.

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As the entire region is very complex, a holistic understanding of the operational setting demands: a full appreciation of the ability for stakeholders to hold regional actors accountable; an examination of key major environmental issues; and an analysis of regional security risks through a modified approach for assessing non-land based environmental security. This chapter examines these issues, models outcomes if no intervention is offered, and recommends contexts where China can be influenced and may be more willing to amend their activities in the region.

Keywords China · Commercial fishing · Conflict · Coral · Coral reef · El Nino · Environmental scarcity · Environmental security · Fish · Indonesia · Island building · Malaysia · Paracel Islands · Philippines · Pratas atoll · Resources · Sea level · Security · South China Sea · Spratly Islands · Thailand · Transnational environmental issue · United States · Vietnam

1 Background

The interplay of resources, access, and security in the South China Sea (SCS) are multifaceted and offer a very interesting geographical problem. This is a complex region when viewed from any aspect. Topics such as political geography, ethnicity and language diversity, terrestrial and aquatic resources, climate change, historical conflict, and colonial legacies just begin to cover the variety of considerations which should be brought in for analysis. The significant contemporary environmental issues, the environment for advocacy or lack of, and a unique environmental security context, one that is largely aquatic, makes this region a compelling area for case study.

From a perspective of United States (U.S.) interests and security policy, military leaders and government policy makers have sought to understand what motivates or can be used as a lever against the People's Republic of China (PRC), specifically in the context of their expansion into the SCS along the Nine-Dash Line (Fig. 1)? Will a carrot or a stick approach, or a combination of both work best? Can pressure for environmental stewardship offer security benefits for other actors? Who best delivers this leverage and is it delivered directly or indirectly? Environmental change has played a significant role in internal stability and conflict within China over the past millennia when variations in climate results in cooling trends that negatively impacted agricultural and correlated with warfare frequency and dynastic change (Zhang et al. 2007). More modern times have witnessed socially constructed famine as in the case where Mao did just that from 1958 to 1962 to shape policy, practice, compliance, and output during his Great Leap Forward. Can environmental issues external to China still resonate with the domestic population and thus be used as levers?

Leaders of the PRC respond to pressure from environmental issues and have changed policy in the recent past. One interesting change the government of China has made, based on pressure from environmental groups, was to stop serving

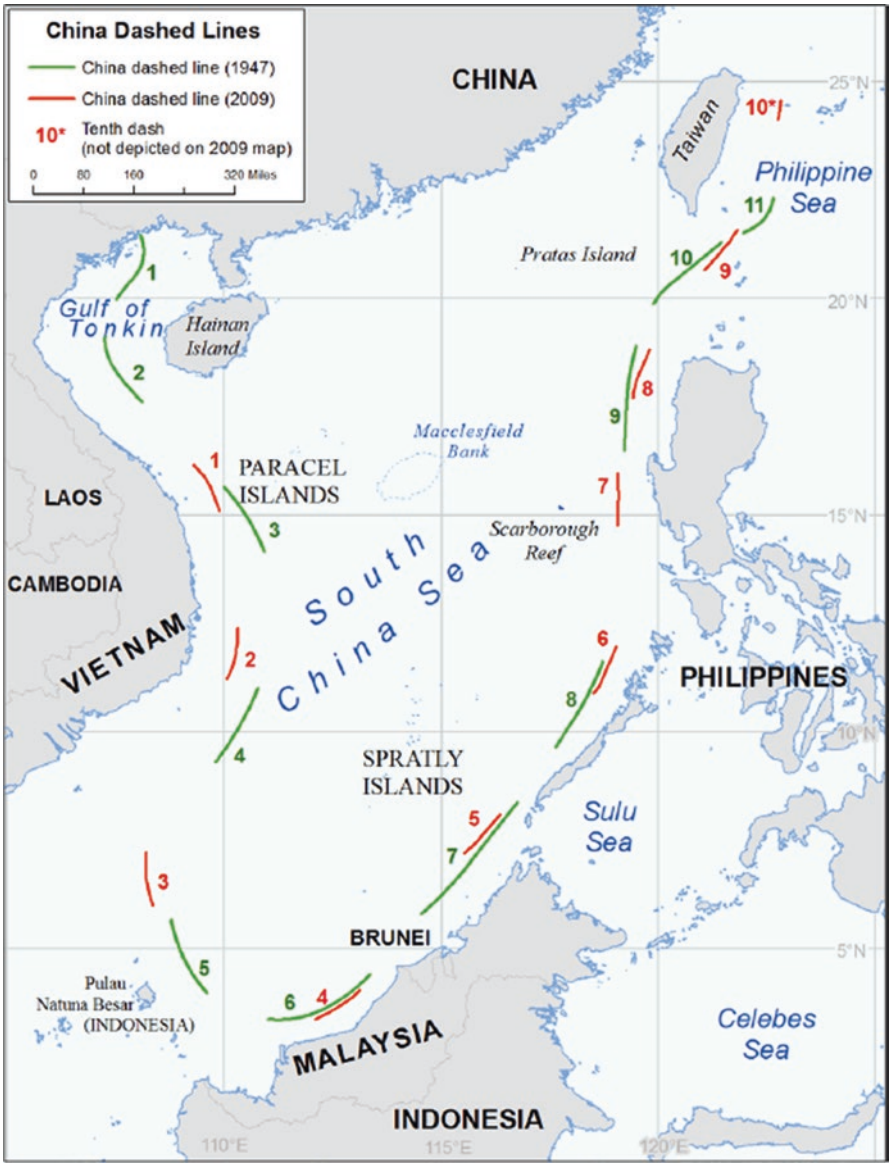

Fig. 1 Map depicting features of interest in the South China Sea to include China's 1947, 2009 and 10th dashed lines. (Source: U.S. DOS (2014))

shark fin soup at state dinners (Eriksson and Clarke 2015). Most impressive is that this resulted in a decrease in the consumption of shark fin soup by a growing middle class at a time when they could afford it. Was it concern for the environment or could it have been the desire for the government not to appear backwards,

uncouth or unsophisticated as portrayed by the rest of the world in the eyes of the Chinese people?

On 1 January 2015 the Standing Committee of National People's Congress passed the first amendment in 25 years offering greater powers for environmental authorities and harsher punishments for polluters. This came at a time when China had not only received significant attention from environmental advocates on issues of air and water pollution, but had felt exposure on these same topics from citizens and media. These movements may suggest that one of the levers that can influence China is the environment and specifically, issues of the environment when failed action or inaction by the ruling party will harm, anger, or embarrass the citizenry. However, when the environment cannot be seen as a major issue by a global audience, and especially when that issue cannot be used to portray the government in a negative light domestically, it may no longer functions as a lever. This appears to be the case with the China's island building and coral destruction in the SCS.

2 Key Environmental Issues

The SCS and its proximal countries are replete with environmental issues ranging from deforestation, oil spills, sea level rise, and deforestation to promote palm oil. For the purposes of this study, the contemporary, globally–relevant environmental issues of coral and fishing were selected. China is having an impact in each of these areas and has attracted global attention for their actions. China's behaviors with respect to island building and the impact and coral and fishing have impacts beyond their borders and arguably influence the security, to varying extents, of the region and beyond. These are transnational environmental issues that are having significant impact on the land, the oceans, and in the atmosphere.

2.1 Coral

Like all biomes, coral has value to the planet. A study published by Costanza et al. (2014) looking across biomes estimated the value of one hectare of coral to be $352,249 (2007 dollars). This is the highest of any biome listed and almost double the unit valued listed for tidal marshes and mangroves. China now occupies 3000 acres (1214 hectares) of artificially constructed island space and has built land at a pace that is 17 times greater (over the last 20 months) than all other claimants in combined efforts over the past 40 years (U.S. DoD 2015). Damage to coral from destructive fishing practices is not new to the region and not unique to this area. Yet, beyond calls by the U.S. and to an extent the government of the Philippines, there has been little demand for accountability and for a halt to these destructive practices.

One of the few calls for accountability from the academic community is Dr. John McManus of the University of Miami's Rosenstiel School. His work has been the

most cited in efforts to highlight the damage being done to coral reefs in the SCS. McManus is the principle investigator for the Peace through Conservation in the SCS project, a project that dates to the 1990s (McManus 1993). He has expressed concerns for an already overfished–fish region and the impact on island expansion on Scarborough Atoll, Pratas Atoll, the Paracel Islands, and the Spratly Islands corals to a point beyond which they will be able to recover. Additionally, he cites concerns over potential for armed conflicts in the past, arrests of fishing crews, and "*the constant threat of escalation to violence stemming primarily from competition over dwindling fishery resources*" that the surrounding coastal populations live under (McManus 2016b p 1).

McManus teamed with other colleagues to examine the human impacts on reef development for geopolitical and military purposes (Mora et al. 2016). They noted the unique value of isolated and uninhabited SCS islands and atolls calling them "reefs of hope," protected from invasive species, agricultural runoff, and pollution from sewage (Mora et al. 2016 p 1). Their emphasis on the value of isolation, which these reefs offer, are a compelling argument for coral preservation as a unique marine environment in the SCS. Supporting this suggestion Alan Freidlander, a biologist at the University of Hawaii, was quoted in an interview (Ranada 2015) noting that "*dredging and building on coral reefs in the SCS is causing irreparable damage to one of the most diverse ecosystems on earth*."

When it comes to coral destruction, China has an interesting ability to self-advocate. Beijing actually suggests that their island building efforts are a Green Project (Allen-Ebrahimian 2016). Although the construction on reefs and the harm it causes is well-documented, Beijing claims no harm is being done. This is an interesting narrative, in which the Chinese claim that their island building techniques simulate the natural processes of weather as "*sea storms blowing away and moving biological scraps which gradually evolve into oasis on the sea*" (Allen-Ebrahimian 2016 p 1).

As a result of climate change, Australia's Great Barrier Reef Marine Park Authority specifically noted that coral reefs are currently at increased risk of damage by rising sea temperatures, ocean acidification, and extreme weather events (AGBRMPA 2016). Changes in the ocean environment can make growth and recovery from damage by humans even more difficult. Ocean acidification from increased carbon dioxide (CO_2) harms corals as it slows the rate of calcification (i.e., skeleton formation) which forms the hard corals. The skeletons that do form under these conditions are also weaker. Work by Chen et al. (2015) examined the impact of increased sea surface temperature range and increased atmospheric carbon dioxide on coral as a result of climate change. Their findings confirm commonly accepted thought that both increased temperature and CO_2 result in a decrease in coral coverage and further suggest that economic losses in the global coral reef value as driven by climate change may range from U.S. $3.95 to U.S. $23.78 billion annually (Chen et al. 2015).

The recent 2015–2016 El Niño, also known as the third global bleaching event, has resulted in coral bleaching on a global scale. The El Niños of 1998 and 2010 had damaging effects on global coral populations, with 16% of reefs being killed world–

wide during the 1998 event (Underwater Earth 2016). Data suggest that the 2015–2016 event is on track to impact 38% of the world's coral reefs resulting in 12,000 square kilometers (4633 square miles) being killed (XL Caitlin 2016). Research from NOAA suggests that the bleaching event could affect the livelihoods of 500 million people, putting at risk income worth over USD $30 billion and also damaging coral reefs which buffer coastal communities from storms, a service that is critical, yet difficult to monetize (NOAA 2016).

The government of the Philippines remains the only major regional actor to speak out against China's destructive land reclamation practices and its commercial fishing fleet's illegal and destructive activities. In 2015, the Philippine Department of Foreign Affairs (DFA) released a statement calling out China's reclamation activities as causing "*irreversible and widespread damage to the biodiversity and ecological balance of the [SCS]/West Philippine* Sea (WPS)" (ROP 2016 p 1). The DFA pointed out that China's activities have so far caused destruction to over 300 hectares of coral reef systems, amounting to an annual economic loss of USD $100 million as well as constituting a threat to the livelihood of peoples and communities in the littoral countries. The statement also criticized China for being tolerant of violations under the Convention on Biological Diversity (CBD) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) as their fishermen poach giant clams, green sea turtles, and other endangered species. While raising critical environmental issues, the statement noted the security issues like China's pursuit of the Nine-Dash Line (Fig. 1) through reef destruction and island building are of significant regional importance (ROP 2016). This affirms that while environmental issues are present, security issues may be at the root of the matter for many.

2.2 Fish

In 2012, the SCS accounted for approximately 12% of the global seafood catch (Seas Around Us 2016). This is a significant number, given the size of this body of water. Over–fishing and destructive environmental practices are poised to negatively impact the value of fishing stock. If nothing changes, a report from the University of British Columbia suggest that the SCS could lose nearly 60% of its stocks by 2045 (Sumaila and Cheung 2015). China is a major stakeholder in the regional fishing economy as they account for about 45% of the landed value of fish taken out of the SCS (Sumaila and Cheung 2015). Overall China has seen its rate of annual marine capture more than quadruple from 7% in 1980 to 32% in 2013 (Baker et al. 2016).

Of particular concern has been the practices of Chinese commercial fishermen (and others) who use destructive techniques to include: dynamite fishing, cyanide poisoning, and bottom trawling. Giant clams are particularly valuable as they may fetch upwards of USD $1000–2000 each. The Chinese fishermen, mostly from Tanmen, harvest these clams which have increased in value as pressure in the illegal

ivory trade has made them a sought–after substitute for ivory carvings (McManus 2016a). The SCS is also home to green sea turtles, which are endangered and hawksbill turtles, a critically endangered species. Further, much of the world's tuna stock are born in the SCS, making this a critical source region for this valuable commodity.

The impacts of Chinese fishing, coral destruction, and island building can have global, regional, and local impacts. This has already been recognized by fishermen and scientists. The reclamation of 769 acres (of Philippine interest) and the impact on fish populations could cost the Philippine economy and its fishing industry USD $110 million annually, according to the Bureau of Fisheries and Aquatic Resources of the Philippines (Ranada 2015). In Ranada's article she cities, Filipino scientist Dr. Edgardo Gomez, as he discussed the ecological significance of the West Philippine Sea noting a 2011 study which found that coral reefs in those waters were critical to the fish populations in the neighboring Sulu and Sulawesi Seas. Further, the SCS coral reefs provide spawning grounds and nurseries for a variety of marine species, demonstrating their value to ecosystems and economies outside their waters.

As Chinese *per capita* consumption of fish is now more than double that of the rest of the world, there may seem to be a compelling narrative available to offer in defense of Beijing's expansionist activities. However off shore fishing is only one method of providing fish for trade or domestic consumption. In a 2014 report, the UNFAO noted that "*China has been responsible for most of the growth in fish availability, owing to the dramatic expansion in its fish production, particularly from aquaculture*" (UNFAO 2014 p 3). This weakens the argument for a need to expand fishing operations into the SCS. Will the Chinese see fish as a strategic commodity to be defended as suggested by Dupont and Baker (2014)? The actions to militarize their commercial fleet suggest that they do (Rajagopalan 2016).

3 An Environmental Security Assessment

In the greater context, events in the SCS can be viewed through the lens of environmental security. In a recent publication focused on environmental security and migration in Africa, the United Nations Environmental Programme framed environmental security as "*the process of establishing the security of those environmental factors – water, soil, air, vegetation, biodiversity, climate and others – that are prime components of a nation's environmental foundations that ultimately underpin all its socioeconomic activities, and hence its political stability*" (UNEP 2017 p 1). Others suggest that environmental security can be framed in the context of a statist viewpoint or alternatively as environmental change that begets social change, which in–turn creates conditions for conflict, even down to the community level (Dabelko and Dableko 1995). A more recent definition of environmental security refers to a broad range of security issues intensified by environmental factors and suggests that environmental stress has the potential to trigger violent conflict (Galgano and Krakowka

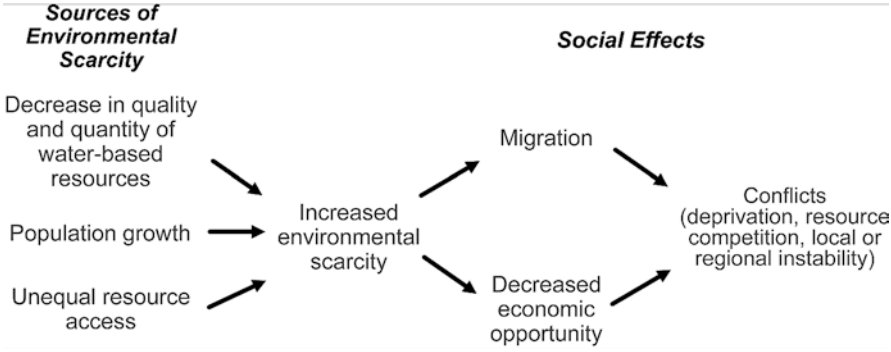

Fig. 2 Path from environmental scarcity to deprivation conflicts. Current conditions in the South China Sea are more likely to follow the lower path. Climate change can exacerbate conditions being seen today. (After Homer-Dixon (1994))

2011). Homer–Dixon, a pioneering scholar and researcher in this area prefers not to use the term security, but instead focuses on links between environmental stress and violence, noting that violence is easier to identify and measure while acknowledging that security has been used to inflate the import of issues in an attempt to make them more competitive for "*public and policy maker attention*" (Homer-Dixon 1995 p 189).

While definitions or the application of terms may vary, the focus of a change in the environment and competition for resources and their correlation to violence remains constant throughout the literature. What is germane to this case study and is strongly emphasized in works by Dabelko and Dableko (1995) and Homer-Dixon (1995) is that any analysis must also incorporate the motivations of other actors, climate change, and a range of social, political and economic considerations. The setting of the SCS as a case study for environmental security is unique. Previous studies have focused on land-based events in Rwanda, Sudan, El Salvador, Haiti, Peru, the Philippines, and South Africa. Yet existing models should apply in a rather straightforward manner within the context of what is occurring, regardless of the terrestrial or aqueous environment, with models incorporating climate change implications being even more applicable.

One of the frameworks that can be used to model actions and outcomes in the context of environmental security (scarcity) was developed by Homer-Dixon (1994) and used in his work entitled Environmental Scarcities and Violent Conflict: Evidence from Cases. An adaptation of the framework he developed is depicted in Fig. 2. By following specific pathways in his framework and modifying terminology, his approach can be adapted to model the scenario being played out in the SCS. As previously noted, he would substitute scarcity for security in his writings. The activities creating environmental scarcity and the manifested effects as seen in the SCS have a distinct geography. Though Homer-Dixon (1994) does not account specifically for climate change, subsequent models suggest that the impacts of climate change can exacerbate anthropogenically created scarcity and social effects.

Table 1 Matrix depicting stakeholder and corresponding interests

Stakeholder	Interests and needs
China	One of the top SCS fish production and export countries. Important sector in economy. Significant distant water fleet.
Hong Kong	Local waters largely unregulated and unmanaged. Important fish stocks over–exploited and depleted
Philippines	Much of the fish is consumed locally. Decline in municipal and coastal fisheries due to heavy fishing pressure
Indonesia	Fisheries in critical condition. Illegal fishing is extensive
Thailand	One of the world's top fish producing countries. Fishing is important for domestic consumption. Primary source of protein for the population, especially in remote villages
Malaysia	Fishing critical to food security. Important for income and employment in rural areas
Vietnam	Critical to economy, 90% of catch is taken from shallow, inshore waters. Increasingly focusing on off–shore tuna market

The impact of fish availability has a distinct geography and varies in the communities it affects. (Derived from source material in Sumaila and Cheung (2015))

Throughout the SCS basin evidence and observations suggest that all three of the sources of Homer-Dixon's (1994) environmental scarcity are evident: (1) a decrease in quality and quantity of renewable resources; (2) population growth; and (3) unequal resource access. There may be a decrease in the quality of resources but there certainly has been a decrease in the quantity of renewable resources in the basin. When properly managed, the oceans can provide diversity of renewable resources for local consumption and in support of export economies. Fish stocks are one of the most exploited of these resources. Noted that by 2045, 60% of the fish they studied in the SCS will generate less catch with the outcome being serious food security implications and 55% of the fish will generate less value resulting in significant economic consequences (Sumalia and Cheung 2105). The authors also indicated that there is concern with overfishing and habitat destruction and share other data which suggest significant declines in fish population by species and in biomass overall (Sumalia and Cheung 2015). Both will influence livelihoods of local fisherman from coastal communities in the Philippines, Indonesia, Malaysia, Vietnam, and China, and the economies and markets which are symbiotic with the fish harvest. As noted by Sumaila and Cheung (2015) each stakeholder has its own interests and needs. These interests and needs are listed in Table 1.

While the impact on export economies, like those of Thailand, Vietnam, and especially China is significant, it is the local fishing communities that may be most affected, especially when there are few alternative livelihood options. The pressure placed on these small, near–shore fishing enterprises is even greater as China develops its commercial fishing fleet, transforming it into an expeditionary force with military training and supporting it with fuel and ice subsidies (Rajagopalan 2016). This clearly suggests that the intent is to use this fleet far from China's coastal waters, putting greater stress on distant marine resources and making it very difficult to manage regional fishing stocks with existing laws and enforcement mechanisms.

The expeditionary nature of China's commercial fishing fleet, combined with their rejection of the 2016 U.N. Tribunal ruling, suggests that China sees the waters around the built islands, specifically the Spratly Islands and Scarborough Shoal, as exclusive economic zones and that they will continue to exploit resources in these areas (Fig. 1). These islands are distant from China, but very close to the Philippines and Malaysia. This fits Homer-Dixon's (1994) framework as large militarized commercial fleets fishing in waters traditionally used by local fisherman will create unequal resource access as another source of environmental scarcity. With other countries unable, or unwilling, to support their local fishing industry in the same manner as the Chinese, the potential for Chinese fishermen to outcompete local fishermen in their own waters exists. Further, the militarization of the Chinese commercial fleet could similarly be seen as a power move to coerce other fishing vessels and dominate the marine harvest. When viewed both from a spatial sense and one of power, the conditions are set for unequal resource access.

China, Vietnam, and Indonesia are seeing rapid population growth along their coastal zones with Vietnam's coastal population growth expanding 0.02% faster than the rest of the country (Hinrichsen 1999), with Vietnam overall adding half the absolute number of people per year as Indonesia, but doing so on land area that is six times smaller. The growth rate in the Philippines province of Palawan was 4.65% from 2000 to 2010, whereas the growth rate in Mindanao was less than half that at 2.14% (NEDA 2016). Currently there are many large, rapidly urbanizing populations living within the coastal zone. Coastal zones include the massive river deltas found throughout Asia, all of which are critical to local livelihood and home to many. Consider the staggering statistic that although coastal zones account for only 2% of land area, they contain 10% of the global population and 13% of the global urban population (McGranahan et al. 2007). Possibly of greater concern is that one–third of the world's population lives within 200 kilometers of the coastline and one–half lives within 260 kilometers of the coast (Hinrichsen 1999; World Bank 2010).

As populations in these areas increase, rising sea levels continue to place them, their resources, and livelihoods at greater risk from coastal flooding, storms, and salt water intrusion. Such predictions suggest that maintaining a sustainable fishing economy is all the more critical in coastal communities. In 2009, the World Wildlife Fund commissioned a study to examine climate vulnerability in 11 major Asian coastal cities. The reports shared concerns that future climate change and vulnerability will impact national and economic security as well as "*human health, food production, infrastructure, water availability and ecosystems*" (WWF 2009 p 3). In China, rivers, deltas, and the coastal zone have become polluted, forcing fishermen farther off–shore to find viable fishing grounds. This not only places them in competition with other Chinese fishermen, but also with fishing fleets from other countries.

The opportunities for environmental scarcity are more than just possible because conditions exist and are being seen by scientists and those who make a living from the sea. At this point Homer-Dixon's framework (Fig. 2), which was developed prior to the time that climate change was well integrated into the body of environmental research, points to conditions of scarcity. Evidence suggests that a warming climate

and increased variability will negatively affect the quality and quantity of renewable resources in the SCS. Warmer waters will alter fish habitat and breeding grounds, possibly forcing migration. As previously noted, some fish populations are genetically connected to populations in other bodies of water, indicating that impacts in the SCS can have teleconnections, making resolution to this crisis not only even more compelling, but also suggesting that in the longer term, chronic environmental impacts may bring in other stakeholders from outside the immediate region. An increase in atmospheric CO_2 has resulted in an increase in carbonic acid in ocean waters, which is hostile to marine life, especially in the context of the regeneration of coral reefs. Changes in water chemistry can impact other marine species, resulting in possible decrease in population numbers or migration out of the basin, similar to the fish the migration of fish populations.

In Homer-Dixon's (1994) model (Fig. 2), increased environmental scarcity can lead to either migration/expulsion, decreased economic productivity or both. In this case study, decreased economic productivity has already been seen, but accurate data are not available. What could make this more problematic is the consideration that local fisherman, where the impact may be hardest felt, have significant investment in their fishing livelihood (i.e., equipment, market connections, home location), thus making supplemental livelihoods or conversion to alternate livelihoods all the more difficult. This is compounded by the lack of available land and the entry of land-based farmers into the aquaculture fishery economy. These constraints leave few options for those in the fishing fleet economy. As such, competition-induced scarcity, especially from a militarized and heavily subsidized foreign fishing fleet, could accelerate the scarcity and worsen the decreased economic productivity.

The question of expulsion or migration is more problematic. As noted above, there may be some economic disincentives to migration by fishing communities. However, this is an aspect that should be examined at the local level in the coastal regions of each country. Migration literature is replete with examples of the impact of distressed economic conditions pushing people from rural regions towards perceived opportunities in urban communities. Just as plentiful is the evidence that these opportunities are only perceived and the situation for these economic migrants does not improve. What might be readily evident in this current context is a denial of resource or opportunity on a very localized scale as militarized Chinese commercial fleets outcompete and even "bully" local fleets away from areas illegally claimed by China. Similarly, the presence of Chinese military boats and aircraft in the region where island building is taking place may result in the intimidation of local fishing fleets, with the result of expelling from their traditional fishing grounds. This could be seen as a localized, forced, economic migration.

Homer-Dixon's (1994) model suggests that social effects may include ethnic conflicts, *coups d'état*, or deprivation conflicts. Conflicts between regional navies, coast guards, and fishing fleets have already occurred. At this point there is little evidence that any state will weaken to the point that a violent overthrow of a government will occur because of environmental scarcity in the SCS. What could happen over time, however, as scarcities become more acute and the impacts on

livelihoods are manifested across larger populations, is that disenfranchised communities may begin to lose confidence in their government's ability to maintain sovereignty over territorial seas and existing regimes may be replaced through the political process.

The more likely outcome, as suggested by Homer-Dixon (1994) is the triggering of a violent conflicts, which may manifest in the form of deprivation, resource competition, or as local or regional civil instability. In fact Homer-Dixon (1994) suggests that evidence demonstrates "*that environmental scarcity simultaneously increases economic deprivation and disrupts key social institutions, which in turn causes 'deprivation' conflicts such as civil strife*." This fits the current scenario very well whereby a decrease in the availability of fish and intimidation by the militarized Chinese commercial fleet or Chinese military planes and boats will create conditions of economic deprivation in regional fisherman, especially those who are locally based. For example, while aquaculture in the Philippines does provide part of the fish production and would not be impacted directly by aggressive island building, it represents only 25.4% of the total catch (FAO 2016).

There is an uncomfortably constant stream of reporting on confrontation between fishing vessels and regional coast guards and navies. Reports, like the article posted by Stratfor (2016) entitled *Fish: The Overlooked Destabilizer in the SCS*, suggests this trend will continue as China sends its fleet away from its depleted shores towards the less depleted waters near the Philippines, Malaysia, and Indonesia. While all of these encounters have been resolved in a relatively peaceful manner to date, it may only be a matter of time until they are not. Further as economic deprivation builds, the impact on livelihoods and coastal communities will eventually manifest in negative outcomes as the social institutions are disrupted and stressed. This has longer-term implications and could, overtime if not addressed by government entities, have negative social, economic, political and eventually, security implications.

4 Conclusions

The value of using a model is in its ability to help us understand complex realities in a more simplified and applicable framework. By modelling and identifying critical attributes and paths we can also look for opportunities to intervene and shape or prevent actions that would lead to undesirable outcomes.

First what should be considered is what can be done to influence a country of 1.38 billion people that has a U.S. $7.0 trillion global economy that sits on a 3.7 million square mile land mass? The answer, at least partially, may lie in looking for what motivates China, and what it values. As noted by Homer–Dixon, assessing the environment and security must incorporate the motivations of other actors in the region in addition to change and scarcity in the environment. According to Dr. Alex Vuving, a faculty member at the Asia–Pacific Center for Security Studies, the interests in the region of most actors largely center on power, resources, and

sovereignty, though they vary from country to country. When it comes to China, Vuving suggests that they are playing Weiqi or Go, not chess. Not seeking victory through checkmate, China is seeking victory through encirclement, territorial gain, and control. He further notes that China does not fear singular attacks as they have a history of carrot and stick diplomacy, selective punishment methods, and an "attack us once we will attack you 1,000 times" mentality. Evidence of this was displayed in the pre-emptive rejection of 2016 The Hague Tribunal findings ahead of the official release and then their resolute rejection following the official release.

When it comes to the motivations of regional actors Vuving suggests that China's objective is first and foremost power and that they are pursuing it in a Mahanian control of the seas in a total hegemonic fashion. The Philippines, he suggests, prioritize resources (i.e., oil and gas) first then, sovereignty. Malaysia values resources (i.e., oil and gas), then sovereignty while Vietnam is mostly focused on sovereignty. Brunei has the least issues of anyone, they would prioritize sovereignty above all. While it appears that there will be little chance of direct conflict between any state actor and China, there are already confrontations between navies and fishing vessels and the conditions are set for the risk of conflict, taking on a variety of manifestations between sub-state actors.

In his chapter entitled, *Geopolitics and the dragon's advance: An exploration of the strategy and reality of China's growing economic and military power and its effect upon Taiwan*, Dr. Clifton Pannell (2011), one of the foremost U.S. experts in China's human geography advised that from the Chinese perspective, "*victory will be based on the full support of a prosperous and contented population while engaging in strategic diplomacy in step with military preparations*" (Pannell 2011 p 361). All of these are clearly evident in the context of environmental issues internally and in the SCS. When the air becomes so polluted that the harm it produces is undeniable to Chinese citizens and global media attention makes emissions an embarrassing issue to the Chinese government, the government takes action.

Though less visible, the government has taken action to clean up Chinese rivers and coastal waters, while in the interim, providing fuel and ice subsidies to off-shore fishing fleets, giving them not only an alternative fishing opportunity and making them an implement of the national security apparatus in the process. Again the prosperous and contented population takes primacy and gets action. As Beijing has thumbed its nose at the Tribunal's ruling, the challenge, if the U.S. wants to make the environment an issue with any leverage, is how to get the global community to rally behind an environmental call to arms over rock and coral that amount to an almost immeasurable area of the SCS. With no check on China's behavior, either from a legal, diplomatic, or influence of domestic support/approval mechanism, consideration must be given to Dr. Pannell's argument that the Second Island Chain is soon to follow as military and technological capabilities and resources mature.

Given little apparent desire to challenge destructive policies from the environmental community and China's refusal to accept the Tribunal's ruling, policy makers may consider developing strategies from Homer-Dixon's framework to intercede and mitigate the risk of deprivation conflicts? Any strategy developed would be best

applied in the early stages where *sources of environmental scarcity* are created: a *decrease in quality and quantity of renewable resources*; *population growth*; and *unequal resource access*. This will impact all scarcity generators except for population growth, which may be negligible from the perspective of populating the built islands.

The two sources of environmental scarcity that can be influenced through are a *decrease in quality and quantity of renewable resources* and *unequal resource access*. In order to mitigate the risk of conflict, economic opportunity and productivity must be secured. To do this, marine resources must be sustainably managed and reasonable and equitable access must be offered. U.N. Convention on the Law of the Sea (UNCLOS), while the source of contention with island building, may be a platform that can be used to find cooperation when it comes to managing the marine harvest. This could be further strengthened with the enforcement of UN Fish Stocks Agreements. Another mechanism that would assist in this effort is more concerted efforts to decrease illegal, unreported and unregulated (IUU) fishing. All of these suggestions would require acceptance, compliance and enforcement of these international agreements. However, unlike the coral destruction and island building, failed compliance is likely to get the attention and advocacy from environmental groups, something that has not happened with coral, but would have the same outcome. In this situation, sustainable fishing is primarily an environmental issue, with negative impact on livelihoods and species depletion being the outcomes of failed action.

Another opportunity to protect marine resources and create the conditions for equal access may actually come through denying or limiting access. Creating marine protected areas (MPAs) or "marine peace parks" as suggested over two decades ago by Dr. McManus could function as a mechanism to control and balance access to space. Environmental groups would be very unlikely to engage on issues related to UNCLOS disputes over territorial waters or exclusive economic zones which are how the island building disputes are seen right now. Sanctuaries or protected parks can function to limit access to fishing fleets and also limit China's island building activities. If the parks included islands already developed, given the Tribunal's ruling that China has no claim to these areas, the Chinese may be compelled, through "shamefare" by environmental groups to abandon these posts. Refusing to abandon the destructive activities associated with military occupancy (waste management, fuel/oil/chemical spills, and noise hazards), especially if they are now taking place in the middle of a marine sanctuary, may finally get environmental advocacy groups engaged.

In the end, the only way to make security issues in the South China into environmental issues is to truly make them environmental issues. If the U.S. and other interested actors can construct a framework of compelling environmental issues that leave no room for China's expansionist aims and makes the issues resonate with environmental primacy, then environmental advocacy may become a reality, as long as security remains masked as a distant and collateral outcome. Finally, analyzing security interests that intersect with the environment through validated frameworks can offer new perspectives, alternative hypotheses, and a more constructive voice in

which to communicate with non-security minded audiences. Military strategists and policy makers should consider adapting these frameworks, when appropriate to develop a more holistic understanding of the complex issues they face. As the global population continues to increase and consumption rises along with it and as climate change modifies the environment, impacting opportunities for livelihoods, all stakeholders will eventually come to the realization that security issues and environmental issues are truly co-equals and those who viewed them in that manner all along were well ahead of the rest.

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