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CONSERVATION AND BIODIVERSITY PROGRAM

The Proposed Spratly Islands Marine Park: A History

John W. McManus, PhD, Benjamin M. Vallejo Jr., PhD, Rodrigo Angelo C. Ong, MD, and Charles Mijares

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"A Planet Skysat captured this image of Fiery Cross Reef in the South China Sea on May 3, 2020. Constructed between 2014 and 2017, Fiery Cross Reef is one of China's seven artificial islands in the Spratly Islands and represents a continued military presence in the region."

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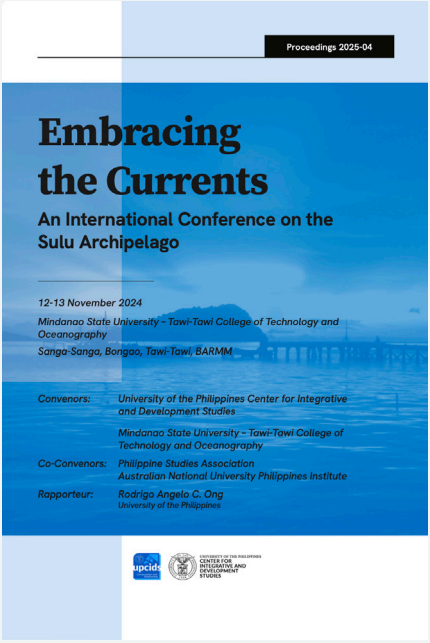

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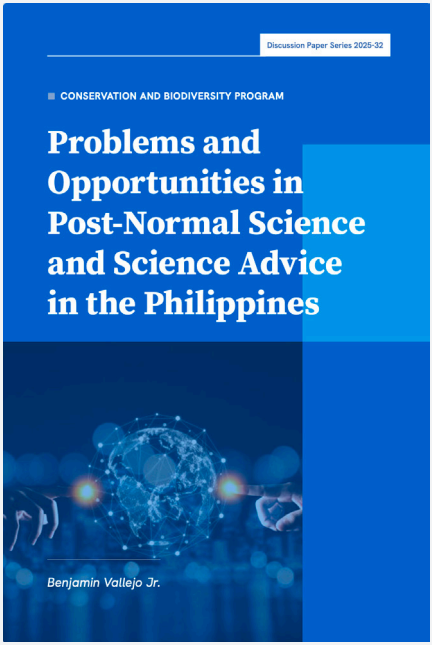

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THE PROPOSED SPRATLY ISLANDS MARINE PARK: A HISTORY

John W. McManus, PhD, Benjamin M. Vallejo Jr., PhD, Rodrigo Angelo C. Ong, MD, and Charles Mijares

ABSTRACT

This paper reviews the history of the Spratly Islands Marine Peace Park proposal from the viewpoint of its original proponent since the 1980s to the present. It presents the development of scientific theories in fisheries, oceanography, and genetic connectivity of Spratly Island reefs as sources of recruits for coral reefs in the Indo-West Pacific. The environmental change and geopolitical contexts of the South China Sea are related to the peace park proposal under a framework similar to the Antarctic Treaty and the prospects for scientific cooperation.

Keywords: South China Sea, biodiversity, fisheries, genetic connectivity, geopolitics, scientific cooperation

INTRODUCTION

The Spratly Islands, or Kalayaan Islands as known in the Philippines, is an ecologically significant area. However, it is an area of geopolitical tension with maritime states on the South China Sea (SCS)/West Philippine Sea (WPS) having territorial and sovereign rights claims to the area. The following states have claims to this maritime area: Vietnam, the People's Republic of China (hereafter referred to as China), Brunei, Malaysia, Indonesia, and the Republic of China (Taiwan) (hereafter referred to as Taiwan). China claims 80 percent of the Philippines EEZ and 100 percent of the Philippines extended continental shelf (ECS). The Chinese claim is a geopolitical challenge to the Philippines and the effort to expand and guarantee its presence in its blue economy space.

A climatological feature of the area are reversing monsoon currents that facilitate dispersal of coral and fish larvae and recruits to coastal reefs in the Philippines, Taiwan, Japan, Malaysia, and Indonesia (McManus 1992). The area was proposed as an international marine park and protected area (McManus 1994). The proposal can be considered as an example of informal science diplomacy where scientists build areas of research cooperation which hopefully be translated into international policies for conservation. Interest in a marine park was discussed in various coral reef and fisheries conferences and symposia in the 1990s.

The reason for the proposed Spratly Islands International Marine Park is to protect the integrity of coral reefs along with associated habitats and to guarantee the sustainability of fisheries in the region. In 1994, I was a coral reef resources scientist with the International Center for Living Aquatic Resources Management (now as WorldFish Center), and proposed the concept based on the ecological evidence that the Spratly Islands reefs are sources of coral reef fish and invertebrate larval recruits to the Philippines, Taiwan, Okinawa, and the rest of Southeast Asia. These are mediated by monsoon-reversing currents which carry the larvae to the Sunda Shelf during the winter monsoon and to the western coasts of the Philippines and Taiwan, during the summer monsoon (McManus 1992). While at the time, population genetic connectivity studies were still in their infancy, there was already a reason to expect that protecting the reefs will ensure genetic connectivity of coral reef populations in Southeast Asia and thereby contributing to genetic stability and diversity of fisheries populations.

METHODS AND CASES

I used as example cases the 1957 Antarctic Treaty and the 1978 Torres Strait Treaty between Papua New Guinea and Australia as a possible framework with the following principles first agreed upon by signatories to the Antarctic Treaty:

I. Peaceful use

II. International cooperation and freedom of scientific research

III. Free exchange of plans, scientific data, and personnel

IV. Non-renunciation of previous claims, prohibition of new claims, citation of new claims during the treaty term

V. Prohibition of nuclear weapons

VI. Open inspection of scientific facilities

VII. Referral of disputes to the International Court of Justice if not settled by arbitration

VIII. Review of treaty after 30 years.

IX. Treaty binds signatories indefinitely

The formal mechanisms and protocols established by the treaty include:

1. A international authority to govern the area composed of representatives from the treaty signatories.

2. A contracted international research agency to manage the science needs, priorities, and management of the marine park.

3. An international system of marine park law enforcement and maritime safety (possibly by joint coast guards of the treaty countries)

4. A international tourism regulatory system

5. A system of international research facilities in the area

The Antarctic Treaty demilitarizes the Antarctic continent. This bans permanent military presence, military activities, nuclear weapons presence, and waste disposal.

Using the framework of the Antarctic Treaty, I proposed that the Spratly Islands be demilitarized. If the reefs are occupied by claimant countries, only civilian presence is allowed. Freedom of navigation and innocent passage will be guaranteed to all vessels transiting through the park subject to the United Nations Convention on the Law of the Sea (UNCLOS). Resource use zones within the park can be negotiated in the treaty as this is necessary for the economic and financial viability of the park.

An international bilateral fisheries agreement that may be relevant to the park is the Torres Strait Treaty between Australia and Papua New Guinea ("The Torres Strait Treaty" n.d.), which took effect in 1985. It established seabed and fisheries boundaries between the two countries. Seabed resources are north of the line belong to Papua New Guinea and south to Australia. North of the line, fisheries belong to Papua New Guinea, while the south belongs to Australia. Both countries have agreed to share fisheries resources and the establishment of a fisheries-protected zone. There is also freedom of movement for traditional fishers. Commercial fishing is allowed subject to the approval of indigenous communities. A Joint Advisory Council (JAC) with government representatives and indigenous people's representatives has been created to resolve conflicts in the application of the treaty and for a regular review of policies.

RESULTS

Scientific developments and cooperation after 2000

Since the 1990s, tensions in the South China Sea/West Pacific States (SCS/WPS) have escalated as claimant states have increased their military presence in the area. There have been calls to revive discussions on the Marine Park proposal (Madin 2015). However the geopolitical realities have changed. China has claimed sovereignty over the area within its self-declared Nine Dash Line. While the Antarctic Treaty framework does not nullify sovereignty claims, China's militarization of the islands and reefs makes it unlikely that it would accede to a multilateral agreement similar to the Antarctic Treaty.

The marine park proposal never got to the formal stage of scientific advice and diplomacy. It was largely limited within the international science community being discussed in research conferences. International cooperation from the mid 1990s continued into the first decade of the 21st century. The Philippines-Vietnam Joint Research Program in the South China Sea agreement was signed by the Presidents of the Philippines and Vietnam in 1994. This resulted in the Joint Oceanographic and Marine Scientific Research Expedition in the South China Sea (JOMSRE-SCS) (Satyawan 2018). The eleven-year research effort established that the Spratly Islands is a source of coral recruits to Western Pacific reefs. Population densities of SCS reefs have been reduced and the fisheries biomass was 30 percent of that reported in 1997. The program provided information on the degradation of the reef areas. The management strategy to arrest fisheries decline is to have a cooperative governance mechanism promoting research, navigational safety, and conservation.

In 2002 to 2008, the UN Environmental Program/ Global Environment Facility (UNEP/GEF) funded the Reversing Environmental Degradation Trends in the SCS and Gulf of Thailand, this was a partnership of seven states (Cambodia, China, Indonesia, Malaysia, and the Philippines). The project consisted of more than 400 institutions networked to provide an information portal on the SCS.

DISCUSSION

Trends in fisheries populations and how science supports the marine park proposal

I worked on coral reef fisheries in the Philippines for thirty years beginning in the 1970s until 2000, when I returned to the United States. I studied the Bolinao Coral Reef System for seven years from 1988 to 1993 with Dr. Cleto Nañola and several others. We monitored the reefs with 18 transects in each reef and found that fish abundances were low, becoming less and less. This was to the extent of finding only a few adult fish per hectare. We studied and monitored 600 coral reef fish species, but were surprised to see that many species were still able to settle in each year. We asked the question how they can still do it, considering the almost all the near-shore SCS reefs were heavily overfished. Our hypothesis was that the fish larvae were coming from somewhere else.

It appeared that from our studies on recruitment of juveniles that the fish were likely coming from the offshore reefs. Because most of the readily accessible nearshore reefs were overfished, it is unlikely that the fish were spawned in these reefs. Dr. Porfirio Aliño suggested that the fish repopulated the reefs as recruitment pulses of larvae spawned in the Spratly reefs.

The SCS current patterns were driven by reversing monsoons, that run across, back and forth across the SCS basin. These patterns resemble what one sees looking down into a vertical clothes washing machine with spinning eddies and currents. These kinds of whorls and currents go in many directions and eventually mix the water mass. The phenomenon of reversing currents in the SCS has been known by sailors throughout the centuries. The reversing currents were exploited by Chinese and Arab traders who would sail during the northeast winter monsoon to reach Southeast Asia. Then they traded among the islands for several months and return with their merchandise to China with the southwest summer monsoon.

It was only in the 1860s that scientific observations of these currents were started by the British Navy. They marked the current directions on their charts. By the 1960s, with satellite remote sensing technology and satellite navigation, current determination became more accurate. Using the old charts and data, we were able to estimate that it takes around 24 days for a larvae spawned in the Spratly Islands to reach the reefs of Northern Luzon. Spawning was during the summer months of June to August and by about a month, the larvae would have recruited to Northern Luzon reefs.

Based on ship observations and drift data, the larvae are likely also to recruit to Taiwanese reefs, reefs on the southeast Chinese coasts and the Okinawan reefs in Japan, where the southwest monsoon driven currents meet with the Kuroshio current. With the northeast monsoon driven currents, the larvae reaches the reefs of Natuna in Indonesia, the reefs off Malaysia and Singapore. Of course different years will have different monsoon and current patterns. In some years recruitment pulses are strong in Luzon and Taiwan.

These support the hypothesis that the Spratly Islands were the source of larvae that repopulated reefs elsewhere in the region. The problem is that reefs in this region are subject to considerable degradation. This, along with heavy overfishing, may even result in local extinction of reef fish species. Further

research by the PISCES project in the mid 1990s which I headed with Dr. Carmen Ablan-Lagman at the then International Center for Living Aquatic Resources (ICLARM – now WorldFish) in the Philippines using protein markers revealed the genetic connectivity of fish populations in the area. This connectivity has been further demonstrated by DNA methods in the next three decades. The research presented by Dr. Mudjekeewis Santos in this MariTESS forum on the connectivity of skipjack tuna populations support our theory. Our project brought on board scientists from Vietnam, Taiwan, and Malaysia to examine genetic connectivity. Dr. Annadel Cabanban, who was then with the University of Kota Kinabalu was one of the Malaysia-based scientists who contributed to the project.

Increased computing power in the last two decades led researchers to use particle drift theory to further refine the dispersal of larvae in the SCS, such that we can now estimate that of perhaps 100,000 larvae spawned by a single fish at a Spratly Islands reef, a one percent successful recruitment rate means 1000 fish successfully seeding the population at let us say a reef in Bolinao, Pangasinan. This of course does not happen regularly at each reef on a yearly basis due to the variability of wind and current direction. But on the whole, the whole reef system is seeded. This happens on many coral reefs in the SCS, in Taiwan, Okinawa, Southern China, Malaysia, Singapore, Indonesia, and the Philippines. Research by Dr. Aletta Yñiguez have revealed clusters of genetically related fish recruit stocks. This was something we were not able to see in such detail in our 1990s research.

The damage to SCS/WPS reefs

Overfishing has long been a problem in the SCS since after World War II. When we went to the Spratly Islands in 2016, we observed that although one species of micro-organism eating fish had arrived recently in great abundance, each about seven centimeters long. These indicated overfishing of potential predators. Additionally, very few large adults were seen. Large adult fish are often the first ones targeted by fishers. As the smaller fish grow, they are fished before they reach the maximum size. Marine protection will result in fish having the chance to be large adults and reproduce.

Massive damage from organic pollution and giant clam cutter boats were also observed. I swam three kilometers across a reef and for the first kilometer

there was nothing alive except a few of these little fish, mainly surgeon fishes of low economic value. Those fish eat microorganisms and cyanobacteria. They are called bristletooth fish (*Ctenochaetus striatus*), and they can survive in damaged reef environments. But there were no sea cucumbers and sea urchins (these are targeted by fishers for their high economic value). There was only a little bit of seaweed here and there. There should have been thousands of species visible there.

Artificial island building activities showed irreversible and permanent reef and biodiversity damage. Massive militarized bases on the converted reefs pose a grave threat to the marine ecology in the South China Sea. Massive dredging of reef lagoons as seen in online satellite imagery only told part of the environmental damage. We observed reefs that have been totally "clouded out" by white sediment, which was evidence of dredging for land reclamation. Also observed were few surviving corals secreting mucous to get rid of the sediments.

Before the area became an area of militarization, in the Scarborough Shoals we observed large stands of organ pipe coral *Tubipora musica*, (an octocoral and non-scleractian coral), of an unusual shade. While most organ pipe corals have red skeletons, this one had purplish red ones. Unfortunately they are now gone, due to coral harvesting and very destructive giant clam harvesting. China announced they had stopped it and claimed to have stopped the illegal activity of giant clam harvesting. Recent satellite imagery, however, showed they still continue this within the reefs they control.

Geopolitics and the fate of the SCS/WPS reefs and the marine park proposal

Transboundary and transnational peace parks have proven successful in terrestrial protected areas in Africa when local stakeholder political contexts for conservation are given equal emphasis as participating states conservation goals (King 2010). This is a clear example that going with others is the best approach for successful conservation outcomes. There is a need for cooperation on all claimant sides in the SCS/SPS. The problem is that China has claimed most of the sea as their sovereign territory in violation of international law.

There is a need to recognize that the geopolitical issues in the SCS/WPS are also potentially impacted by the political question of Taiwan and China. China considers Taiwan as its own territory, while Taiwan considers itself formally as China but not under the Beijing government. The Taiwanese have their own government and military. Taiwan also has a military presence in the Spratlys. While China has been governed by the Communist Party since 1949, Taiwan has evolved into a multi-party liberal democracy. China occupies a seat at the United Nations and permanent seat in the Security Council, while Taiwan does not. Taiwan is not recognized by the majority of UN member states as an independent state, although most have de facto diplomatic relations with it including all ASEAN states, the Philippines, and the United States.

Taiwan never abandoned its claim in the SCS through the Nine Dash Line, but they are willing to cooperate with claimant states in the region. It has to be noted that Taiwan President Chen-Shui Bian in 2008 made conservation of SCS reefs as a state policy. This was continued by his successor Ma Jing-jeou who explicitly supported the Marine Park proposal to promote cooperation in the region (McManus, Shao, and Lin 2010). If a multilateral peace park proposal is on the table, Taiwan would possibly not oppose it. The same, however, cannot be said with China. Despite this, Chinese scientists have been participants in research and forums where the proposal has been discussed. China prefers bilateral agreements between claimant states in the Spratly issue. But the peace park proposal will succeed only if its multilateral. China is onboard with many international multilateral fisheries and environmental agreements. This may also be possible with the Spratly issue.

The Philippines which stands most to gain by the marine park proposal, has no formal position on it although Filipino scientists have strongly supported it. Philippine President Fidel Valdez Ramos endorsed the proposal in 1994 but the Philippines Congress has never acted on the matter. To make the proposal viable, it does not only require the agreement of China, but all the ASEAN states. But within ASEAN there are competing territorial claims that remain unresolved such as the Philippines' claim to Sabah. This complicates negotiations for a peace park declaration. However this can be overcome. Malaysia and the Philippines have come to a border agreement on the conservation and fisheries of the Turtle Islands in the Sulu Sea.

The SCS/WPS however, is becoming more militarized by the day, and that is a worrying prospect. Although China has been using naval gray zone tactics in pursuing its territorial claims, any miscalculation in the equation could result in war. Furthermore, China's gray zone tactics have affected the income of Luzon fishers through the Chinese Coast Guard and Maritime Militia or Paranaval (Erickson and Morton 2019) access denial to traditional fishing grounds (Chen et al 2024). The gray zone tactics are calibrated according to the military strengths and capabilities of the claimant countries. These calibrations also enable the Chinese military to effectively deploy its assets and manage potential flashpoints from escalation. Chinese policies of de-escalating or escalating maritime access denial is dependent on the presence of other maritime powers in the region and a changing regional alliance security environment. An example is China's gray zone operations against the Japanese Coast Guard (JCG) in waters where China has sovereign claims and in the overlapping EEZs. The JCG is one of the largest and most capable coast guards in the world, but its functions are mainly civilian maritime law enforcement. In order to meet the Chinese challenge, the Japanese government has strengthened the capability of Japan's de facto navy, the Japanese Maritime Self Defense Force (JMSDF) for unfriendly forces denial and deterrence, strengthened and renewed defense alliance relationships with the United States by improving inter-operability and capacity for rapid response (Liff 2019). The Philippines efforts to strengthen its traditional mutual defense arrangements with the United States and new defense agreements with regional powers is a direct result of Chinese fisheries denial policies. The Philippines has followed the Japanese response by allowing more US military presence in Filipino military bases with the Enhanced Defense Cooperation Agreement (EDCA) in line with the existing Philippines-US mutual defense treaty. The Philippines has also signed or is in negotiations for defense agreements with Australia, Japan, Canada, France and New Zealand.

Vietnam has followed a more none-aligned strategy towards Chinese paranaval tactics in the SCS. However Vietnam has a history of military conflict with China in the last 70 years. The two states are governed by Communist parties and state to state relations have been characterized by deterioration and normalization during this period. This has led some observers to conclude that Vietnam's maritime governance strategy is weak in response to China's gray zone tactics on fisheries access denial. In the last 70 years, Vietnam and China have been involved in two military conflicts, the Battle of the Paracel

Islands in January 1974 and the Sino-Vietnamese War in 1979. The islands were partially controlled by South Vietnam and China, where Vietnam wanted to displace the Chinese from the islands. The Paracel Islands conflict between the naval forces of South Vietnam and China resulted in the defeat of Vietnam and total Chinese control of the islands.

Vietnamese strategy in the SCS is based on strong assertion of its rights under UNCLOS and to abide by international treaty obligations. With respect to China, its strategy can be considered as "struggle and cooperate" which reflects its ideological affinity with China as both Vietnam and China are governed by their respective communist parties. Furthermore, both states have adopted market reforms according to their vision of the development of socialism. Both states have strong economic relations and would wish to maintain it. Thus the approach of Vietnam in the SCS issue is bilateral and is in line with its "Four Nos" principle in defense relations. These are no foreign troops, no foreign military bases on its territory, no use of Vietnamese territory for military action against other countries and, no military alliances.

An example of a successful bilateral agreement between Vietnam and China is their 2000 agreement on the Gulf of Tonkin which defined both states maritime borders, fisheries, and EEZ. This agreement is the only maritime border agreement China has ever concluded with a neighboring state and is hailed by observers as an exemplary attempt at resolving territorial claims (Tønnesson 2016). While this has been successful for the Gulf of Tonkin, Vietnam's attempts to reach a similar deal with its claims in the SCS have proven more elusive.

One reason is that Vietnam has a gray zone conflict with Indonesia in seas surrounding the Natuna Islands. Vietnam does not have a territorial claim on these islands unlike in the Paracels, but its EEZ overlaps with those of Indonesia and there is no agreement on EEZ delineation with Indonesia. The Indonesians have accused the Vietnamese of allowing a large number of fishing boats in the Indonesian EEZ and conducting maritime security patrols using their coast guard. The Indonesians have responded by detaining fishing boats and in one instance blew up one of them in a display of political will. Steps have been taken by both states to reduce tensions.

Bigger investments in ASEAN states' coast guards are one of the initiatives taken by at least three member states, Malaysia, The Philippines, and Indonesia. While these states have shown increasing political will by improving the ability of their coast guard meet the Chinese gray zone challenge, they are hampered by limited funding and the overlapping functions of government bureaucracies in maritime security and fisheries law enforcement. All states in the SCS have prioritized cooperation, science, and environmental diplomacy to defuse tensions but the approaches are different. China favors bilateral agreements while the Philippines multilateral agreements. While Vietnam has avoided regional security agreements, the Philippines has strengthened and diversified its defense agreements with the US and other democracies. Malaysia has taken an approach as not to affect its relations with ASEAN states but maintaining strong economic ties with China.

CONCLUSION

In conclusion, research has shown that the Spratly Islands may be the source of pulses of larvae through the whole region, and keeping the stocks of coral reef fish from suffering local extinction. Permanent damage to the reefs by reclamation for military bases, which is estimated at around 14 km^2, dredging and destructive coral and giant clam harvesting will have catastrophic consequences for the food security of all claimant states, including China.

We need to have a binding international agreement to conserve and protect the SCS/WPS. The marine peace park proposal remains viable if all the states bordering the SCS basin have the cooperative will. If all the ASEAN countries agree and get on board on the marine park proposal, I believe they will get significant international support and China will have to take notice.

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