

OUR THANKS

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Hong Kong's sea life has an amazing variety of habitats and species. However, they currently face numerous threats from rampant development, unregulated fishing practices, escalating marine traffic and marine litter pollution. Other threats loom: a total of 2,000 hectares of local waters are planned for reclamation and development in the decades ahead.

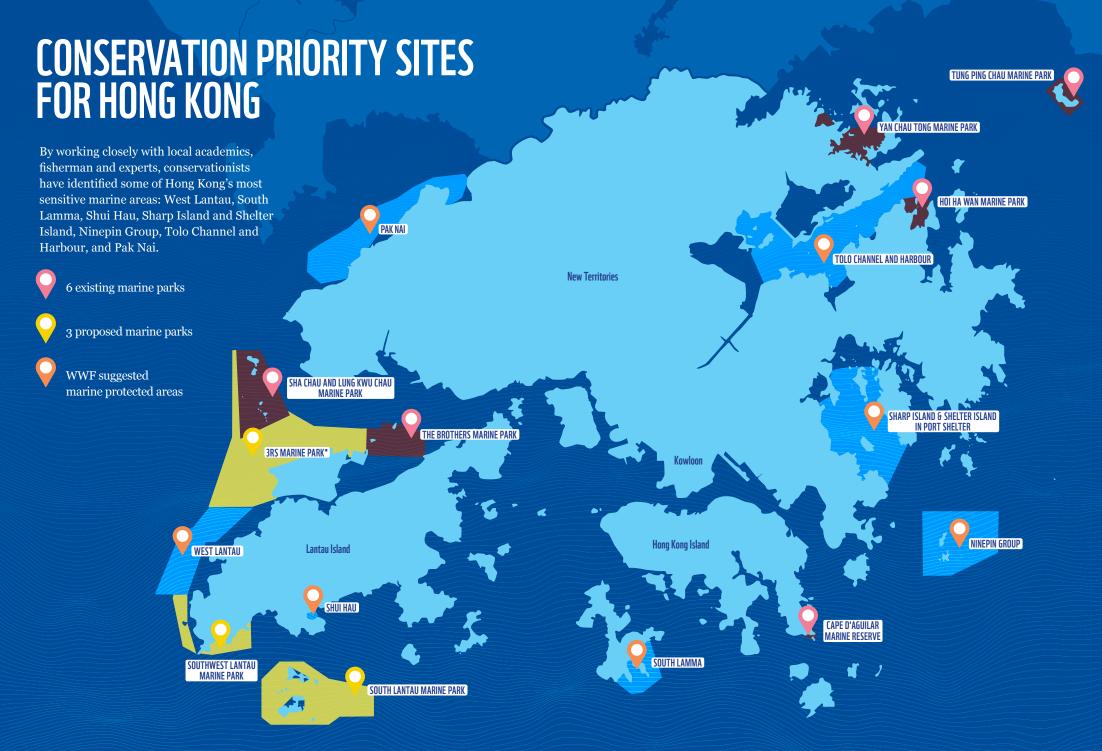
Effective conservation measures are needed before it's too late. Scientists, conservationists and NGOs have been calling for 30 per cent of global waters to be designated as marine protected areas (MPA) by 2030. By working closely with local academics and experts, we identified seven of Hong Kong's most sensitive areas for further protection and the establishment of sustainable fisheries. We are proposing these seven priority sites for marine conservation, as outlined in this booklet, achieving 10% of our MPA goals.

The goal of this booklet is to advise policy makers and to suggest what kind of protection measures suit each site best. By utilizing the baseline knowledge from both scientists and local communities, we hope to advance the science and practice of designing MPA networks. To do this, we need to form partnerships with different stakeholders and move forward on a collaborative basis. MPAs are part of the solution in turning the tide, ensuring thriving ecosystems and for creating a sea for future.

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The natural rocky coastline provides estuarine habitats to over 180 fish species1 and is a spawning and nursery ground for many commercially important fish and crustacean species. West (Tai O) and southwest Lantau (Fan Lau) are the only remaining core habitats of the Chinese white dolphin, whose numbers dropped 70% from 2003-2017²³. The endemic Chinese bahaba, once abundant, now faces extinction. Adult mangrove horseshoe crabs are found at Yi O4. Southwest Lantau Marine Park will be designated in 2018 at the earliest. The boundary will adjoin the Lantau South Country Park along the coastline between Kau Ling Chung and Pak Kok.

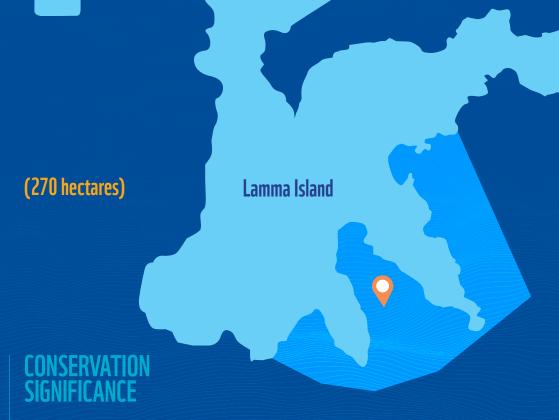
THREATS

Expanding reclamation work and hi-speed marine traffic has increased stress on the Chinese white dolphin at the northern part of its range. Pressure from development and marine traffic is relatively low in western Lantau. Tai O is a popular dolphin watching spot, which can increase stress levels and disrupt socializing, feeding or resting behavior. Water pollution from Pearl River discharge may lead to bioaccumulation of heavy metal and organic pollutants in dolphins and other species. There is greater potential for an influx of marine litter during the wet season. Illegal fishing is serious in western and northern Lantau.

SUGGESTED CONSERVATION MEASURES

- Designate offshore waters of Yi O and Tai O as the Western Lantau Marine Park, linking current and and future marine parks, creating a protected corridor for Chinese white dolphins, helping fisheries recovery and encouraging sustainable use of resources.
- Establish a core dolphin conservation zone around Tai O with no coastal development and restrictions on traffic and human activities. Regulate dolphin watching activities with a statutory code of conduct.
- Regulate gillnets and ban non-selective fishing methods using trammel nets and snake cages, to lower entanglement risk to marine species.
- Work with academics, fishermen, local community, village leaders and NGOs to adopt a co-management approach.
- Work with fishermen to combat illegal fishing.





Sham Wan, located at southern Lamma and designated a Site of Special Scientific Interest in 1999, is the only nesting site for globally-endangered green turtles, whose last nesting record was in 2012. The anemone and coral communities inside Sham Wan and Tung O Wan include locally-rare hard coral species (i.e. pseudosiderastrea tayami). These rocky reefs support a high diversity of species, with at least 73 marine fishes, including 23 locally rare species and the endangered threadfin porgy. The vulnerable Indo-Pacific finless porpoise is found off south Lamma. In 1999, the AFCD assessed south Lamma's suitability as a marine protected area.

THREATS

Human disturbances, including marine traffic and light and noise pollution, can prevent female green turtles from nesting. Entanglement in fishing nets and accidental ingestion of marine litter are a common cause of turtle deaths. The marine litter problem at Sham Wan is serious, especially during the wet season. Underwater noise pollution may further reduce use of the area by the finless porpoise. According to a study conducted by an eNGO from 2013-2015, up to 17 boats were found anchored in the bay during summer weekends, generating high levels of noise. There are frequent reports of visitors entering the beach.



- Restrict vessel speeds to 5 knots⁵ over the entire bay to minimize collision risk to turtles.
- Study the feasibility of a non-anchoring zone, banning trammel nets and restricting the number of recreational vessels.
- Regulate activities such as scuba diving to reduce disturbance to vulnerable habitats, with fishing and recreational boating regulated during breeding season.
- Implement weekly clean-ups of ghost nets and marine litter.



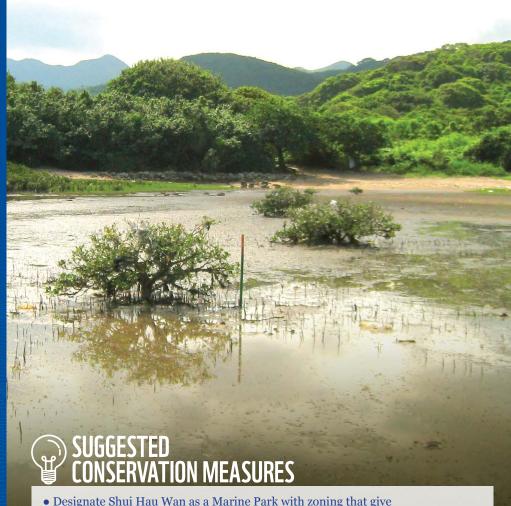


CONSERVATION SIGNIFICANCE

Shui Hau Wan comprises a variety of coastal habitats, including mangroves, intertidal sand and mud flats, and boulder and rocky shores, supporting over 180 species⁶. Shui Hau has a terrestrial Coastal Protection Area but the inter-tidal zone receives no protection. The intertidal soft shore is an important spawning and nursery ground for juvenile Chinese horseshoe crabs⁷ which spend 10 years on the muddy shore, migrating into the sea when they reach sexual maturity. The estuary that flows through the mangroves along the southern coast is a nursery for juvenile fishes, including commercially valuable species (i.e. families sparidae, sillaginidae, mugilidae and lutjanidae).8

THREATS

Shui Hau Wan faces high levels of disturbance from recreational activities such as paragliding and clam digging on the intertidal mudflats. Unregulated clam digging is a serious concern, can lead to juvenile horseshoe crabs being trampled and may change the composition and density of the benthic community structure and the availability of prey (such as polychaete). Large Asiatic hard clam have all but disappeared due to this unsustainable activity. The litter left behind by clam diggers pollutes the environment, and increases the chance of animals being entangled and killed. Shui Hau was listed marine refuse priority site in 2015.



- Designate Shui Hau Wan as a Marine Park with zoning that give the most ecologically sensitive area strict protection and allows regulated activities in the outer zone.
- Implement measures to protect horseshoe crabs, including no take zones and partial closures during breeding season.
- Implement measures to protect clams, including a code of conduct, partial closures spatial/seasonal and licenses or a quota system.
- Adopt a co-management approach, provide public facilities (e.g. boardwalk on mudflats and educational signs).
- Develop marine litter source reduction strategies, arrange weekly clean-ups to ensure the cleanliness of the mangrove and wetland environment.

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Sharp Island and Shelter Island have a high diversity of hard coral species (over 46 out of 84) and at least 169 species of marine fish such as the endangered threadfin porgy, the vulnerable spotted seahorse and the locally-rare sargassum fish9. Of those, over 35 are locally rare, endangered or vulnerable. Shelter Island is a fishery spawning and nursery ground. In 2009, the Country and Marine Park Board produced a draft map of Sharp and Shelter islands marine park covering an area of 198.5 and 138.3 hectares, respectively. In 2012, a policy framework for a Fisheries Protection Area (FPA) was released, with Port Shelter as a potential site.

THREATS

This rocky habitat is frequented by recreational and commercial fishers, with cage trapping a common fishing method. Nighttime squid jigging also poses concerns. Sharp Island is a hotspot for recreational activities and receives hikers, beachgoers, snorkelers, divers and licensed spearfishers. Despite no anchoring areas at the main coral sites, with the terrestrial areas designated as a country park and geopark, the marine life at Port Shelter still faces threats, including breakage of coral by careless divers, water pollution and marine litter (including ghost nets), introduction of non-local species by mercy release and fishing activities (both commercial and recreational).





(500 hectares)

CONSERVATION SIGNIFICANCE

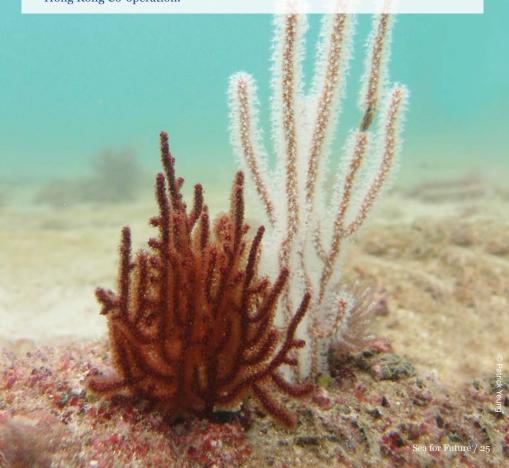
The Ninepin Group has a high coverage of staghorn coral in the shallow waters and its steep rocky slopes are dominated by soft corals and a high diversity of octocoral and black coral species10. At least 120 fish species have been recorded, of which 29 locally rare11 or endangered, such as Hong Kong grouper. The islands are an important site for breeding terns¹². In 2015, AFCD established a no anchoring area at the northern side of South Ninepin to prevent coral damage. In 2009, the Country and Marine Park Board produced a 324.5 hectare draft map of Ninepin Marine Park. It is also part of the UNESCO Global Geopark.

THREATS

For decades, East Ninepin is used by Civil Engineering and Development Department for open sea disposal of dredged sediment and uncontaminated mud, affecting sediment loads in the water. The government has no plan to cease this. A high-level of fishing by commercial and recreational fishers (e.g. hand-line, gill-netting, cage trapping, spearfishing) and illegal fishing has been recorded, resulting in a high occurrence of ghost nets. This area is frequented by divers. Several cases of disturbance to tern nests and eggs have been recorded, but increased site patrols and efforts to promote awareness has led to improvements.

SUGGESTED CONSERVATION MEASURES

- Designate Ninepin Group and its surrounding waters as a marine park. This is crucial in enhancing its resilience against climate change and facilitating the recovery of fisheries resources.
- Only allow commercial fishing with a license, prohibit non-selective fishing methods (e.g. trammel nets and snake cages).
- Regulate recreational activities (e.g. scuba diving) through licensing.
- Set up patrol stations (e.g. on a floating platform) and work with fishing communities to combat illegal fishing.
- Strengthen the notification mechanism of joint enforcement against illegal fishing and trawlers from the mainland (e.g. an Automatic Identification System) to enhance execution of the Framework Agreement on Guangdong/Hong Kong Co-operation.



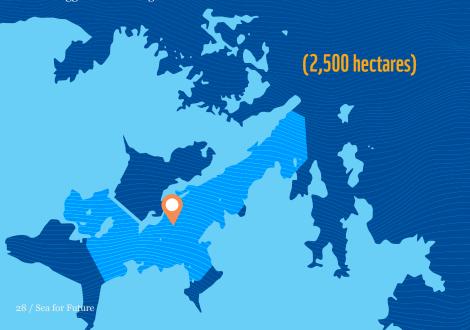


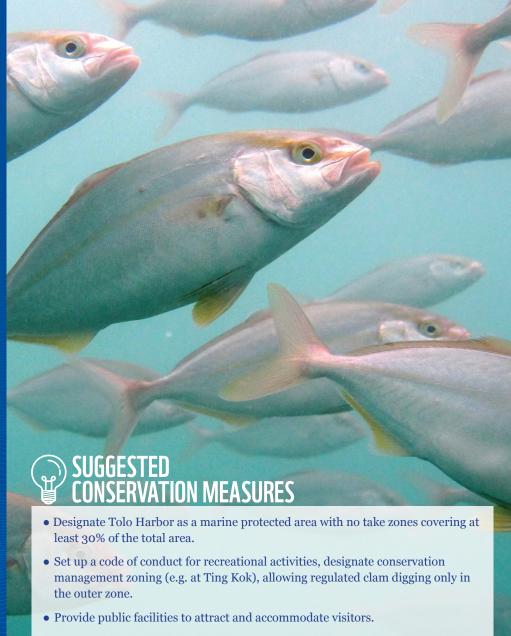
CONSERVATION SIGNIFICANCE

Tolo bay yields a high diversity of species. Port Island (Chek Chau) and Hoi Ha Wan harbour 60% of local hard coral species¹³, and over 153 fishes, including the endangered Hong Kong grouper¹⁴. Tolo has the largest mangrove coverage¹⁵ in eastern waters¹⁶ ¹⁷. Ting Kok and nearby Lung Mei support over 300 marine species18 19 20 21 including a newly-discovered endemic tree-climbing micro-crab²², the vulnerable spotted seahorse and five species of starfish. The inshore area is essential to support both resident and migratory species and Sham Chung is a nesting site for the protected white-bellied sea eagle²³. Several sites have been previously assigned for conservation priority. Tolo has been suggested for designation as an FPA.

THREATS

The eastern and southern coastline are entirely reclaimed. Because of a semienclosed harbor that reduces seawater circulation, domestic and industrial sewage cumulate within the inshore harbor. Tolo has Hong Kong's highest frequency of red tide events, which deplete oxygen and cause massive biomass and economic loss. Fishing pressure is high for the juvenile fish, crabs, urchins, sea cucumbers, bivalves and gastropods. The inner bays and outer islands are hotspots for hikers, scuba divers, snorkelers and kayakers. Hundreds of visitors can be seen digging clams and disturbing marine life, especially during weekends. Marine litter occurs both on the shore and underwater.





- Implement a log book system to collect fishing information, prohibit nonselective fishing practices such as trammel nets and snake cages and mercy release activities in proximity to the boundary of the FPA (e.g. 500 meters).
- Work with academics, fishermen, local community, village leaders and NGOs to adopt a co-management approach.



Pak Nai supports one of the city's largest intertidal mudflats and mangrove stands, providing habitats and food for wildlife including the globally endangered black-faced spoonbill. Part of the nearshore area is zoned as a Coastal Protection Area. Pak Nai is of the few remaining habitats in Hong Kong that supports relatively high densities of Asia horseshoe crabs and mangrove horseshoe crabs²⁴. Pak Nai supports the largest area of seagrass bed in Hong Kong²⁵, which is an ecologically significant food source for juvenile horseshoe crabs in summer and winter26 and provides shelter and feeding grounds for a variety of intertidal animals²⁷.

Pak Nai has recently been under pressure from a developer's attempts to apply for rezoning involving low density villas, club houses and recreational facilities. The developer eventually withdrew all applications due to objections from the public and green groups. Oyster farming is practiced along the intertidal mudflat with over 1,000 rafts operating in the area²⁸. The dumping of oyster shells affects the current, sedimentation and alkalinity of the sea water and can negatively affect horseshoe crab density and foraging behavior²⁹. The mudflats in Pak Nai are highly susceptible to human disturbance from recreational activities such as unregulated clam digging.

(800 hectares)



- Designate the outer fringe of mangroves as a horseshoe crab conservation zone.
 Other potential measures to protect horseshoe crabs include seasonal closure of part of the bay during breeding seasons and a no take zone.
- Regulate or restrict clam digging activities (e.g. license/quota) and implement a code of conduct, to protect the high density of early-stage juveniles. Further study will provide guidelines for these measures.
- Provide public facilities and management (e.g. on mudflats and educational signs) to attract visitors without causing excessive disturbance to the environment.
- Work with academics, fishermen, local community, village leaders and NGOs to adopt a co-management approach.

CURRENT AND PROPOSED MARINE PROTECTED AREAS: (10% by 2020)

NAME	DESIGNATED Year	AREA (HECTARE)	PERCENTAGE OF TOTAL HONG KONG WATERS	REMARKS
Hoi Ha Wan Marine Park	1996	260	0.16	
Yan Chau Tong Marine Park	1996	680	0.41	
Sha Chau and Lung Kwu Chau Marine Park	1996	1,200	0.73	
Cape'd Aguilar Marine Reserve	1996	20	0.01	
Tung Ping Chau Marine Park	2001	270	0.16	Two core areas were set up to protect coral communities
Brothers Island Marine Park	2016	970	0.59	Including 80 hectares of no-take zone
Proposed Southwest Lantau Marine Park	2018	650	0.39	
Proposed South Lantau Marine Park	2019	2,067	1.25	Including 145 hectares of no-take zone
Proposed Marine Park for compensation of construction of Third Runway	2023	2,400	1.45	Zoning to be confirmed (apart from the Marine Exclusion Zone)
West Lantau Marine Protected Area		1,500	0.91	
South Lamma Marine Protected Area		270	0.16	
Shui Hau Marine Protected Area		50	0.03	
Port Shelter Marine Protection Area		2,500	1.52	Suggested by WWF and experts
Ninepins Marine Protected Area		500	0.30	
Tolo Marine Protection Area		2,500	1.52	
Pak Nai Marine Protected Area		800	0.48	
	TOTAL	16,637	10.1	

ENDNOTES

- Expansion of Hong Kong International Airport into a Three-Runway System. Environmental Impact Assessment Report. http://www.epd.gov.hk/eia/register/report/eia_2232014/html/Ch%2013%20-%20Marine%20Ecology.htm
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- * 水口百態 一 大嶼山水口生物記錄。香港自然生態論壇、守護大嶼聯盟及香港大學學生會理學會環境生命科學學會聯著。2016 年1月出版。
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Sea for Future



sites of high ecological value are being proposed

MPAs current exist in Hong Kong, the first designated in 1996.

of Hong Kong's waters designated or planned to be established as MPAs by 2023 is not enough.



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