

Green Turtle (*Chelonia mydas*)

Species Action Plan

2023-2027



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Compiled by the Agriculture, Fisheries and Conservation Department



Acronyms and Abbreviations

AFCD	Agriculture, Fisheries and Conservation Department
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
IUCN	International Union for the Conservation of Nature
NGO	Non-government Organisation

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1. Introduction

The Green Turtle (綠海龜, *Chelonia mydas*) is a species of sea turtles widely distributed throughout the tropical and subtropical waters of the world. It is one of the largest species of sea turtle and is characterized by its olive-brown coloured carapace and its herbivorous diet. The species is known for its long migrations, often traveling thousands of kilometres between their foraging grounds and natal beaches.

In Hong Kong, Green Turtles are often sighted in eastern and southern waters in warm seasons, and the Green Turtles seen in Hong Kong are part of the population in the South China Sea.

The Green Turtle is listed as endangered (EN) by the International Union for Conservation of Nature (IUCN) Red List of Threatened Species and is protected from the threat of overexploitation by international trade under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). In Hong Kong, Green Turtle, along with all other turtle species, is protected under the Wild Animals Protection Ordinance (Cap. 170). It is also a scheduled species under the Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586).

Green Turtles face many threats globally and locally, including habitat destruction, egg collection, fishing gear entanglement, pollution, and the illegal trade in turtle products. Climate change is also a growing concern, as rising sea levels and increased ocean temperatures are affecting the species' nesting beaches and altering their food sources.

This species action plan, effective from 2023 to 2027, aims to establish protection measures to the breeding ground, reduce mortality of turtles from fishing gear and marine traffic, increase public awareness and education, conduct research to fill information gaps, and build partnerships with stakeholders to support conservation efforts. The conservation of Green Turtles in Hong Kong and beyond requires a coordinated and sustained effort by governments, NGOs, academic institutions, and local communities. This species action plan provides a roadmap for the conservation of Green Turtles in Hong Kong and is an essential component of the larger efforts to conserve the species globally. The protection and conservation of Green Turtles is important not only for the species itself but also for the stability of the marine ecosystem and the overall health of the ocean.

2. Background information

2.1 Taxonomy

The Green Turtle (*Chelonia mydas*) is placed under the following taxonomic hierarchy:

Class Reptilia

Order Testudines

Family Cheloniidae

Genus *Chelonia*

Species *Chelonia mydas* (Linnaeus, 1758)

Green Turtle (*Chelonia mydas*)

Green Turtle is the only species in the genus *Chelonia*, and is widely distributed throughout the tropical and subtropical waters of the world. The species is known for its long migrations, often traveling thousands of kilometres between their foraging grounds and natal beaches. Nesting occurs on sandy beaches in the tropical and subtropical regions of the world. The common name of this species comes from the greenish colour of the turtle's fat.

2.2 Biology and ecology

Green Turtles are one of the largest species of sea turtles, usually reaching up to 1.5 m in length and weighing over 200 kg. They are widely distributed throughout the tropical and subtropical waters of the world and have a habit to return to their natal beach to breed and nest. Lifespan of this species is believed to be at least 70-80 years and it may take 25-40 years for juvenile to reach sexual maturity. Nesting takes place around June to October, with several hundreds of eggs laid by a female in one nesting season. While little is known about the development of the hatchlings before they reach sexual maturity, it is believed that they are solitary..

Green Turtle is primarily a herbivore and feeds mainly on sea grasses and algae, making it an important species in maintaining the health of seagrass beds and coral reefs. They are also known to feed on jellyfish, which can help control the populations of jellyfish. Unfortunately, the Green Turtle is endangered due to a number of threats, including human activities such as coastal development, marine traffic, and climate change. Coastal development can destroy important nesting sites, while marine traffic can injure Green Turtles. Climate change is also affecting the Green Turtles in a number of ways, including rising sea levels and more frequent and intense storms, which can damage nesting beaches and disrupt nesting patterns. Fishing gears abandoned in the sea (ghost nets) are becoming a more common factor injuring and killing Green Turtles.

2.3 Distribution

Green Turtle is widely distributed throughout the tropical and subtropical waters of the world, including the Atlantic, Indian, and Pacific Oceans. They are found in areas ranging from coastal waters to the open ocean.

In the Atlantic Ocean, Green Turtles are found from the coast of West Africa to the coast of South America and are known to nest primarily in the Caribbean and along the coast of Florida. In the Indian Ocean, they are found along the coast of East Africa, India, and Southeast Asia, with the largest nesting populations found in the Maldives and Malaysia. In the Pacific Ocean, they are found along the coast of Australia, New Zealand, and the Pacific islands, with the largest nesting populations found in the Northern Great Barrier Reef and the Solomon Islands.

In Hong Kong, Green Turtles are sighted in eastern and southern waters in warm seasons. Nesting of Green Turtles was recorded in several beaches in Sai Kung, Shek O, Sham Wan and Tung O of Lamma Island, and Tai Long Wan on Lantau Island.

2.4 Population status

Despite being protected by international and national laws, Green Turtle is classified as endangered by the International Union for Conservation of Nature (IUCN). Populations of Green Turtles have declined significantly in recent decades due to a range of threats, including over-exploitation of eggs, degradation of marine and nesting habitats, and incidental mortality.

The trend for sub-populations of Green Turtles varies depending on the specific locations. Some sub-populations have shown signs of recovery in recent years due to conservation efforts, while others continue to decline. The global annual nesting female population size shows a 48% to 67% decline over the last three generations (Seminoff, 2004). As many of the threats that led to the decline of the sub-populations are not reversible and have not yet ceased, it is believed the endangered status of Green Turtle is not to be improved in near future. It is important to note that Green Turtles have a slow reproductive rate, which makes it difficult for populations to recover quickly from declines. Ongoing monitoring and conservation efforts are necessary to ensure the continued survival of Green Turtles and their sub-populations.

The Green Turtle population in the Southeast Asian region, especially in some sites in Indonesia and Malaysia, have experienced significant declines in recent decades due to a number of threats, including habitat destruction, hunting, marine pollution and accidental capture in fishing gear. In countries such as Indonesia and Malaysia, the destruction of nesting beaches for coastal development and the poaching of eggs for human consumption have had a significant impact on the Green Turtle populations. In addition, the accidental capture of Green Turtles in fishing gears, particularly in the form of ghost fishing, has also contributed to the decline of the population in the region.

Green Turtles are known to occur in the waters surrounding South China, Taiwan, and Hong Kong, but their population trends in this region are not well-documented. However, it is likely that the Green Turtle population in this region has declined due to the same threats faced by Green Turtles in other parts of Southeast Asia, including habitat destruction, marine pollution and accidental capture in fishing gear. Great efforts have been dedicated in China to restore Green Turtle population in the region in recent decades. For example, over 65,000 sea turtles have been released from the Huidong Sea Turtle National Nature Reserve in the last 30 years. The National Nature Reserve has also successfully developed techniques to the artificial breeding of Green Turtles.

In Hong Kong, Sham Wan on Lamma Island remains the only beach with nesting events. Some of the eggs were collected by AFCD for artificial incubation to enhance the hatching success since 1998. Up-to-date, the total number of hatchlings hatched and released from Sham Wan beach is more than 1000.

2.5 Threats and challenges

The major threats and challenges to the protection of Green Turtles include:

1. Poaching and illegal trade: Green Turtles are hunted for their meat, eggs, and shells, which are used for direct consumption and production of other products.

2. Loss and degradation of foraging, breeding grounds and nesting sites: The loss and degradation of seagrass beds and coral reefs, which are critical foraging habitats for Green Turtles, are major threats to their survival. The loss of nesting grounds on sandy beaches, and /or nearby breeding grounds poses a critical threat to the continuity of the population.

3. Climate change: Climate change is affecting Green Turtles in a number of ways, including rising sea levels and more frequent and intense storms, which can damage nesting beaches and disrupt nesting patterns.

4. Marine pollution: Marine pollution is a major threat to Green Turtles, as they can mistake plastic debris for food and become entangled in abandoned fishing gear.

5. Marine traffic: Green Turtles are also threatened by marine traffic when they are accidentally injured or killed by boat strike.

6. Knowledge Gap: Knowledge on the connectivity of the Green Turtles in Hong Kong to the other individuals in the South China region is limited. This information gap hinders the understanding of the life cycle and assessment of status of the hatchlings born in Sham Wan. The information is also important for making effective conservation plan.

2.6 Conservation

Conservation efforts for Green Turtles are underway globally, with the aim of protecting and recovering their populations. Some of the efforts include protection and restoration of breeding grounds, regulation of poaching, reduction of plastic pollution, and development of sustainable fishing practices. Globally, Green Turtle is protected by international and national laws, including the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) which subjects the international trade in Green Turtle to stringent regulations and other national laws. Regulation of the trade of Green Turtle products helps to protect the species from exploitation and habitat destruction.

In China, the Green Turtle is protected by law. The species is listed under Class I in the List of Wildlife under Special State Protection under the Law on the Protection of Wildlife. A comprehensive protection action plan has been developed to ensure the survival of the Green Turtle population in China and more conservation actions are being developed.

In Hong Kong, the Green Turtle is protected under the Wild Animals Protection Ordinance (Cap. 170). Hunting, wilful disturbance, possession, sale or export of sea turtles including their nests and eggs are subject to a maximum fine of HKD100,000 and an imprisonment of 1 year. Besides, all sea turtles are also scheduled under the Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586). Unless otherwise excepted or exempted, anyone importing, exporting or possessing sea turtles without a valid licence is liable to a maximum fine of HKD10,000,000 and an

imprisonment of 10 years upon conviction. The specimens will also be forfeited.

In view of the scientific interest of the sandy beach and the nearby shallow water, the Sham Wan area has become a Site of Special Scientific Interest since 1999. The sandy beach at Sham Wan was also designated as a Restricted Area under the Wild Animals Protection Ordinance (Cap. 170) in the same year. With effect from 1 April 2021, the Restricted Area was expanded from the beach to the adjacent waters in the inlet of the sea, and the restricted period has been extended from five months to seven months (1 April to 31 October) every year. Unauthorised entry to the Sham Wan Restricted Area during the restricted period is subject to a maximum fine of HKD50,000.

During the restricted period, AFCD carries out patrols to control unauthorised entry and deploy remote control surveillance to monitor the condition of the restricted area. Habitat management actions at the restricted area are carried out before the breeding season every year, including clearing of climbers and refuse from the beach as well as removal of abandoned fishing nets from the sea inlet of Sham Wan. AFCD also undertakes scientific studies, conducts publicity and education programmes from time to time, and maintains regional and international collaboration with relevant organisations for conservation of Green Turtles.

The protection of nesting beaches and other conservation measures have been implemented for decades to ensure the survival of the Green Turtle population in this region. Further studies and monitoring are necessary to determine the population trend of Green Turtles in South China, Taiwan, and Hong Kong, and to implement effective conservation measures to protect this species in the region.

3. Action Plan

3.1 Aim

The purpose of this action plan is to protect and conserve the Green Turtle and its habitats in Hong Kong, while reducing the threats they face and increasing public awareness and education on the importance of their conservation.

3.2 Objectives

The major objectives are:

- (i) To protect Green Turtle breeding ground and nesting site through habitat management and protection.
- (ii) To reduce the mortality rate of Green Turtles by addressing anthropogenic threats, such as entanglement in fishing gear and marine traffic.
- (iii) To enhance public awareness and education on the importance of protecting and conserving Green Turtles.
- (iv) To bridge current knowledge gaps in the management and conservation of the Green Turtle population occurring in Hong Kong.

3.3 Timeframe

This action plan covers a period of 5 years, from 2023 to 2027. A review of the plan should be conducted towards the end of the 5-year period.

3.4 Actions

HABITAT PROTECTION

Action (1): To control disturbance at the Sham Wan Restricted Area

- Description: Sham Wan Restricted Area is the only regular nesting site for Green Turtles in Hong Kong. Anyone entering Sham Wan without an entry permit during the restricted period from 1 April to 31 October will be prosecuted. Land and sea patrols (including daytime and night time) will be carried out during the restricted period against any authorised entry to ensure any breeding turtle at the sea inlet and any nesting turtle on the beach is not disturbed.
- Agency(-ies): AFCD
- Timeline: 2023-2027

Action (2): To manage the Sham Wan Restricted Area

- Description: The Sham Wan Restricted Area is prone to natural degradation. Proper management actions including vegetation maintenance, beach cleaning and underwater debris removal are needed before nesting season to ensure the beach is suitable for nesting.
- Agency(-ies): AFCD
- Timeline: 2023-2027

Action (3): To monitor the Sham Wan Restricted Area

- Description: Continuous monitoring via patrols and remote control camera surveillance system will identify any irregularities and changes in the environment on time.
- Agency(-ies): AFCD
- Timeline: 2023-2027

SPECIES PROTECTION

Action (4): To enforce against illegal trade in Green Turtle and its products, and other illegal activities on Green Turtle

- Description: The commercial trade in Green Turtle and its products is prohibited under CITES and is regulated locally under Cap. 586. AFCD will conduct market inspections, monitor online trading platforms and collect intelligence, and detect and enforce against illegal trade in Green Turtle and its products. AFCD will also work closely with Customs and Excise Department (C&ED) to combat the smuggling of Green Turtle and its products. Green Turtle is also protected under Cap. 170. AFCD will take law enforcement against any hunting, wilful disturbance, possession, sale or export of sea turtles including their nests and eggs.
- Agency(-ies): AFCD, C&ED
- Timeline: 2023-2027

Action (5): To rescue, rehabilitate, release and post-release monitor injured Green Turtles

- Description: Green Turtles injured by marine traffic or ghost net may not be able to recover naturally and therefore need rescue and rehabilitation. AFCDC will work closely with Ocean Park Hong Kong to utilise their veterinary and husbandry expertise to help the injured animals. Post-release satellite tracking will help to understand the survival and movement pattern of the animals. Public should be encouraged to report any sightings of injured Green Turtles via 1823 hotline.
- Agency(-ies): AFCDC, Ocean Park Hong Kong
- Timeline: 2023-2027

Action (6): To arrange visits or participate in workshops to exchange experience and ideas on rescue and rehabilitation

- Description: Staff of AFCDC should visit other Green Turtle protected areas to exchange experience on rescue and rehabilitation where opportunities arise. Collaborate with protected areas in the Mainland and/or Southeast Asia to share information and knowledge on Green Turtles in the region.
- Agency(-ies): AFCDC, other Green Turtle protected areas in the region
- Timeline: 2024-2027

RESEARCH

Action (7): To promote research on Green Turtles in Hong Kong

- Description: Local research or international collaboration on Green Turtle studies should be encouraged and facilitated to promote better understanding of the animal in this region.
- Agencies: AFCDC, NGOs, tertiary institutes
- Timeline: 2023-2027

COMMUNITY AND PUBLICITY

Action (8): To raise awareness on conservation and protection

- Description: Fostering public support is needed for a more effective enforcement, trade control and rescue operation. Public participation on beach cleaning can directly benefit the Green Turtles. It is therefore important to utilise various platforms and media to promote appreciation on biodiversity, as well as to facilitate a better understanding on the local fauna and flora, to enhance positive actions on environmental protection. Dedicated publicity efforts targeting fishermen communities, marina and other stakeholders using Sham Wan Restricted Area will be made before the restricted period every year to remind them about the restriction.
- Agency(-ies): AFCDC, NGOs,
- Timeline: 2023-2027

3.5 Action timetable

Actions		Agencies	Timeframe
HABITAT PROTECTION			
1	To control disturbance at the Sham Wan Restricted Area	AFCD	2023-2027
2	To manage the Sham Wan Restricted Area	AFCD	2023-2027
3	To monitor the Sham Wan Restricted Area	AFCD	2023-2027
SPECIES PROTECTION			
4	To enforce against illegal trade in Green Turtle and its products, and other illegal activities on Green Turtle	AFCD, C&ED	2023-2027
5	To rescue, rehabilitate, release and post-release monitor injured Green Turtles	AFCD, Ocean Park Hong Kong	2023-2027
6	To arrange visits or participate in workshops to exchange experience and ideas on rescue and rehabilitation	AFCD, other Green Turtle protected areas in the region	2024-2027
RESEARCH			
7	To promote research on Green Turtles in Hong Kong	AFCD, NGOs, tertiary institutes	2023-2027
COMMUNITY AND PUBLICITY			
8	To raise awareness on conservation and protection	AFCD, NGOs	2023-2027

4. Implementation and Review

Actions laid out in this action plan will be carried out by the corresponding agencies according to the set timelines, under the coordination of AFCD. Funding for the implementation of actions will be sought by the responsible agencies. All actions will be reviewed in late 2027 and will be documented properly.

5. References

Seminoff, J.A. (Southwest Fisheries Science Center, U.S.). 2004. *Chelonia mydas*. The IUCN Red List of Threatened Species 2004: e.T4615A11037468. <https://dx.doi.org/10.2305/IUCN.UK.2004.RLTS.T4615A11037468.en>. Accessed on 02 June 2023.