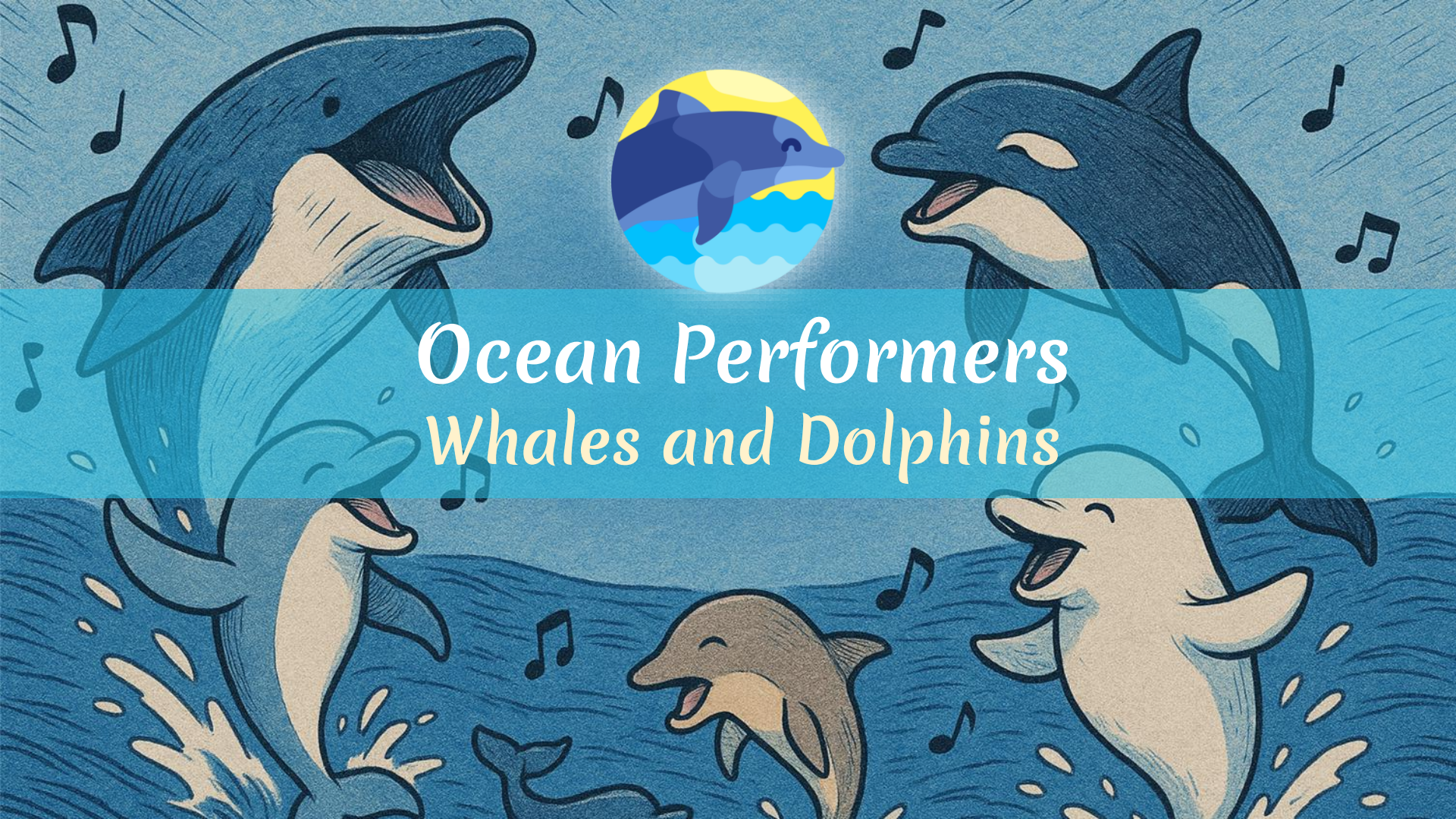
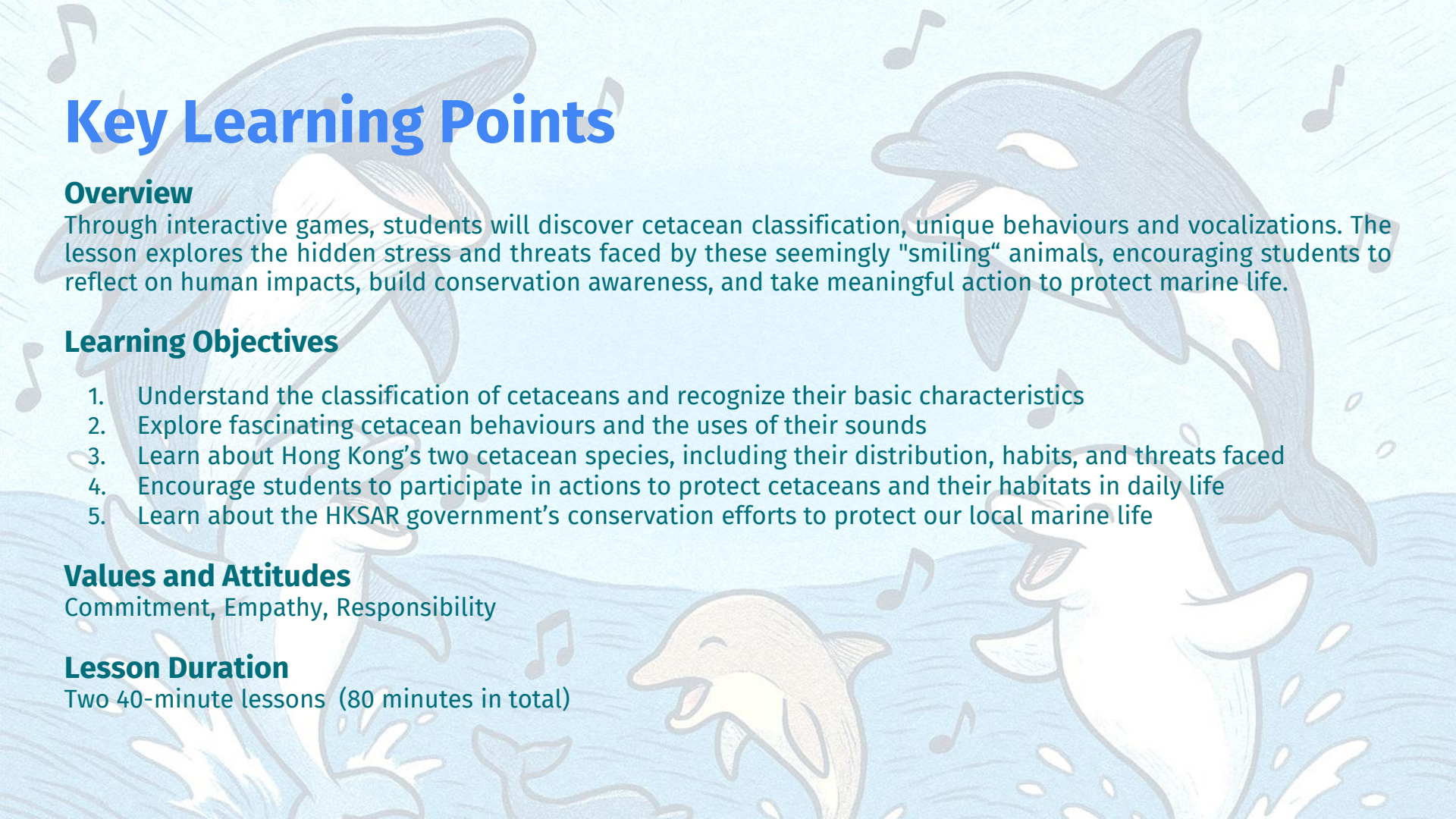


The background is a vibrant blue illustration of dolphins performing in the ocean. Several dolphins are shown in various poses, some leaping out of the water with splashes. Musical notes are scattered throughout the scene, suggesting a performance. In the center, there is a circular logo featuring a stylized dolphin in shades of blue and purple, set against a yellow and blue background. A semi-transparent blue horizontal band runs across the middle of the image, containing the title text.

Ocean Performers

Whales and Dolphins

The background of the entire page is a light blue illustration of the ocean. Several dolphins are depicted in various poses: some are leaping out of the water, others are swimming, and one in the foreground is shown with its mouth open as if singing. Scattered throughout the scene are several black musical notes, reinforcing the theme of dolphin vocalizations.

Key Learning Points

Overview

Through interactive games, students will discover cetacean classification, unique behaviours and vocalizations. The lesson explores the hidden stress and threats faced by these seemingly "smiling" animals, encouraging students to reflect on human impacts, build conservation awareness, and take meaningful action to protect marine life.

Learning Objectives

1. Understand the classification of cetaceans and recognize their basic characteristics
2. Explore fascinating cetacean behaviours and the uses of their sounds
3. Learn about Hong Kong's two cetacean species, including their distribution, habits, and threats faced
4. Encourage students to participate in actions to protect cetaceans and their habitats in daily life
5. Learn about the HKSAR government's conservation efforts to protect our local marine life

Values and Attitudes

Commitment, Empathy, Responsibility

Lesson Duration

Two 40-minute lessons (80 minutes in total)





Ask me a question

What is the largest known animal in the world?

What is the largest known animal in the world?

Blue Whale (藍鯨)

Can reach nearly 30m in length
(equivalent to the length of
2.5 double-decker buses!)





Which of these animals are cetaceans?

(A)

(B)

(C)

(D)



Cetacean

A Harbour Porpoise

D Killer Whale



Fish

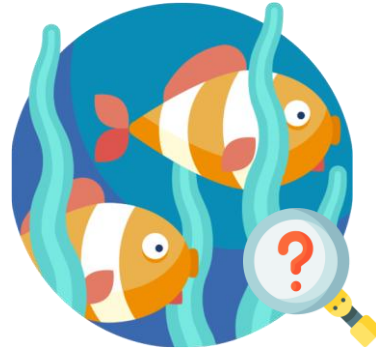
B Whale Shark

C Mahi-mahi

Mahi-mahi



It is also named "dolphinfish" due to its habit of swimming ahead of boats like dolphins.



Cetaceans vs. Fish

Let's spot the differences!



Tail Movement Direction



Cetacean (鯨豚)



© Shark Week



Fish (魚類)



© University of California



Respiration Organs



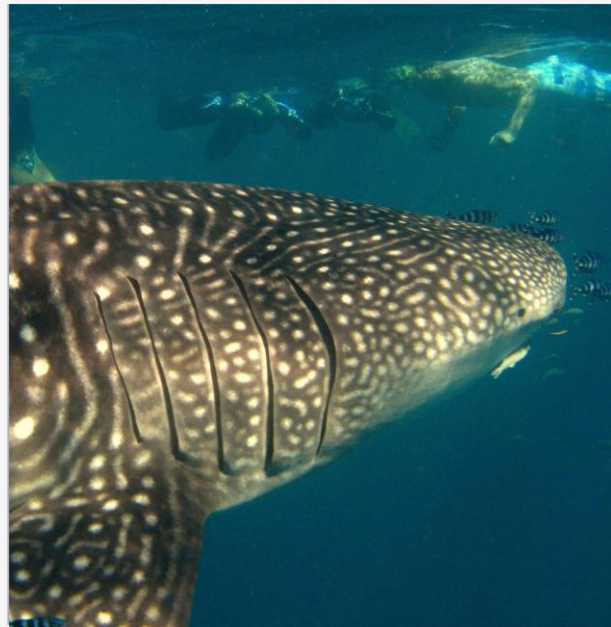
Cetacean (鯨豚)



© Niall Perrins



Fish (魚類)



© Royle Safaris



Skin



Cetacean (鯨豚)



© Corey Husic



Fish (魚類)

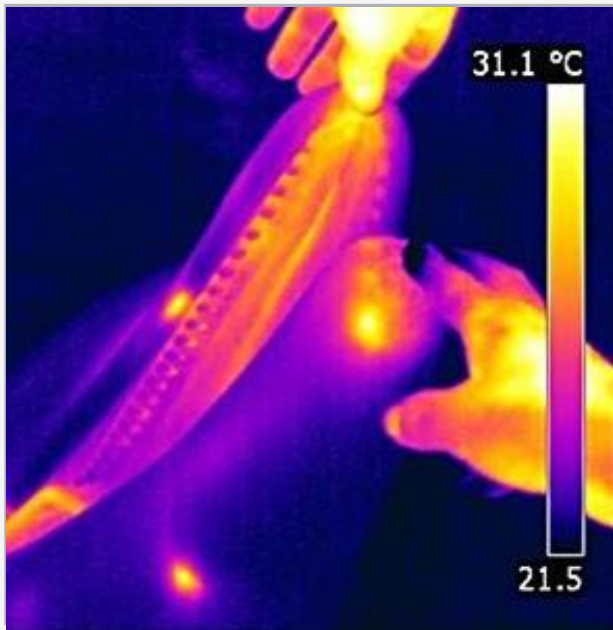




Body vs. Environmental Temperature



Cetacean (鯨豚)



© John Easton



Fish (魚類)



© InspectTally.com



Reproduction



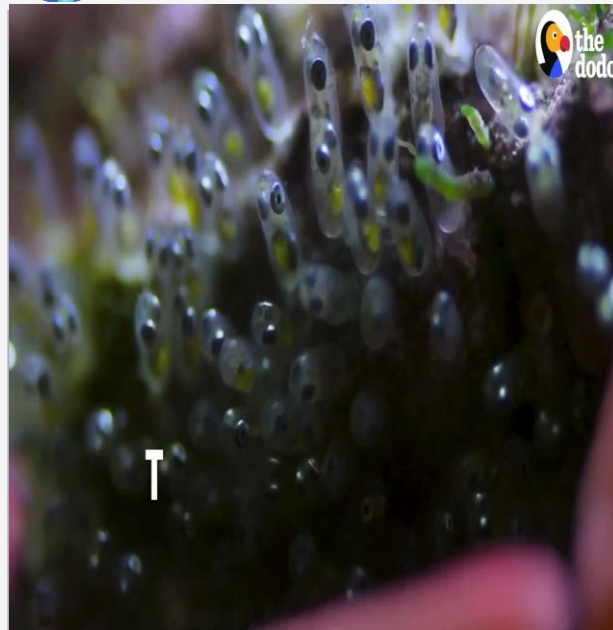
Cetacean (鯨豚)



© Dolphin Quest



Fish (魚類)



© The Dodo

Cetaceans are mammals!



Cetaceans share more common traits with other mammals than they do with fish:

- Breathe with lungs through a blowhole
- Smooth, scaleless skin; minimal body hair
- Homeothermic (Warm-blooded)
- Viviparous (Live birth)
- Produce milk to feed the next generation



Ask me a question

How cetaceans are classified?

Cetacean Classification



Do cetaceans have teeth?

?

Cetacea (鯨豚類)

Toothed Whales (齒鯨)



© QuestaGame

Have sharp,
cone-shaped
teeth

Baleen Whales (鬚鯨)



© Ryan Douglas

Have no teeth,
but feature
baleen plates

Cetacean Classification



How do cetaceans forage ?

?

Toothed Whales (齒鯨)



© shawnphoenix

Mainly feed on fish and squid

Baleen Whales (鬚鯨)



© Donna Pomeroy

Filter feeders, using **baleen** plates to scoop up and strain prey like small fish, plankton, and krill

Cetacean Classification



Here are some of
the star species



Toothed Whales

Mostly marine dwelling, a few live in fresh water



Killer Whale



Amazon River Dolphin



Narwhal

Cetacean Classification



Here are some of
the star species



Baleen Whales

Entirely marine-dwelling

© José Antonio Linage Espinosa



Humpback Whale

© Vicki Beaver



Bowhead Whale

© Aqqa Rosing-Asvid



Fin Whale

Nature's Born Dancers!



Why do they behave this way?



Breaching



Lobtailing

Nature's Born Dancers!



Why do they behave this way?

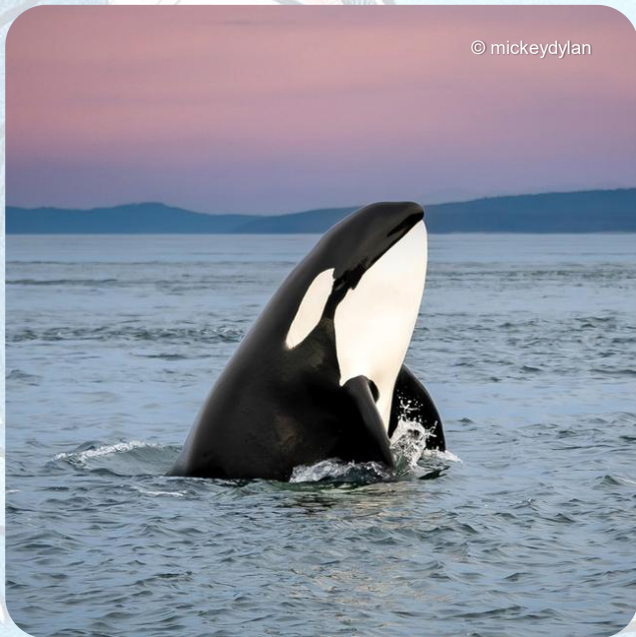


Leaping

Nature's Born Dancers!



Why do they behave this way?



Spyhopping



Logging

Nature's Born Dancers!



Why do they behave this way?



© NewportWhales

Bow-riding

Cetacean Behaviors



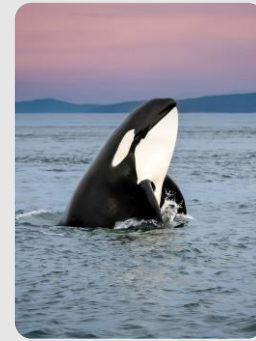
© BBC

- Communication
- Territorial defence
- Parasite removal



© U.S. Navy

Uses vessel-generated waves to propel forward as an energy-saving strategy



Observing surroundings and prey



Resting

Nature's Natural Singers! 🎵

- Most toothed whales use **echolocation** to 'see' the world around them. This helps them hunt, navigate, and communicate.
- They make **high-frequency** sounds that bounce back upon hitting objects.
- They analyse returning echoes to determine target distance and shape.



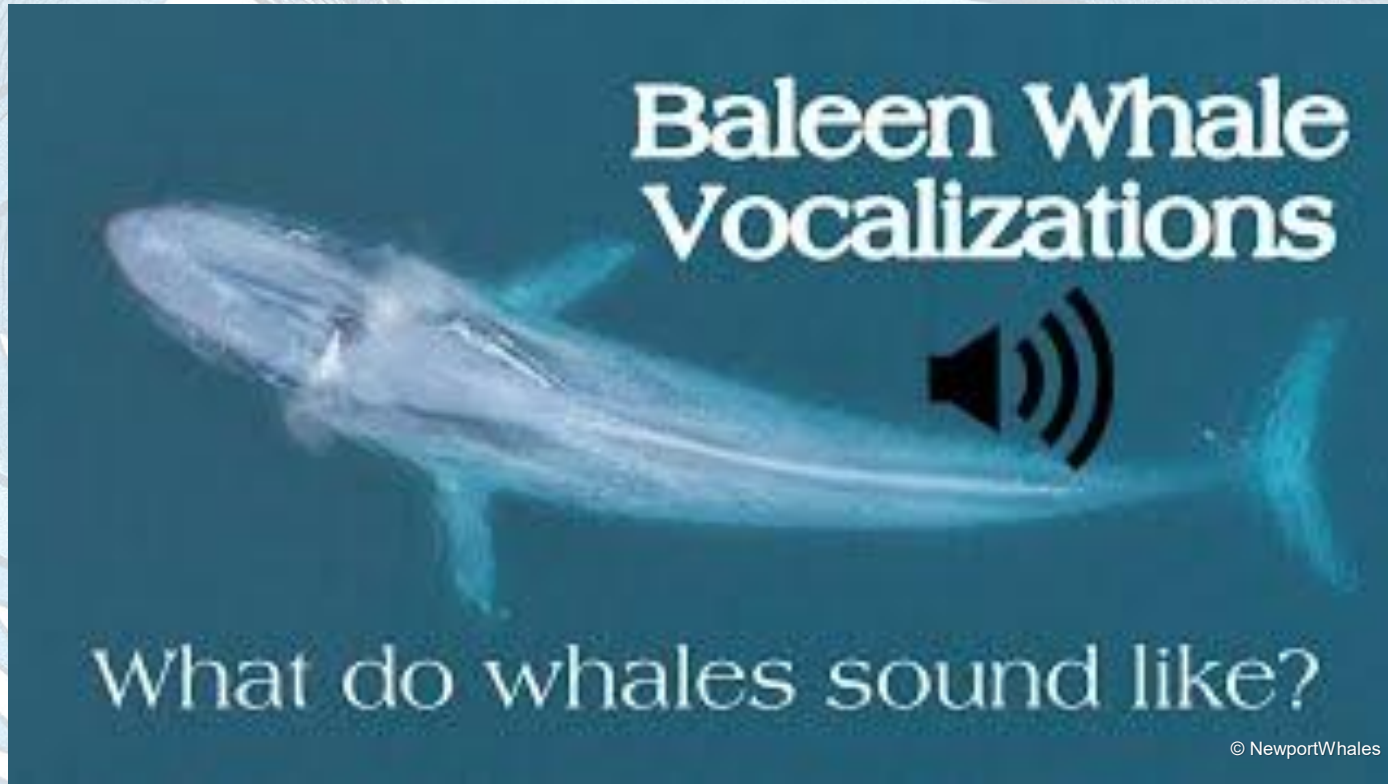
Nature's Natural Singers! 🎵



Nature's Natural Singers! 🎵

- Baleen whales do not use echolocation.
- They could produce complex acoustic patterns known as "whale songs".
- Whale songs are primarily for communication, foraging, and courtship.

Nature's Natural Singers! 🎵



Hong Kong's Cetaceans



2 resident species



Chinese White Dolphin



Indo-Pacific Finless Porpoise

21 non-resident species recorded up to 2025

(including carcasses, stranded, or vagrant individuals)



Pantropical Spotted Dolphin



Risso's Dolphin



False Killer Whale



Eden's Whale

Chinese White Dolphins - Distribution



- Distributed in the coastal waters of **East Indian and West Pacific Oceans** (from Bangladesh to Southeast Asia, China and Northern Australia)
- HK – representing the eastern edge of the Pearl River Estuary population
- **Prominent dorsal hump**; hence also named the **Indo-Pacific Humpback Dolphin**
- Elongated beak
- The *chinensis* from the scientific name, *Sousa chinensis*, means “from China”



© Jefferson et al.

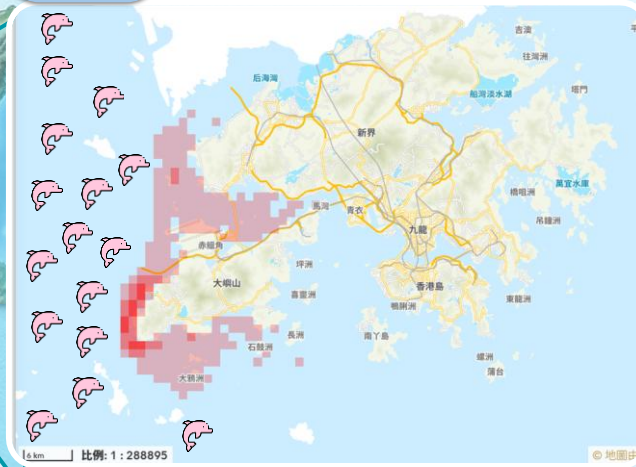


© hokoonwong

Chinese White Dolphins - Distribution in China



- Prefer estuarine habitats
- Freshwater flowing out from the Pearl River mixes with the salty ocean water on the west side of Hong Kong



- Found in Deep Bay, **Lantau**, Tuen Mun, Sha Chau & Lung Kwu Chau, and **Pearl River Estuary**

Chinese White Dolphins - Traits



- Born **dark gray** and turn **pink** as adults
- White skin pigment – The pink appearance comes from **dilated capillaries flushing to dissipate heat** during activity



Chinese White Dolphins - Social Habits



Inhabit dynamic social communities with no fixed members, occasionally exceeding 20 individuals



Chinese White Dolphins - Hunting Habits



Think About It

Are Chinese white dolphins toothed whales or baleen whales?

- Estuarine environments contain more sediment, which reduces underwater visibility and requires them to rely on echolocation to forage
- Studies show they feed on about 20 fish species, most commonly **Lion-head Fish** and anchovies

© 魚類生態與演化研究室



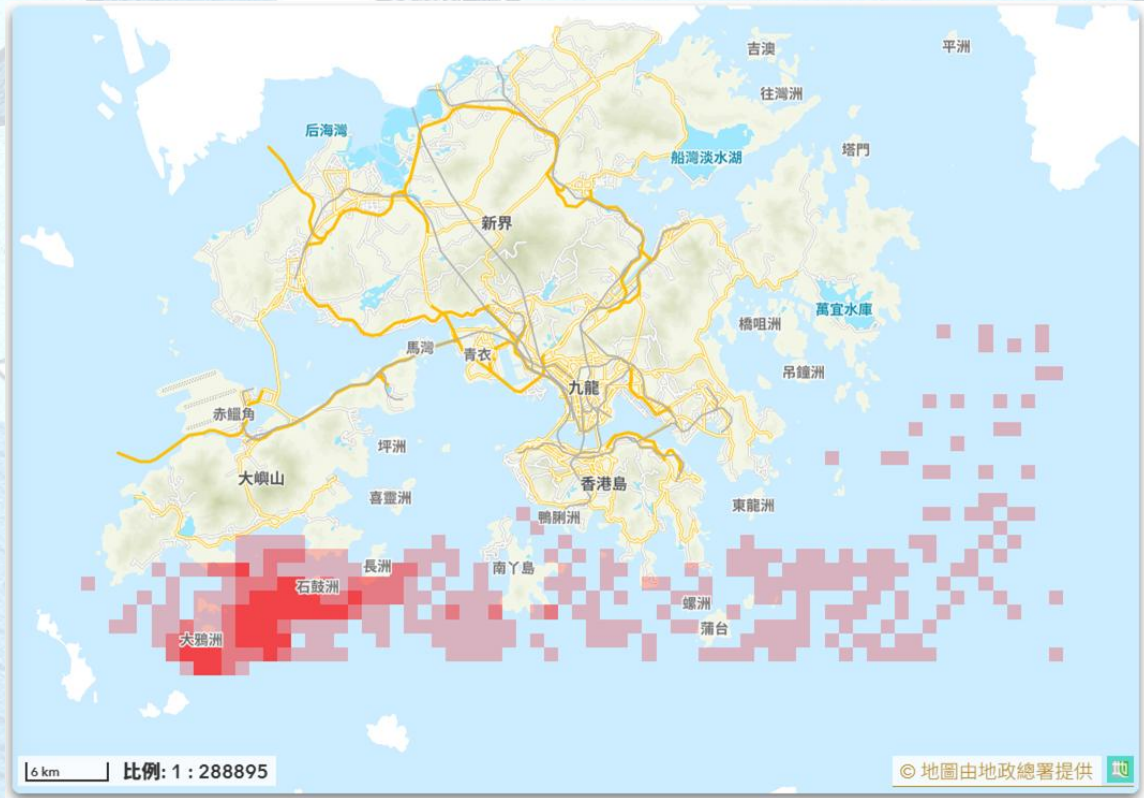
Lion-head Fish

Finless Porpoises - Distribution

- Distributed in the shallow coastal waters of the Indo-Pacific
- Also known as Indo-Pacific finless porpoises

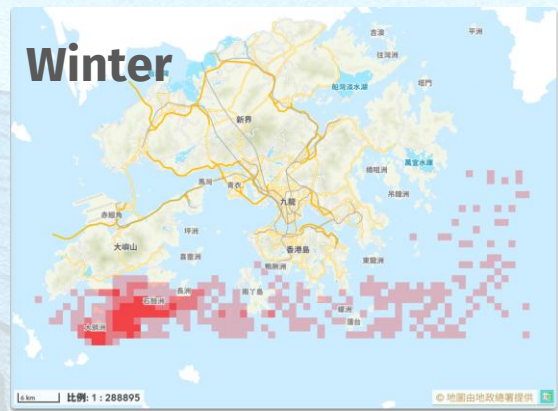
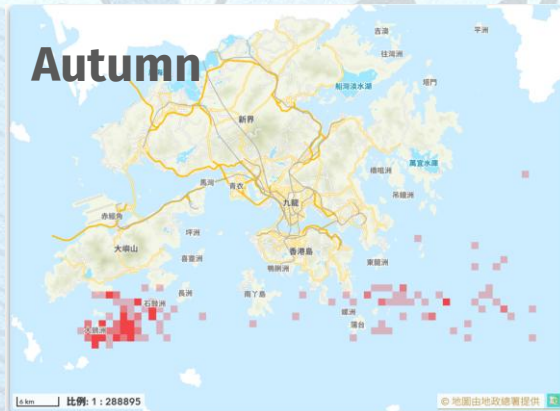
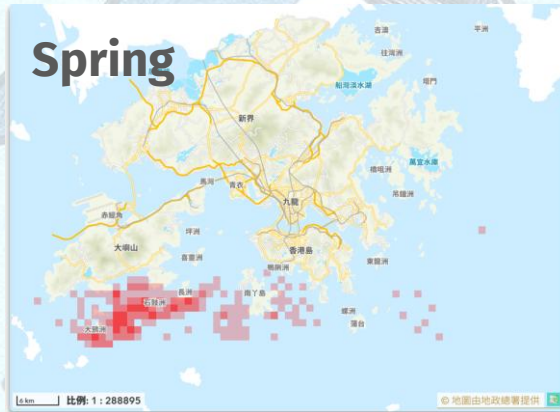


Finless Porpoises - Distribution in Hong Kong



- Prefer marine habitats
- Found in southern and eastern waters of Hong Kong
- South Lantau, Lamma Island, and Po Toi Island

Finless Porpoises - Distribution in Hong Kong



Think About It

Which season is the peak period for finless porpoise sightings?

Finless Porpoises - Traits



- Belong to the family **Phocoenidae** (porpoises), which has 8 living species globally
- Porpoises are the **smallest members among toothed whales**, featuring a rounded head **without a beak**
- Unlike dolphins which have conical teeth, porpoises have **spade-shaped teeth**



Dolphin



Porpoise

Finless Porpoises - Traits



- Their entire body is **lead-gray**
- The term "finless" in their English name refers to the complete **absence of a dorsal fin**



Hong Kong Cetacean Research Project 香港鯨豚研究計劃



Finless Porpoises - Social Habits



Solitary or live in small groups, with group sizes usually under 3



Finless Porpoise - Hunting Habits



- Also use **echolocation** to forage
- Prefer preying on **fish, cephalopods** (octopus and squid), and **shrimp**
- Studies reveal they feed on about 25 fish species, including Lion-head Fish and **Tiger-tooth Croaker**



© 魚類生態與演化研究室



Tiger-tooth Croaker

Summary (1)



- Cetaceans are marine mammals.
- They are divided into toothed whales and baleen whales.
- Toothed whales possess teeth, prey on fish and squid, and inhabit both marine and freshwater environments .
- Baleen whales lack teeth, filter-feed using baleen plates, and reside exclusively in marine waters.
- Cetaceans display a wide range of behaviors that serve distinct ecological functions.
- Vocalization is vital for communication, foraging, and courtship.

Summary (2)



- **Chinese White Dolphin:**

- Prefers estuarine habitats, primarily distributed across the Pearl River Estuary and western Hong Kong waters
- Changes color from calfhood to adulthood
- Lives in social groups
- Uses echolocation to forage for food

Summary (3)



- **Indo-Pacific Finless Porpoise:**

- Prefers marine habitats, distributed across the southern and eastern waters of Hong Kong
- Winter is their peak sighting season
- Belongs to the porpoise family (Phocoenidae); possesses a small body and lacks a distinct beak
- The entire body is lead-gray and lacks a dorsal fin
- Solitary or lives in small social groups
- Uses echolocation to forage for food



Lesson Review



Answer the following questions to review the previous session!

- Which group of animals do cetaceans belong to, and why?
- What are the two major categories of cetaceans, and what are their distinct characteristics?
- Name two behaviours exhibited by cetaceans and explain their functions.
- What method do dolphins use to assist them in hunting/foraging?
- Which two cetacean species live in Hong Kong, and what are their characteristics?

Status and Trends of Cetaceans in Hong Kong



Chinese White Dolphin



Estimated Wild Populations:
~2,500 in Pearl River Estuary

Although numbers in Hong Kong waters declined between 2003–2020, recent trends show stabilization.



Finless Porpoise



Estimated Wild Populations:
~200 in Hong Kong and adjacent waters

Although numbers in South Lantau waters dropped noticeably, recent trends show stabilization.

Threat - Large Scale Development



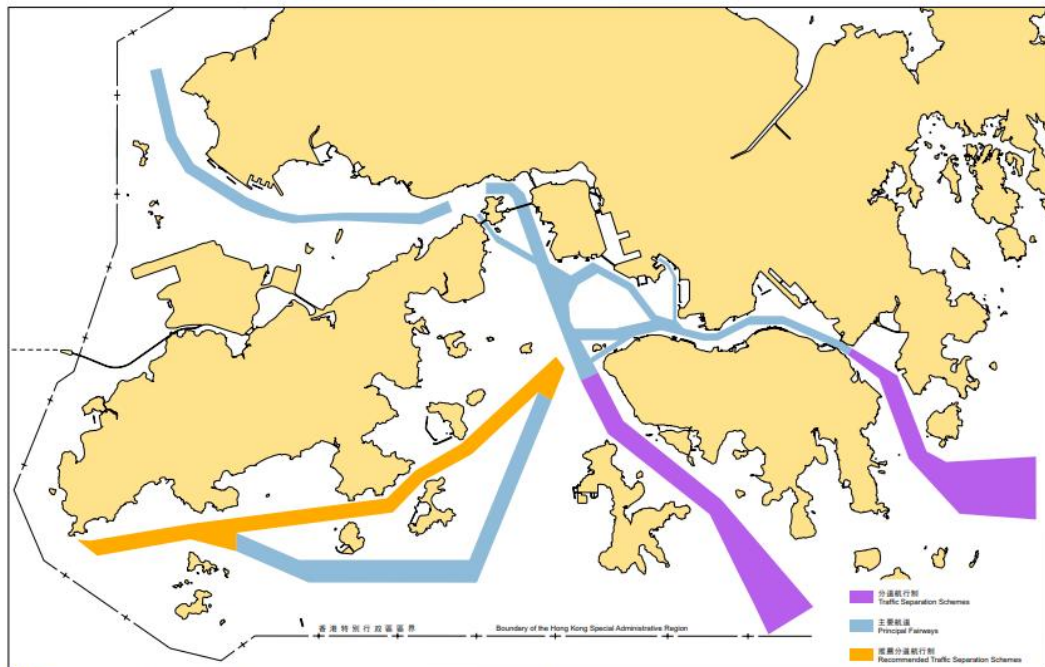
Which local cetacean species is more affected by reclamation?

- Reclamation causes cetaceans to lose parts of their habitat
 - Three-Runway System
 - Tung Chung New Town Extension
 - Siu Ho Wan reclamation
- **Cumulative** impacts from multiple projects

Threats - Vessel Traffic



分道航行制及主要航道
Traffic Separation Schemes and Principal Fairways



- Risk of vessel **strikes and collisions**
- **Underwater noise** causes stress and acoustic masking

Threats - Vessel Traffic



- In 2018, an injured Chinese White Dolphin was spotted in Lantau waters
- Injuries were suspected to be caused by vessel propellers
- The public named him "Hope"
- Despite rescue attempts and assessments by scientists/vets, he was euthanized due to severe injuries

Threats - Water Quality Changes



- **Climate Change**

- Alters water temperature, salinity, and dissolved oxygen, impacting prey abundance

- **Pollutants**

- *E. coli*, suspended solids
- Chemical fertilizers, and sewage runoff

Threats - Reduced Food Supply



Construction from development projects **increases sediment** or **lowers dissolved oxygen**, affecting prey growth and availability.



© WWF-Hong Kong

Threats - Ghost Nets



"Ghost Nets"

Abandoned nets in the ocean

- Directly entangles dolphins, leading to drowning
- Severely restricts mobility and foraging ability



Threats - Bycatch (Overseas Case Study)

- Fishermen may accidentally catch dolphins even when they are not the target species.
- High demand for fish products can drive cetaceans elsewhere to extinction risks.
- For instance, Mexico's endemic vaquita porpoise is now critically endangered due to massive bycatch driven by the high demand for totoaba.



How Do We Know If Species Are Threatened?



國際自然保護聯盟
International Union for
Conservation of Nature (IUCN)

World's largest conservation network, consisting of government and non-governmental organizations

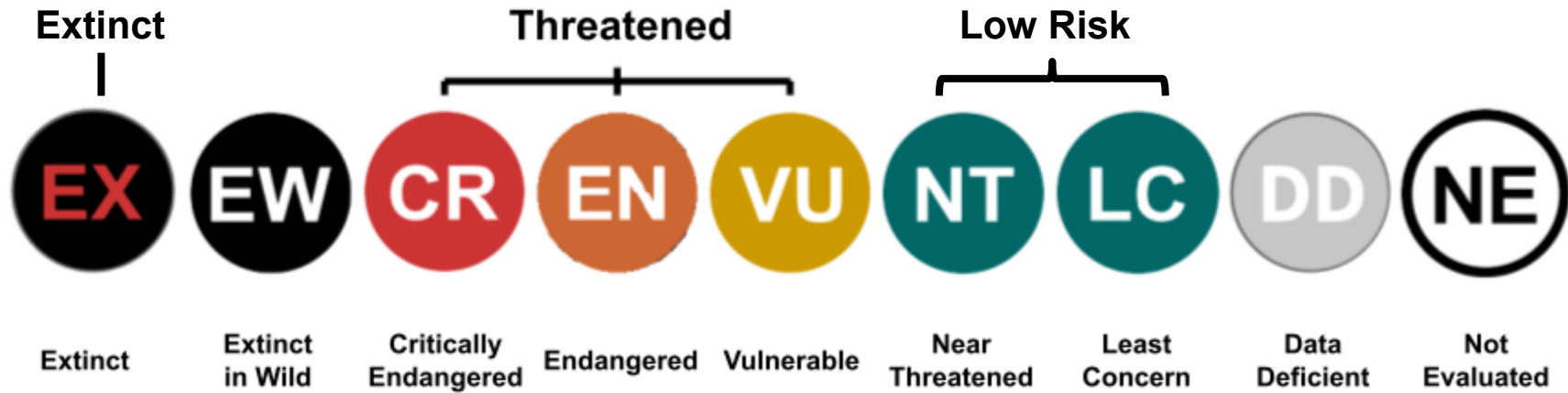
How Do We Know If Species Are Threatened?



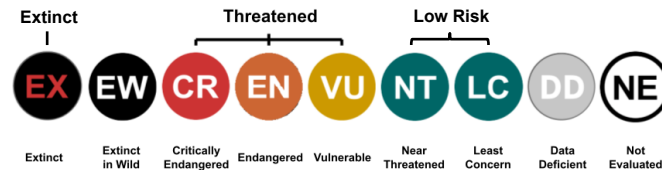
瀕危物種紅色名錄 Red List

Compiled by IUCN since 1964 to assess the conservation status of animals, plants, and fungi, and categorise the extinction risk of different species

How Do We Know If Species Are Threatened?



Threat of Local Wildlife



Guess which category the following animals belong to!



Black-faced Spoonbill



Romer's Tree Frog



Chinese Pangolin

Threat of Local Wildlife



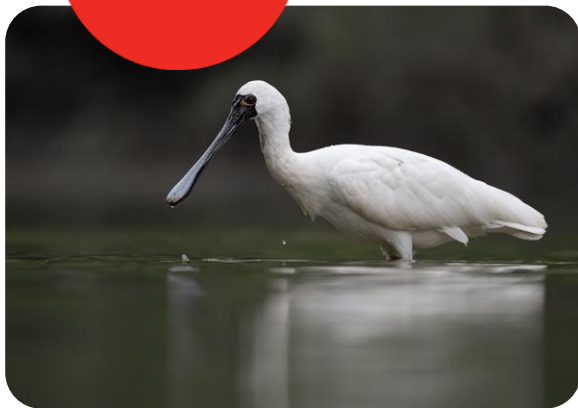
Black-faced Spoonbill was downlisted to Vulnerable (VU) in 2025 due to long-term cross-border conservation efforts!



Vulnerable

< VULNERABLE >

VU



Black-faced Spoonbill



Endangered

< ENDANGERED >

EN



Romer's Tree Frog



Critically Endangered

< CRITICALLY ENDANGERED >

CR



Chinese Pangolin

Hong Kong Cetacean Status



< VULNERABLE >

VU

Vulnerable



Chinese White Dolphin



< VULNERABLE >

VU

Vulnerable



Indo-Pacific Finless Porpoise

Government Conservation Work



- The **Agriculture, Fisheries and Conservation Department (AFCD)** has long been committed to implementing various conservation measures to enhance the protection of local cetaceans.
- Their work includes legislative protection, marine park designation, environmental impact assessments, monitoring and investigation, marine resource enhancement, public education, and cross-boundary cooperation.

Environmental Impact Assessments

- Under the Environmental Impact Assessment Ordinance (Cap. 499), AFCD reviews ecological assessment under the environmental impact Assessments submitted by project proponents.
- These assessments aim to collect precise ecological data to analyze potential impacts and damage from development projects on local and their habitats, objectively determining the actual environmental impact.
- Ecological assessments include key components: establishing ecological baselines, evaluating impact levels, proposing mitigation measures, and implementing long-term monitoring.

Legislative Protection

- Marine Parks Ordinance (Cap. 476)
- Wild Animals Protection Ordinance (Cap. 170)
- Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586)
- Regularly reviews and updates legislation to protect wild marine mammals



Marine Park Designation



Protects habitats and mitigates vessel noise/speed threats.



Designated Marine Parks:

- Sha Chau and Lung Kwu Chau
- The Brothers
- North Lantau
- Southwest Lantau
- South Lantau

These five western marine parks protect vital resources, including Chinese white dolphins and finless porpoises. They protect dolphins by restricting marine construction, restricting fishing, and capping vessel speeds at 10 knots.

Marine Park Designation in Recent Years



- **North Lantau Marine Park (2024)**

The largest marine park (2400 ha) in Hong Kong so far and connected to two previously designated marine parks, namely the Sha Chau & Lung Kwu Chau Marine Park (a fish spawning/nursery ground with fishing prohibited) and The Brothers Marine Park (with non-fishing zone), as well as the Guangdong Pearl River Estuary National Nature Reserve to form a large connected marine protected areas network

- **Southwest Lantau Marine Park (2020)**

Core habitat for Chinese White Dolphins (e.g., Peaked Hill, Fan Lau)

- **South Lantau Marine Park (in 2022)**

Covers Soko Islands; habitat for both Chinese White Dolphins and Finless Porpoises. Features core non-fishing zones

Monitoring & Investigation – Water Quality



- AFCD conducts quarterly water quality monitoring in various marine parks and marine reserves
- **Monitors multiple parameters** (e.g., water temperature, salinity, dissolved oxygen, nitrogen, *E. coli*, and suspended solids)
- Compares results against the Water Quality Objectives established by the Environmental Protection Department
- Provides a scientific basis for **formulating effective water quality control strategies** to protect dolphins and the marine ecosystem



Monitoring & Investigation – Cetacean Stranding



© OPCFHK



© OPCFHK

Primary Causes

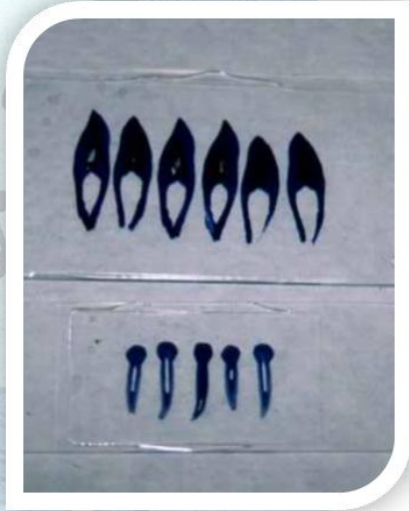
- Mostly undetermined or natural
- Infections from viruses, bacteria, or parasites
- Vessel strikes / propeller wounds
- Entanglement in ghost nets

Monitoring & Investigation – Cetacean Stranding



- AFCD partners with **Ocean Park Conservation Foundation Hong Kong (OPCFHK)** since 2006 to handle stranding cases
- Dispatches teams to collect **stranding data and tissue samples** for laboratory tests

Monitoring & Investigation – Cetacean Stranding



- The types of samples collected **depend on the level of carcass decomposition**, generally including blubber, liver, kidneys, stomach, reproductive organs, skull, and teeth
- Provides information regarding the **causes of death and life cycles** of cetaceans, such as:
 - Foraging habits
 - Growth rates
 - Reproductive capacity
 - Impacts of environmental pollutants
 - Population structure

Monitoring & Investigation – Distribution and Population



- AFCD, Mainland institutions, and universities collaborate continuously to monitor dolphin population trends
- Survey methods:
 - Line-transect surveys
 - Photo-identification
 - Passive Acoustic Monitoring

matching unique dorsal fin marks to identify different individuals

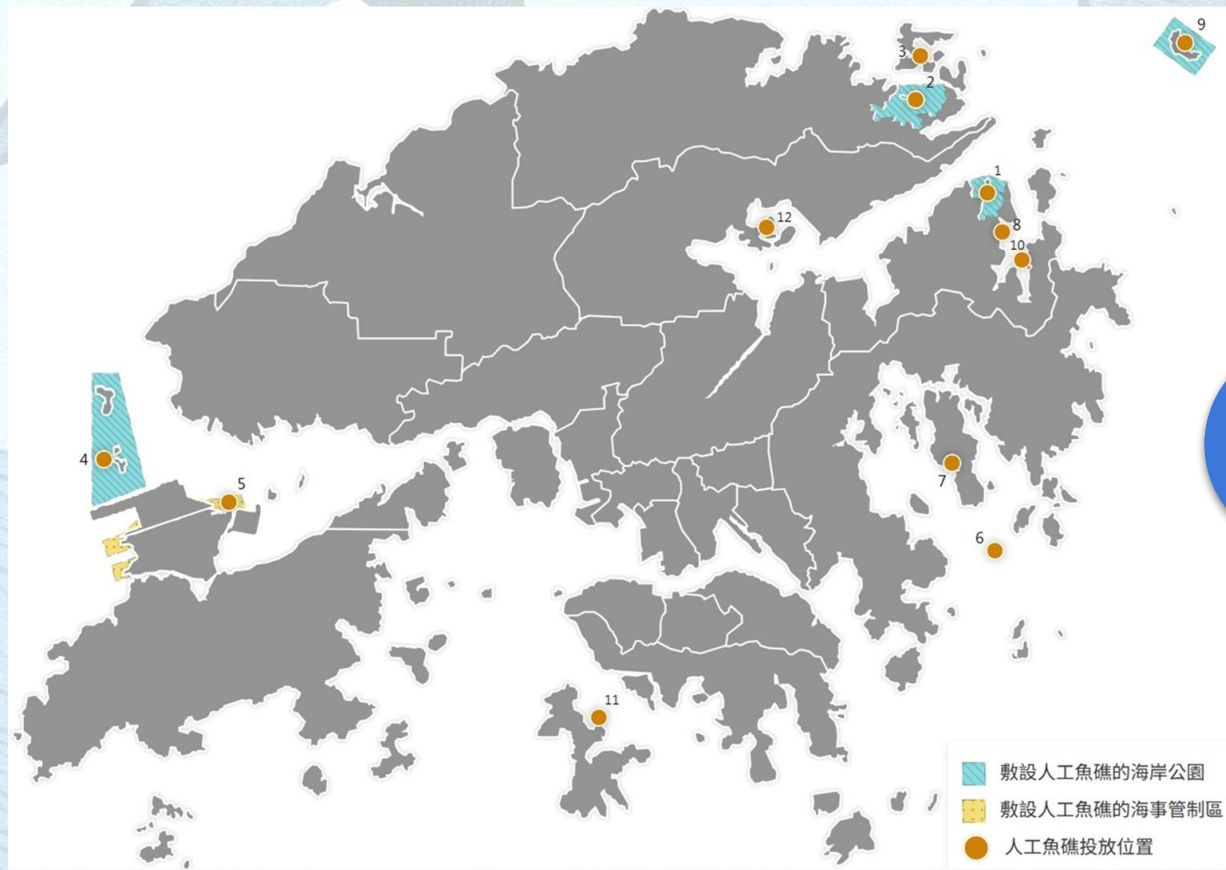


Marine Resource Enhancement – Artificial Reefs



- The government has deployed different types of **artificial reefs** in Hong Kong waters
- These artificial reefs increase **habitat complexity**, provide additional habitats for fish and other organisms, and enhance fisheries resources for both citizens and cetaceans

Marine Resource Enhancement – Artificial Reefs



Think about it

Where should artificial reefs be placed?

Marine Resource Enhancement: Restocking



- AFCD and Airport Authority Hong Kong regularly conduct **scientific restocking** programs near artificial reefs
- Releases include **site-appropriate** fish, crustaceans, mollusks, and echinoderms
- **Optimise marine resources**
- The program also raises public awareness about marine conservation and sustainable fisheries

Public Education

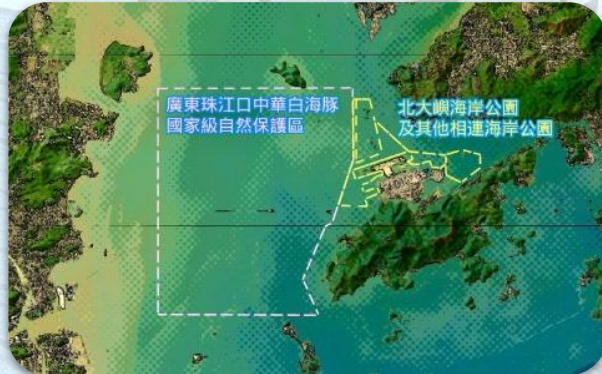


Conducts school talks, visitor centre workshops, and eco-tours to enhance public awareness regarding cetacean conservation

Cross-boundary Cooperation - Marine Protected Area Network



粵港中華白海豚保護合作平台備忘錄簽約儀式
珠江口中華白海豚保護區 香港漁護署



- The Guangdong-Hong Kong Chinese White Dolphin Conservation Cooperation Platform was launched in 2025.
- It enhances joint management, public education, and scientific monitoring for ecological and fishery synergies.
- It links some marine parks in HK waters with the Guangdong Pearl River Estuary National Nature Reserve, covering a total area of 50,570 ha (including ~4,570 ha in northern Lantau Island).
- It allows Chinese white dolphins to safely travel between these habitats, ensuring more comprehensive protection.

Cross-boundary Cooperation – Joint Rescue Mechanism



- Established the "Shenzhen-Hong Kong Large Aquatic Wildlife Joint Rescue Mechanism" in 2025
- Cetaceans may strand and die due to various reasons
- Identifying the causes of death helps evaluate population changes and further formulate relevant conservation work

Group Discussion

- What do you think are the pros and cons of participating in dolphin-watching activities? How can we strike a balance?
- Whales are non-resident cetaceans, and those visiting our waters may be sick. Should we engage in whale-watching activities in local waters?



- Chinese White Dolphin and Finless Porpoise are two local/ resident cetaceans inhabiting the Pearl River Estuary including Hong Kong waters. Dolphin watching activities are common in Hong Kong and would allow the public to engage with the marine ecosystem.
- This Code aims to provide guidance on good practice on dolphin watching activities to ensure the protection of dolphins and sustainability of dolphin watching activities.
- However, watching non-resident cetaceans, such as whales, is not encouraged because Hong Kong is not their usual habitat, and these cetaceans entering Hong Kong waters may be sicked or disoriented, and maybe stressed and disturbed.

Code of Conduct for Dolphin Watching (1)

General Rules

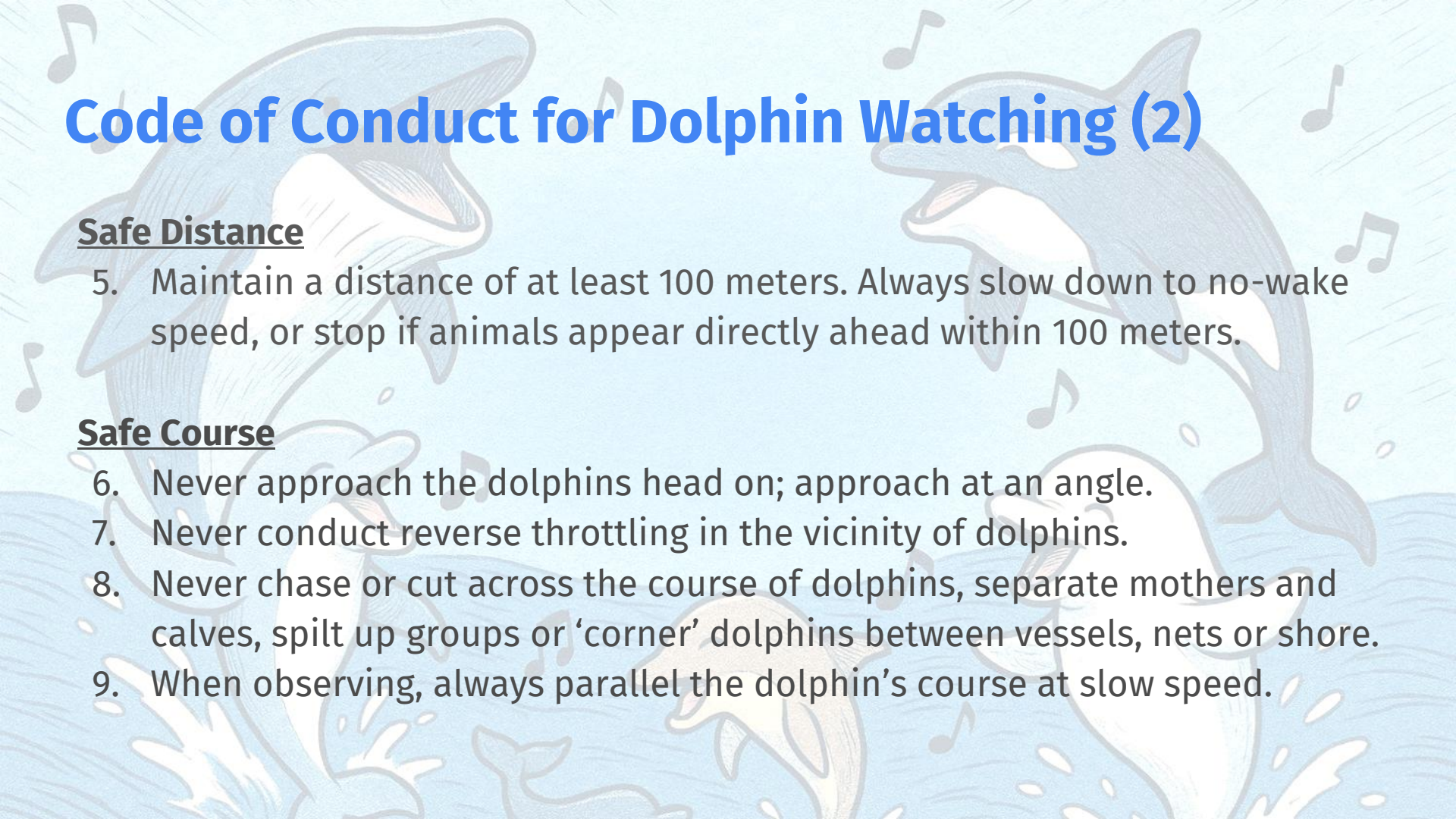
1. Never attempt to touch, swim with, or feed the dolphins.
2. Do not litter or dispose of any fuel, oil or other pollutants in the waters.
3. Respect the dolphins and let them make the choice to approach or flee. If a group of dolphins is difficult to observe and elusive, leave them alone and try to find a more cooperative group.

Safe Speed

4. Maintain forward progress at a slow, steady speed or stop with no sudden course changes. Vessel speed should not exceed **10 knots**.



1 Knot = 1 Nautical Mile/hr
= 1.852 km/hr



Code of Conduct for Dolphin Watching (2)

Safe Distance

5. Maintain a distance of at least 100 meters. Always slow down to no-wake speed, or stop if animals appear directly ahead within 100 meters.

Safe Course

6. Never approach the dolphins head on; approach at an angle.
7. Never conduct reverse throttling in the vicinity of dolphins.
8. Never chase or cut across the course of dolphins, separate mothers and calves, spilt up groups or 'corner' dolphins between vessels, nets or shore.
9. When observing, always parallel the dolphin's course at slow speed.

How We Can Help



- Avoid participating in whale-watching activities
- Join responsible dolphin-watching tours and follow the code of conduct.
- Report live stranding incidents via the 1823 hotline. AFCD will immediately coordinate emergency rescue actions with experts from the Conservation Foundation and Ocean Park
- Join coastal cleanup events
- Protect precious marine resources

Summary (1)



- The population declines of Chinese white dolphins and finless porpoises in the wild have gradually stabilized.
- Cetaceans face various threats including Large-scale development projects, marine vessel traffic, water pollution, declining food supply, and ghost nets.
- AFCD's efforts can strengthen the conservation of cetaceans.
- The IUCN Red List identifies and tracks the endangerment levels of different species.

Summary (2)



- Both Chinese white dolphins and finless porpoises are vulnerable species.
- All sectors of society can work together with the AFCD to conserve cetaceans:
 - Protecting marine parks
 - Supporting and complying with relevant laws protecting cetaceans
 - Supporting cross-boundary cooperation
 - Supporting marine resource enhancement measures (e.g., artificial reef deployment and scientific restocking)
 - Investigating cetacean stranding cases
 - Continuously monitoring distribution and population
 - Publicising and promoting cetacean conservation
 - Taking individual actions