Integrated Conservation Strategy for the BEALE'S EYED TURTLE in Hong Kong 2025–2030

Many people contributed to the creation of the Integrated Conservation Strategy for the Beale's Eyed Turtle in Hong Kong (2025-2030). Their time and contributions are acknowledged here:

Hosts and financial support: Ocean Park Corporation (OPC)

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IUCN SSC Conservation Planning Specialist Group (CPSG)

Supported by: Agriculture, Fisheries and Conservation Department (AFCD)

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Workshop process:
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Facilitation team:
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A full list of participants is provided in Appendix 1 of this document, and all are thanked for their time and contributions.

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Planning Workshop for the
Integrated Conservation of the

BEALE'S EYED TURTLE

HONG KONG 18–21 JUNE 2024

Convened by

Ocean Park Hong Kong 香港海洋公園

Supported by

漁農自然護理署
Agriculture, Fisheries and Conservation Department

Designed and facilitated by

IUCN SSC Species Survival Commission

CONSERVATION PLANNING SPECIALIST GROUP
Changing the Future for Wildlife

Chester Zoo

Participating Institutions

海南師范大學
HAINAN NORMAL UNIVERSITY

香港兩棲及爬行動物保育基金
慈善機構 Charitable Organization

暨南大學 JINAN UNIVERSITY 1906

KFBG
Kadoorie Farm & Botanic Garden
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Lingnan 嶺南大學 University 香港 Hong Kong

OPCF Hong Kong
香港海洋公園保育基金
Ocean Park Conservation Foundation Hong Kong

BEALE'S EYED TURTLE

DISCLAIMER

This report is the result of a participative process involving stakeholders from different sectors of civil society and government agencies. Therefore, the reflections, content and points of view expressed in this document, and the presentation of material do not represent the institutional vision, or opinions expressed by the participating organisations, nor do they reflect the spirit of their formal policies.

AGRICULTURE, FISHERIES AND CONSERVATION DEPARTMENT (AFCD)

The Agriculture, Fisheries and Conservation Department supports technical and participatory processes that contribute to the development of conservation strategies. However, the official regulatory instrument guiding species conservation efforts in Hong Kong are the AFCD Species Action Plans (SAPs) under the Biodiversity Strategy and Action Plan.

This document serves as a valuable reference and guiding framework for the development of the AFCD SAP for turtles. While the information and recommendations presented herein contribute to the broader conservation dialogue, they do not constitute official AFCD policy. However, AFCD supports its role in fostering collaboration and promoting participatory conservation efforts led by civil society organisations.

INTERNATIONAL UNION FOR THE CONSERVATION OF NATURE

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FOREWORD

The Beale's Eyed Turtle, with fewer than 100 individuals remaining in the wild in Hong Kong, urgently requires our protection. This species, unique to Hong Kong and southeastern China, symbolises the rich biodiversity and ecological interconnectedness of the Greater Bay Area (GBA). Its status on the brink of extinction, highlighting the critical need for immediate action.

From June 18 to 21, 2024, a dedicated group of experts, researchers, and stakeholders from Hong Kong, Chinese Mainland, and other countries convened at Ocean Park Hong Kong for a proactive planning workshop focused on the Integrated Conservation of Beale's Eyed Turtle. This workshop was a pivotal step in our united journey to address the urgent challenges this species faces, including habitat loss, illegal wildlife trade, and poaching.

The outcome of our collective efforts is the Integrated Conservation Strategy for Beale's Eyed Turtle in Hong Kong. This strategy serves as a roadmap for reversing the decline and ensuring the long-term survival of this endangered species. By embracing a science-based, collaborative, and adaptive approach, we have created a shared vision and mission that unites all participants in our commitment to preserving the Beale's Eyed Turtle. Utilising the 'One Plan Approach' to species conservation, we integrated both *in situ* and *ex situ* efforts from multiple stakeholders, charting a clear path forward. These actions represent our dedication to implementing real, tangible steps that secure the future of the Beale's Eyed Turtle as a vital biological resource in Hong Kong and expand conservation impact within the GBA.

Our strategy underscores our commitment to conserving endangered species through collaboration and calls for sustained efforts to protect the Beale's Eyed Turtle. Our goal is to establish Hong Kong as a stronghold for this species. By achieving positive conservation outcomes, we aspire to inspire others and serve as a model for protecting other endangered freshwater turtles throughout the Greater Bay Area and beyond.

Howard Chuk
Executive Director, Zoological Operations and Conservation
Ocean Park Hong Kong

Executive summary

The Beale's Eyed Turtle (*Sacalia bealei*) is an endangered freshwater species endemic to southeastern China, including Hong Kong. With a local breeding population of fewer than 100 individuals, it faces severe threats from poaching and the presence of non-native turtle species. In addition, potential and emerging threats, as well as critical data and knowledge gaps, must be addressed to effectively conserve this species.

In June 2024, a four-day conservation planning workshop was convened by Ocean Park Hong Kong, facilitated by the IUCN SSC Conservation Planning Specialist Group, and supported by the Agriculture, Fisheries and Conservation Department (AFCD). The workshop brought together 26 participants from 10 institutions, including government agencies, academic institutions, NGOs, and herpetological and zoological groups, to develop a coordinated and integrated conservation strategy. This strategy combines *in situ* and *ex situ* approaches and is structured for adaptive implementation to safeguard the species' future.

The workshop began with introductory presentations on the ecology and conservation status of the Beale's Eyed Turtle, as well as the broader context of turtle conservation in Hong Kong. This was followed by four days of facilitated collaborative action planning.

Participants identified core challenges in conserving the species, including:

- Ongoing opportunistic poaching and low-evidence illegal trade;
- Risks from non-native and hybrid turtles introduced through pet abandonment and mercy release;
- Localised habitat degradation due to pollution, minor physical barriers, human disturbance, and potential climate stress;
- Inherently low reproductive rates and small population size;
- Critical data and knowledge gaps;
- Limited public awareness and enforcement constraints.

Together, participants defined a shared vision: "**BET populations are thriving and fulfilling integral ecological roles, and are well-protected through multi-agency collaboration and community participation, with Hong Kong being a stronghold for the species and a successful model for endangered species conservation**". The overarching aim is to reverse population decline and to secure habitats through coordinated actions, enforcement, and community engagement.

Executive summary

This vision translated into **41 targeted actions** that fall under eight objectives:

Objective 1: Reduce poaching and illegal trade of BET
Objective 2: Prevent, control, and mitigate the presence and negative impacts of non-native species in key locations
Objective 3: Safeguard the habitat integrity of BET populations
Objective 4: Obtain information through biological, ecological & social research to fill knowledge gaps and guide adaptive measures for BET conservation
Objective 5: Increase awareness of the major threats and importance of BET conservation, and engage the community in supporting conservation actions
Objective 6: Increase capacity and engagement of key stakeholders to undertake BET conservation actions
Objective 7: Assemble and maintain robust *ex situ* populations that can serve as assurance colonies and for restoration of BET
Objective 8: Develop management strategies to safeguard BET populations *in situ*

To ensure effective implementation and ongoing monitoring, a governance framework was established, jointly coordinated by Ocean Park Hong Kong and Lingnan University. A coordination team of eight members representing six institutions, including AFCD, was appointed to oversee progress and maintain accountability.

The conservation strategy is set to be implemented over five years. During this period, we aim to establish a robust and holistic foundation to secure a viable future for the Beale's Eyed Turtle.

CONTENTS

ABBREVIATIONS AND ACRONYMS

AFCD	Agriculture, Fisheries and Conservation Department
BET	Beale's Eyed Turtle
BHT	Big-headed Turtle
BSAP	Biodiversity Strategy and Action Plan
CITES	Convention on the International Trade in Endangered Species
CPSG	Conservation Planning Specialist Group
eDNA	Environmental DNA
HKHERP	Hong Kong Society of Herpetology Foundation
IUCN	International Union for the Conservation of Nature
KFBG	Kadoorie Farm and Botanic Garden
LingU	Lingnan University
OPC	Ocean Park Corporation
OPCFHK	Ocean Park Conservation Foundation, Hong Kong
OPHK	Ocean Park Hong Kong
SAP	Species Action Plan
SSC	Species Survival Commission
TFTSG	Tortoise and Freshwater Turtle Specialist Group

BEALE'S EYED TURTLE

ABOUT THE SPECIES

Taxonomy

Class Reptillia

Order Testudines

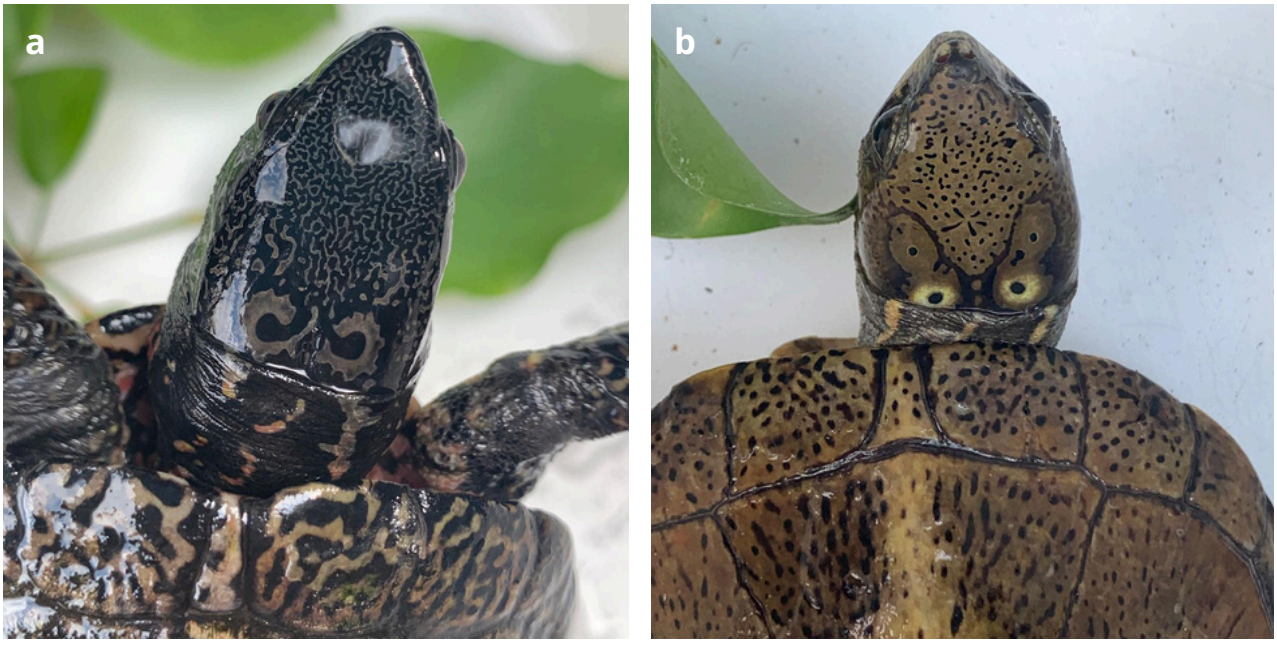
Family Geoemydidae

Genus Sacali

Species *Sacalia bealei* (Gray, 1831)

General description

The Beale's Eyed Turtle (*S. bealei*; hereafter abbreviated to BET) is a small aquatic turtle species that has distinctive ocelli 'eyespots' on the dorsal surface of the head. The carapace measures around 14 cm in length and is brown with irregularly distributed dark specks. A sexually dimorphic species, the adult male exhibits numerous tiny black dots on the head, bright-red stripes on the neck, and plentiful small black spots on the peripheral area of the plastron. In contrast, female adults have fewer black dots on the head, faint yellow stripes on the neck, and fewer and larger black patches on the plastron. Compared to the male, females have a longer plastron and higher carapace (Lin *et al*., 2017).



Beale's Eyed Turtle (*Sacalia bealei*) distinctive ocelli 'eyespots'.
a. Male top head. b. Female to head. Photos by Calvin Fung, Ocean Park Hong Kong

Biology and ecology

Habitat

Field studies indicate that BET prefers habitats associated with primary tributaries. Individuals home ranges vary greatly in their extent (814 – 14,110 m^2), with no significant differences observed between males and females (Hu, 2016). The large area that their home ranges can cover highlights the importance of preserving diverse freshwater and terrestrial environments to support their populations.

Diet and nutrition requirements

The BET has a diverse diet, consisting of plant material, fruits, insects, and occasionally carrion (Sung *et al.*, 2021). This varied diet reflects the turtle's role in nutrient cycling within its ecosystem (Sung *et al.*, 2021). Habitat quality, and particularly water quality and availability of food sources, significantly impacts their health and reproductive success. Captive individuals readily accept commercial turtle foods, but Fong *et al.* (2020) suggests that a diet including more fruits may better mimic a diet in the wild and enhance gut microbiota diversity, potentially improving reproductive success. The diversity of the gut microbiota in wild individuals compared to those in captivity indicates the importance of dietary variety in maintaining health and fertility (Fong *et al.*, 2020).

Reproductive ecology

The BET is known for its secretive nature, spending much of its time hidden under vegetation or submerged in water. They are primarily solitary, coming together only for mating. They become dormant during the cooler months (December to March), with courtship behaviour observed one month prior to, or following dormancy (Lin *et al.*, 2018). In captivity, the majority of courtship activities occur in March and April, suggesting a seasonal pattern in reproductive behaviour. In the wild, egg laying begins in early May, with females laying one clutch per year, averaging 2.2 eggs (Lin *et al.*, 2018). The mean incubation period in the wild is 94.7 ± 2.5 days, with a higher development and hatching rate compared to those in captivity. This information underscores the importance of understanding and mimicking natural conditions to improve conservation breeding success.

Life cycle

The BET life cycle is characterised by a slow growth rate and late maturity; these are common traits among freshwater turtles that contribute to their vulnerability and the critical need for conservation (Easter *et al.*, 2023). Females lay one clutch per year, with an average clutch size of 2.2 eggs, which they deposit in nests dug into the soil near water bodies (Lin *et al.*, 2018). The importance of protecting nesting sites and juvenile habitats is underscored by the species' low fertility rate

(<30%; Gong *et al.*, 2017b; Lin *et al.*, 2018) and limited juvenile survival (due to predation and habitat disturbance).

Significance in ecosystem services

With its omnivorous diet, the BET plays a pivotal role in the ecosystem services of its native habitats. It contributes to seed dispersal, aiding in the regeneration of riparian vegetation (Sung *et al.*, 2021). This activity is crucial for maintaining the health and stability of riparian zones, which are vital for biodiversity. Furthermore, by feeding on a variety of terrestrial organisms, including plants, fruits, insects, and carrion, the BET facilitates energy flow from riparian forests to stream ecosystems, supporting a complex web of aquatic and terrestrial life.

Co-occurring freshwater turtle species

There are five species of freshwater turtle native to Hong Kong: BET, Golden Coin Turtle (*Cuora trifasciata*; Critically Endangered), Big-headed Turtle (*Platysternon megacephalum*; Critically Endangered), Reeve's Turtle (*Mauremys reevesii*; Endangered), and Chinese Softshell Turtle (*Pelodiscus sinensis*; Vulnerable). Fong *et al.* (2024) noted that the BHT and BET are syntopic, while the Hong Kong Biodiversity Strategy and Action Plan (Environment Bureau, 2016) noted that the BET is sympatric with *C. trifasciata*. These three species are known to inhabit hill streams, and are likely to share the same habitat due to the compact geographical range in Hong Kong.

Population Status

The BET lives in rocky hill streams within secondary forest with high canopy coverage; its habitats in Hong Kong are mainly located and protected in country parks. The exact locations are not disclosed to protect the wild populations. The species is now considered to be extremely rare in the wild (Gong *et al.*, 2017a, Lin *et al.*, 2018) as well as the trade (Van Dijk, Stuart & Rhodin, 2000). A field study by Hu (2016) found the population density to be very low. Market surveys have recorded BET in trade from southern China's major trade hub, but not in abundance (Cheung & Dudgeon, 2006, Chow & Yip 2014). Observations by Gong *et al.*, (2009) showed that the number of individuals offered for sale was very low, with less than 10 individuals recorded in the largest pet market in China during the study period. Due to the low fecundity rate of the species, it is highly unlikely BET is maintained in farms and reaches production scale. Fong *et al.* (2020) estimate the population in Hong Kong to be no more than 100 individuals, and this is considered as one of the remaining breeding populations.

Distribution

The BET is endemic to southeastern China, distributed in Guangxi, Guangdong, Fujian, Anhui, Guizhou, and Jiangxi Provinces, and Hong Kong (Shi et al., 2008; Ling et al., 2018).

Conservation status

International:

- IUCN Red List: Endangered (Asian Turtle Trade Working Group, 2000)
- TFTSG Provisional Red List: Critically Endangered (2011)
- CITES: Appendix II (2013)

China:

- Red List of China Vertebrates: Critically Endangered (2020)
- List of State Key Protected Wild Animals (國家重點保護野生動物名錄): Class II (二級保護)

Hong Kong:

- Protected under Wild Animals Protection Ordinance (Cap. 170)
- Protected under Endangered Species of Animals and Plants Ordinance (Cap. 586)

Threats and challenges

1. KNOWN THREATS

1.1 Poaching and the illegal trade

Poaching is the greatest threat to wild freshwater turtles in many parts of Asia. Evidence shows that illegal possession and harvesting from national protected areas still occurs in China (Hu 2016, Gong *et al.*, 2017a). The illicit trade of *Sacalia* turtles is also prevalent, which often involves long-distance and cross-border transportation (Lin *et al.*, 2022).

Illegal traps have been periodically uncovered in Hong Kong, most likely targeting highly valuable species, e.g., *C. trifasciata*. However, due to its rarity, poachers will collect any native freshwater turtles indiscriminately from traps.

1.2 Genetic contamination from non-native species

It is common practice in freshwater turtle aquaculture in China to mix individuals from different geographical populations, and even different species of *Sacalia* turtles. This practice can lead to genetic contamination of the *ex situ* population, jeopardising its suitability for future reintroductions (Lin *et al.*, 2022). Furthermore, the accidental release or escape of hybrid turtles from captivity, and the introduction of non-native species through mercy releases could significantly impact native populations and ecosystems. Such events put purebred populations at risk of genetic contamination.

2. EMERGING THREATS

2.1 Pathogens

The number of publications on reptile diseases remains relatively low, especially for freshwater turtles, which are a well-known source of zoonotic diseases (Hossain *et al.*, 2017; Mendoza-Roldan *et al.*, 2020; Hossain *et al.*, 2021; Marin *et al.*, 2022). Pathogens that infect BET are scarcely studied in Hong Kong, despite the species' family (Geomydidae) being relatively well studied in Asia. More effort should be directed towards assessing the risk of pathogens and their role as a source of zoonotic diseases for the BET. Moreover, the occurrence of the Red-eared Slider (*Trachemys scripta elegans*) in certain areas may introduce novel parasites or other pathogens, which could affect the survival of native turtle populations (Héritier *et al.*, 2017).

3. Knowledge gaps

A comprehensive understanding of the population dynamics of BET, including data on its current population size, distribution, and temporal trends, is crucial yet lacking. The limited knowledge of BET's ecology hampers accurate assessments of its conservation status and the formulation of targeted management strategies. Moreover, there are scarce experiences of successful

reintroductions of freshwater turtles and methodologies for monitoring released individuals in Hong Kong. Thus, there are opportunities to fill such knowledge gaps through further research.

4. Contributing factors

4.1 Low Intrinsic rate of population growth

Observations of wild BET have shown that females produce smaller clutches (average 2.2 eggs) of larger eggs, and usually only one clutch is produced per year. This is coupled with a prolonged incubation period which makes them more vulnerable to predators and poachers (Lin *et al.*, 2018).

4.2 Inadequate public knowledge about the BET

While public awareness about the plight of freshwater turtles, including the BET, is on the rise in Hong Kong, the level of public knowledge remains insufficient to catalyse comprehensive conservation action. This gap in awareness is a critical hurdle, as public support and understanding are fundamental to the success of any conservation initiatives. Efforts to educate and engage the community are increasing, but they face the challenge of reaching a broader audience and instilling a deep, actionable concern for these species.

Organisations that have already established lines of work that are relevant to the conservation of Beale's Eyed Turtle

漁農自然護理署
Agriculture, Fisheries and Conservation Department

Agriculture, Fisheries and Conservation Department (AFCD) is the conservation authority in Hong Kong responsible for protection of native freshwater turtles, including BET, through the Wild Animals Protection Ordinance (Cap. 170). AFCD has devoted tremendous efforts to tackling illegal hunting, trading and possessing of protected freshwater turtles and to protecting their natural habitats.

Ocean Park Corporation (OPC) manages a total of 40 BET individuals, with the ultimate aim of producing offspring to contribute to restocking wild populations. In collaboration with OPCFHK, and with funding from the Environmental Conservation Fund, a revamped exhibition titled Dive into Local Diversity opened to guests in late 2023. The exhibit highlights species such as the Golden Coin Turtle and the BET. It features educational panels that aim to strengthen visitors' connections with local freshwater turtles, to spark interest in nature and wildlife, and to promote support for freshwater turtle conservation.

Ocean Park Conservation Foundation, Hong Kong (OPCFHK) has led the Native Freshwater Turtles Education Programme since 2021, aiming to engage local students by recruiting them to help raise awareness and disseminate conservation messages.

Lingnan University (LingU) has conducted critical research highlighting the plight of freshwater turtles in Hong Kong, including the BET. In particular, a study conducted by the university's Science Unit revealed that three local species of freshwater turtle are on the brink of disappearing, urging immediate action against poaching (LingU, 2023). At the time of writing, LingU manages 8 BET individuals for conservation breeding.

Hong Kong Society of Herpetology Foundation (HKHERP) is the first and the only registered charitable organisation in Hong Kong related to amphibians and reptiles. It supports AFCD in keeping confiscated CITES Appendix II freshwater turtles and other amphibians and reptiles, including the BETs that are now on loan to OPC and LingU for conservation breeding purposes.

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BEALE'S EYED TURTLE

About the workshop

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Workshop process

The process for this workshop was designed and facilitated by:

The IUCN SSC Conservation Planning Specialist Group (IUCN SSC CPSG) has been working for 40 years with wildlife agencies, conservation organisations, zoos and similar entities to develop strategic conservation plans for individual species, protected areas and conservation organisations.

The workshop followed the IUCN SSC CPSG Principles & Steps for Species Conservation Planning. These principles are: plan to act, promote inclusive participation, use sound science, ensure good design and neutral facilitation, reach decisions through consensus, generate and share products quickly, and adapt to changing circumstances. While the Principles are the roots, grounding the planning process with a strong foundation, the Steps are like leaves—flexible and adaptable to each workshop and the specific conservation needs of the species.

In this workshop, we also referenced and adapted elements of the process to align with the framework outlined in **AFCD's Nature Conservation Practice Note No. 05: Guidelines on the Formulation of Species Action Plan.**

In addition, the workshop was designed following the One Plan approach — an integrated, inclusive, science-based process that considers all populations of a species, whether inside or outside their natural range. CPSG promotes this integrated approach by facilitating the joint development of management strategies and conservation actions among all responsible parties. We strive to ensure broad stakeholder representation in each workshop, resulting in a single, comprehensive conservation plan that bridges the gap between wild populations and those under human care. By considering all available resources, both *in situ* and *ex situ*, this approach maximizes the expertise and tools available for species recovery, improving their chances of survival in the wild.

The design tools, combined with knowledge-based facilitation skills, can be applied to a wide variety of conservation planning needs. This planning process can be applied to any taxon; consequently, the number of stages and planning terminology have been kept as simple as possible. This is to emphasise that good planning is the first and most essential stage in supporting species conservation, but it is simply a process and not an end in itself.

Workshop structure

A detailed overview of the planning process, including the key elements of the plan and the full agenda, can be found in Appendix 3.

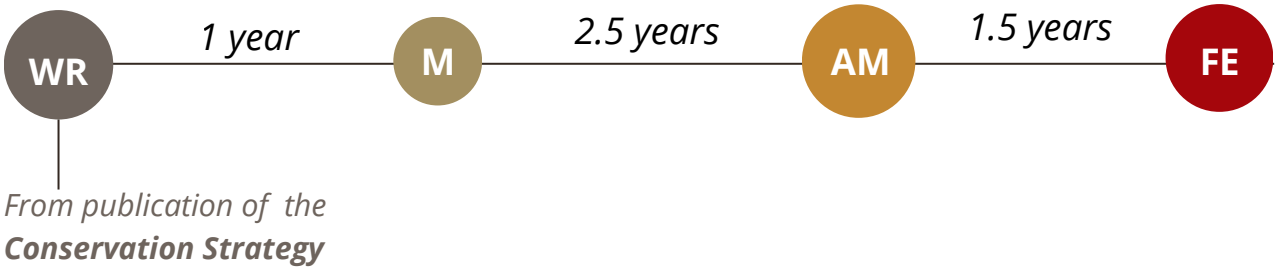
		CPSG STEPS
DAY 1	**Levelling session on BET** • *Conservation of turtles in China* • *Species overview* • *Relevant conservation actions already in place* • *Ex situ efforts for the BET* **Threats and challenges** assessment • *Known threats* • *Possible threats* • *Knowledge gaps*	**UNDERSTANDING THE SYSTEM** Assemble the best available information on the biology, history, management, status and threats to the species, the obstacles to addressing those threats, and the opportunities or options for successful intervention.
DAY 2	**Vision development** *What should the BET's status look like after five years of work to make these changes?* **Aim** development *What needs to be achieved for the vision to become reality?* ***Ex situ* roles** and thematic groupings for action-planning **Objectives**	**DECIDING WHERE TO INTERVENE** Determine where in the system to intervene and recommend and prioritise the changes needed to achieve the desired future state. **AGREE HOW TO INTERVENE** Identify alternative approaches to achieving the recommended changes, compare their relative costs, benefits and feasibility, and choose which one(s) to pursue.
DAY 3	Establishing **actions** *What actions are needed to achieve the objective established within their thematic area?* **Actions market**	**SPECIFY WHAT NEEDS TO BE DONE** Agree on what will be done, when and by whom, to implement the chosen approach, and which measures will be used to indicate progress or completion of specific tasks.
DAY 4	**Governance** and **implementation** *Governance structure for implementation, monitoring and review of actions*	**PREPARE TO IMPLEMENT** Produce the plan swiftly, share it widely and strategically to maximise conservation impact, and capture lessons learned in order to develop more effective conservation planning processes.

About the final product

This document is intended as a resource for use by stakeholders relevant to the conservation of BET, including, but not limited to:

- Workshop participants, as a record of the actions, initiatives and collaborations that were discussed;
- Hong Kong government agencies, to help guide, inform and coordinate the development of initiatives in strategic planning and implementation of actions for the conservation of the BET;
- Individuals, institutions and *ex situ* facilities that work with BET, to help inform their priorities;
- Non-governmental conservation organisations and community groups, to guide and inform their priorities and work plans; and
- Donor organisations, to guide priority actions for financial support.

The implementation of this Conservation Strategy will be monitored over five years, with a yearly monitoring (M) meeting and detailed adaptive management (AM) to be conducted after three and a half years, and a final evaluation (FE) at the end of the five years.



Breadth of participation

The workshop was attended by 26 participants* representing the following 10 institutions:

Public exhibits and conservation and education facilities
Ocean Park Corporation
Kadoorie Farm and Botanic Garden

Conservation and Education NGO
Ocean Park Conservation Foundation, Hong Kong
Hong Kong Society of Herpetology Foundation

Government Department
Agriculture, Fisheries and Conservation Department

Academia
Lingnan University
University of Hong Kong
University of Suffolk
Jinan University
Hainan Normal University

*A complete list of participants can be found in Appendix I.


IG KONG
JUNE 2024
by 主辦機構
Planning Workshop for the
Integrated Conservation of the
BEALE'S
EYED TURTLE
眼斑水龜世界自然保育聯盟專家會議
Designed and facilitated by 計劃及
IUCN
SSC
Supported by 支持機構
漁農自然護理署
Agriculture, Fisheries and
Conservation Department
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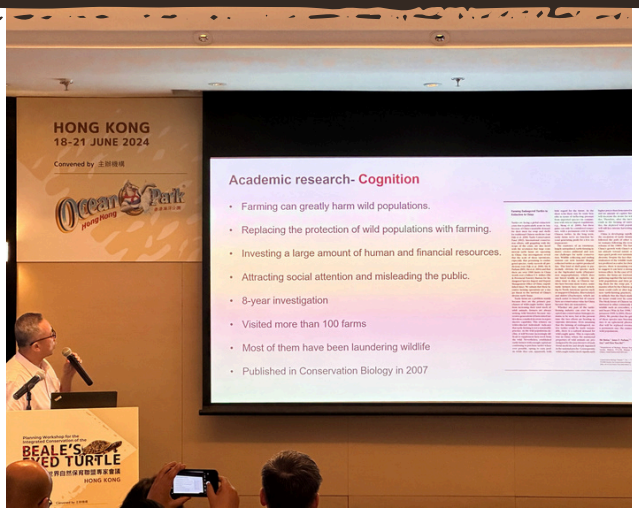
EXIT
眼斑水龜
Beale's-eyed Turtle


Day 1 | June 18th 2024


HONG KONG
18-21 JUNE 2024
Academic research- Taxonomy
BEALE'S EYED TURTLE


PANDA TEAM 2024


Day 1 | June 18th 2024
Planning Workshop for the Integrated Conservation of the
BEALE'S EYED TURTLE
HONG KONG 18-21 JUNE 2024


HONG KONG
18-21 JUNE 2024
Academic research- Cognition
Farming can greatly harm wild populations.
Replacing the protection of wild populations with farming.
Investing a large amount of human and financial resources.
Attracting social attention and misleading the public.
8-year investigation
Visited more than 100 farms
Most of them have been laundering wildlife
Published in Conservation Biology in 2007


HONG KONG
18-21 JUNE 2024
BET: Biology, ecology and threats
宋亦希 Hei SUNG


HONG KONG
18-21 JUNE 2024
Other duties


HONG KONG
18-21 JUNE 2024
CITES =
Convention on International Trade in
Endangered Species of Wild Fauna and Flora


define the problem

Abstracts from the Levelling session presentations

Conservation of turtles in China: The work of my research team, during 35 years guided under the IUCN SSC Tortoise and Freshwater Turtle Specialist Group (TFTSG)

Shi Haitao. Hainan Normal University / IUCN SSC TFTSG

China is crucial for turtle conservation, hosting over 40 species, more than 10% of the world's total. Rampant trade and overuse have endangered many species. Our team created a conservation action plan in 2003 and has made significant progress. I began with the Central Asian Tortoise (*Agrionemys horsfieldii*) in Xinjiang in 1989 and have studied one-third of China's turtle species, including *Sacalia bealei*, *S. insulensis*, *Cuora galbinifrons*, and *C. mouhotii*. We also research the invasive Trachemys scripta elegans to control its spread. A correct understanding of wildlife conservation is crucial; misconceptions include conservation for exploitation and ignoring ecological functions. Captive breeding in China often prioritises profit over conservation, producing hormone-treated and hybrid turtles. We train law enforcement officials, write training materials, and have built a museum and turtle sanctuary. China has improved wildlife protection, reducing overuse, enhancing legislation and enforcement, and increasing the number of protected species from 35% to 88%. We advocate for unified wildlife management to ensure effective conservation.

BET species overview: Biology, ecology and threats

Sung Yik Hei, university of Suffolk

Recent research has shed new light on the distribution of Beale's Eyed Turtles, the species remains rare across its distribution, with few viable wild populations known to scientists. While there have been some studies on their ecology and biology, including studies on reproductive biology, morphology, diet, microbiome, and spatial biology, more comprehensive research is needed. Similar to most other Asian freshwater turtles, the primary threats to Beale's Eyed Turtles are poaching and illegal trade. Illegal traps have been found at key distribution sites in Hong Kong and individuals are regularly sold in physical stores and online platforms. Additionally, genetic pollution from released exotic turtle species poses a risk, as hybrids between Beale's Eyed Turtles and *Cyclemys* sp. have been discovered in the wild in Hong Kong. To develop and implement effective conservation actions for Beale's Eyed Turtles, it is imperative to conduct further research on their biology and ecology, and monitor the threats they face.

Relevant conservation actions already in place

a. Baseline surveys and Monitoring

Ken Chan AFCD

The duties of the Agriculture, Fisheries and Conservation Department's (AFCD) Herpetofauna Working Group (HWG) include conducting ecological surveys in herpetofauna hotspots. In addition, HWG undertakes scientific research projects, e.g. breeding habitat monitoring of Romer's tree frogs, cryptic species diversity of geckos, and territory-wide chytrid fungus screening.

b. Enforcement against the illegal trade

Edward Lau AFCD

Hong Kong SAR implements the Convention on the International Trade in Endangered Species of Wild Fauna and Flora ('CITES') through the enactment of the Protection of Endangered Species of Animals and Plants Ordinance ('the Ordinance'), Cap. 586. Under the Ordinance, unless exempted or otherwise specified, a licence issued in advance by the AFCD is required to import, introduce from the sea, export/re-export or possess any scheduled species. Offenders are liable to a maximum fine of HK$ 10 million and imprisonment for ten years upon conviction with the specimens forfeited. The BET is a listed species under CITES, as are the majority of local freshwater turtles. As an Appendix II species, the import, export, re-export and possession of the Beale's Eyed Turtle are regulated under the Ordinance. In collaboration with the police, two large-scale seizures involving local freshwater turtles were made in 2022 and 2023, respectively. The offenders in the two cases were convicted at the District Court and the Organised and Serious Crime Ordinance was invoked to enhance the sentence in the latter case in view of the harm caused to local communities, demonstrating the seriousness of the offence. AFCD is committed to combating the illegal wildlife trade and will continue to do so through enforcing the Ordinance, international collaboration, as well as publicity and education.

c. AFCD SAP framework and Species Action Plan for the Big-headed Turtle

Tony Chan AFCD

In 2016, the HKSAR Government formulated the first city-level Biodiversity Strategy and Action Plan (BSAP) to step up biodiversity conservation, taking into account the local economic and social priorities. One of the actions put forward in the BSAP is the implementation of conservation action plans for priority species, in particular highly threatened and important species (BSAP Action 6). To take forward this action, AFCD had compiled the 'Guidelines on the Formulation of Species Action Plan (SAP)' to provide technical guidance to the

formulation and review of SAPs for the local priority species, such as the Big-headed Turtle. The Big-headed Turtle (BHT) is native to Hong Kong. It is considered Critically Endangered under the IUCN Red List, and is under Appendix I of CITES. Despite being a protected species under local legislations, it is still under high hunting pressure in the last two decades. To protect BHT, AFCD, local experts and NGO had formulated a SAP with seven actions for BHT. With the joint efforts of relevant stakeholders, it is hoped that BHT would once again thrive in the wild of Hong Kong.

d. *Ex situ* efforts for the Beale's Eyed Turtle

Anthony Kim Ho Chang, Ocean Park Corporation

Beale's Eyed Turtle (*Sacalia bealei*) is a small aquatic turtle species characterised by distinctive ocelli on its head. This endangered species, listed as Critically Endangered by the TFTSG and Endangered by the IUCN, faces significant threats from habitat loss and hybridisation with non-native turtles. Conservation efforts have been made by collaborative initiatives between OPCFHK, Lingnan University, and local organisations like HKHerps. These partnerships have established an ongoing *ex situ* breeding program, focusing on maintaining genetic purity and improving husbandry techniques. Notable achievements include the first successful hatch in 2020 and an increase in egg production, with 14 eggs collected in 2023. Despite challenges in fertilisation rates, the program has successfully hatched two healthy turtles this year (2024). Enhanced breeding protocols, including optimised temperature and humidity control, have contributed to improved hatching and survival rates. The ongoing success of the breeding program is vital for future reintroduction efforts, ensuring the long-term conservation of Beale's Eyed Turtles and addressing the urgent threats they face in their natural habitats.

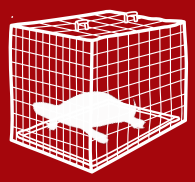
BEALE'S EYED TURTLE

Integrated Conservation Strategy

SCOPE

The scope of this Integrated Conservation Strategy encompasses all BET populations in Hong Kong, within a Five–year timeframe.

1. Poaching



Wild BET populations are depleted by capture throughout their range, most likely to be kept or sold as pets, or for turtle farms. Turtles are caught by electrofishing, trapped with metal cage traps, or baited fishing hooks (left a few days in the river) by active fishing with fishing poles. Traps and hooks are baited with meat, squid, or seafood. Direct searching (visual search of the river or looking under rocks in the water for turtles sheltering beneath) is also used, but this method is less effective for BET than other turtle species due to their preference for living in the middle of the stream, which is less accessible than the banks.

Key stakeholders involved in this threat are:

- **Local hobbyists, collectors, pet keepers** – targeting the species for their own collections; no financial incentive involved
- **Turtle farm operators** – looking for new stock to broaden/invigorate their genetic stock
- **Traders** – thought to be catching turtles mainly for sale to the previous two groups; often catching turtle indiscriminately
- **Possibly people from other regions, e.g. from Chinese Mainland, or further abroad (Nepal, Philippines)** – these may be associated with other wildlife crime activities, e.g. hunting other wildlife, cutting incense trees

The main driver for this threat is pet keeping, due to the intrinsic aesthetic appeal of the species (eyespots); also, its rarity increases the appeal for pet keepers. BET capture is mostly incidental: they are not popular for eating or medicinal use because of their smell (common names in Chinese include 'stink turtle' or 'cow dung turtle'), but this may be affected by fluctuations in market value, with capture increasing in line with increases in the price of turtles.

The threat is believed to occur throughout the species' known habitat. However, most knowledge about wild populations is restricted to country parks, as little research takes place outside of these areas, and so the extent to which populations outside of protected areas are threatened is unknown. Lantau Island is an important knowledge gap.

Poaching can take place during the day or night. Installation of traps is thought to occur primarily in the nighttime, with traps being left for 1–2 days, or sometimes longer. Searching and electrofishing take place at nighttime.

It was thought that this activity occurs mostly during the summer (wet and hot season), due to higher activity levels, but camera trapping data is calling this into question, with observations of trapping take place in winter (dry and cool season from Nov–Apr) as well, when turtles may be more accessible due to lower water levels. It is now thought that trapping most likely occurs year-round, but with some seasonal fluctuation.

This poaching threat is difficult to deter due to limited resource available for patrolling. Vigilance is challenging due to the remote location of populations; trees limit visibility and the terrain is difficult to patrol.

If a poacher is convicted under Wild Animals Protection Ordinance for illegal hunting of BET, the maximum penalty is HK$ 100,000 and one year in prison. If poachers are not caught red-handed, securing convictions is difficult due to weakness of circumstantial evidence. Penalties for possession or sale also depend on proving that the animal is wild caught. If this can't be demonstrated, then a conviction is very unlikely.

Some people may not be aware that it is illegal to remove turtles from the wild, or to buy wild-caught animals.

Impacts of poaching include:

- Depletion of the wild population
- Habitat disturbance
- Disturbance of eggs during the incubation period

What do we need to change?

- Methods are needed for reliably differentiating wild caught and captive-bred animals
- Pet ownership of native wildlife species needs to be limited/regulated
- Access needs to be restricted to key locations as a proactive measure to prevent trapping and catching

2. Non-native species

The presence of non-native species, particularly non-native freshwater turtles, can negatively impact wild BET populations. The release of non-native species into waterways is a common practice, motivated in some cases by Buddhists religious beliefs. Pet keepers are usually unaware of the negative impacts, and non-native species, such as the Red-eared Slider, are accessible and cheap to buy.

Key stakeholders involved in this threat are:

- General public in Hong Kong
- Pet owners
- Pet traders
- Facebook and social media platforms where trading is advertised
- Food market / Wet market traders
- The government (as the enforcement authority)
- Customers and suppliers involved in mercy releases practices

Mercy releases are promoted by religious customs, Improper releases that involve releasing animals to an unsuitable environment are often driven by a lack of understanding about animals' welfare needs and the fact that the right to freedom of individual animals is valued more highly than the conservation of populations and species. The sale of animals from the pet trade for mercy releases is profit-driven. No specific legislation exists to prevent the release of non-native species, so the activity is usually not illegal, unless it touches on an animal welfare issue, or if it involves locally protected species.

Mercy release occurs throughout the territory, particularly in temple ponds, reservoirs, e.g. Shing Mun reservoirs, and easily accessible rock pools. It occurs year-round, but peaks around around the holiday of the Birthday of the Buddha, which is normally in May.

Potential impacts of mercy releases include:

- Hybridisation between native and non-native species
- Direct competition between native and non-native species
- Transmission of novel pathogens
- Predation by non-native species
- Behavioural changes in native species (e.g., native species may avoid suitable habitats if non-native species are present)

What do we need to change?

- Decrease the presence of non-native turtles in BET habitats
- Improve the pet trade system
- Promote behaviour change amongst release practitioners
- Decrease the number of improper releases

3. Possible and emerging threats

(climate change, habitat-related threats, disease risk)

Fragmentation and reduction of suitable habitats may lead to populations becoming functionally extinct, whilst habitat integrity can be compromised by pollution and physical modification.

BET habitats suffer **pollution** from: microplastics (detected in faecal samples; may affect digestion, and biological processes); camping equipment; car washing pollutants; potentially pesticides from mosquito control activities near the habitats, and; incidents of wastewater being rerouted to key streams (contributing factor to this: lack of awareness of different stakeholders).

Construction work may impact turtle populations, particularly in cases where their presence has not been identified or reported during environmental impact assessments.

Small dams/weirs may obstruct, or otherwise affect the movement of individuals, affecting opportunities to disperse in search of food or mates (though Prof Sung Yik Hei mentioned that the BET is able to scale up to 2 m of barrier). They may also physically alter the habitat in other ways that could affect local populations.

The proposal to issue a charge for the municipal Solid Waste scheme may result in people **dumping waste** in the wild, whilst the security of populations in country parks may be negatively affected when the boundaries of these areas are encroached upon.

Climate change may lead to an increase in temperatures at high altitude, which could potentially affect sex ratios and growth rates amongst hatchlings, and even have a negative impact on hatching success rates. Extreme weather events may include high volumes of rainfall, which could result in eggs being flushed downstream, reducing egg survival rates. Climate change may also pose a disease risk due to an increase in stress and infections. In the case of fruit-eating animals, warmer weather may lead to potential food pressure.

Other potential or emerging threats include

- Human disturbances, like stream trekking, that might lead to BET eggs being destroyed/picked up by trekkers

- A lack of awareness about the species and its importance, or about ways for public and law enforcers to respond when they find someone engaging in threat activities
- Risk of new/emerging diseases
- Egg consumption by predators
- Access to information on the location/status of populations could increase the threat from poaching
- Challenges in prosecution

Threats that are immediate enough to consider within the timeframe of this plan are:

- Lack of public awareness
- Habitat pollution (could possibly be addressed through education)
- Small dams/weirs
- Small and unsustainable population size
- Human disturbances

What do we need to change?

- Existing habitat areas need to be more effectively protected
- Current wild populations need to be safeguarded from further reductions

4. Knowledge gaps

(priority research areas for informing BET conservation)

More research needs to be undertaken into the species' biology, ecology, population dynamics, genetics, health, *ex situ* management, and the human dimensions of BET conservation, as well as monitoring of wild populations, threats, and evaluating conservation interventions.

Priority research areas for informing BET conservation are:

1. Biology

- Factors that affect fertility in wild and captive BETs
- Natural life span
- Chemical communication between populations

2. Ecology

- Ecosystem services/ecological roles provided by BET
- Natural threats and predators

3. Population ecology, genetics, and health

- Genetic identity/database
- Certainty and reliability of the genetic identification for forensic purposes
- Possible fitness consequences of the currently known, perceivably low, genetic diversity?
- Population history in Hong Kong; Has there ever been a strong population?
- What should we realistically aim for in terms of population size and extent?
- Natural and wild pathogen load in BET
- Disease risk assessment
- Risk assessment of pathogens introduced by invasive species

4. *Ex situ* management

- General husbandry techniques/measures to enhance fertility
- Impact of captive diet on fertility
- Nesting substrate and incubation temperature preferences
- Pairing methods

5. Human dimensions

- Who are the consumers for BET? Are they only by-catch or target?
- Where do the poachers come from?
- Geographical trapping patterns?

- Survey of public awareness and knowledge about BET
- Survey of public capacity to correctly identify turtles

6. Population monitoring, threat monitoring, and evaluating conservation interventions

- Population structure and distribution in Hong Kong (by eDNA?). Connectivity between populations
- Survival rate for released BET and monitoring of released animals; determining optimum release age
- Impact of climate change on sex ratios within the population?
- Assessing reintroduction methods; interaction with other species to know where to reintroduce
- Devices to detect poaching; realtime, microchip presence in turtles; passive tracking device
- Do water collection systems/reservoirs have any affect to BET?

VISION

BET populations are thriving and fulfilling integral ecological roles, and are well-protected through multi-agency collaboration and community participation, with Hong Kong being a stronghold for the species and a successful model for endangered species conservation.

AIM

Reverse the decline of, and secure BET populations in Hong Kong, and protect their habitats, through effective collaborative actions, enforcement, and community participation.

OBJECTIVE 1: **Reduce poaching and illegal trade of BET**	
Actions	
1.1	Develop a medium term (Lasting minimum five years) strategy for the use of (real-time video) camera traps and evaluate the possibility of using car park surveillance cameras as a mean of surveillance of illegal activities within key BET habitat sites
1.2	Advocate measures to improve protections against poaching, based on previous successful case studies in HK
1.3	Continue evaluating possibility of enhancing *in situ* vigilance
1.4	Review other relevant action plans, to identify opportunities for combined actions
1.5	Reassess BET and publish in IUCN Red List
1.6	Adopt existing wildilfe forensic techniques to assist turtle trade regulation
1.7	Investigate the feasibility of using technological tools and other new methods for inspection and enforcement of turtle trade and possession

OBJECTIVE 2: **Prevent, control and mitigate the presence and negative impacts of non-native species in key locations**	
Actions	
2.1	Investigate the feasibility of removing non-native turtle species from key turtle sites

OBJECTIVE 3: **Safeguard the habitat integrity of BET populations**	
Actions	
3.1	Ensure up to date data is available on key sites for native turtles for informing development planning process
3.2	Establish a communication platform and information sharing strategy for relevant stakeholder groups regarding cases that may impact key turtles sites and to trigger management responses

OBJECTIVE 4: **Obtain information through biological, ecological & social research to fill knowledge gaps and guide adaptive measures for BET conservation.**	
Actions	
4.1	Build and expand BET biological database (e.g. phylogeny, morphology, physiology, reproductive biology, parentage, etc) to improve knowledge and to guide conservation measures
4.2	Monitor BET population dynamics in the wild to evaluate conservation measures in Hong Kong
4.3	Characterise habitat (e.g. water quality, substrate, vegetation and food source) and home range of BET as inclusion criteria for reintroduction
4.4	Identify and evaluate potential intensive management sites based on parameters identified in action 4.3
4.5	Understand the ecological functions (e.g. seed dispersal, bioturbation, community structure, terrestrial and aquatic energy transfer, decomposition rate) of BET
4.6	Compare biological, ecological and behavioral traits of wild and captive BET to optimise *ex situ* management (e.g. increase reproductive success and survival rate)
4.7	Investigate and monitor major threats to adapt conservation action
4.8	Refine current methods (e.g. SIA, DNA) to improve differentiation of wild-caught and captive-bred BET and develop new methods (e.g. biomarker, gut microbiome, elemental analysis)
4.9	Explore collaborations on social science research on drivers for pet owners and poachers
4.10	Explore collaborations on social science research to understand drivers of release practice
4.11	Evaluate existing tracking technologies and potential new ones

OBJECTIVE 5: **Increase awareness of the major threats and importance of BET conservation, and engage the community in supporting conservation actions.**	
Actions	
5.1	Develop digital platform and material about BET and other freshwater turtles conservation for increasing public awareness
5.2	Recruit a volunteer team/ambassadors to help with promotion and participating in environmental activities safeguarding BET conservation and its habitats
5.3	Produce pet owner targeted strategy and materials to raise awareness for BET conservation and to motivate behavioral changes about poaching and releases of non-native species
5.4	Produce school targeted strategy and materials to raise awareness for BET conservation and to motivate behavioral changes about poaching and releases of non-native species
5.5	Continue and expand religious group targeted strategy and materials to raise awareness for BET and other freshwater turtle conservation and to motivate behavioral changes about poaching and releases of non-native species
5.6	Promote existing reporting channel for poaching or illegal trade and assess the need to create a new reporting platform
5.7	Establish BET Day and coordinate calendar of events to share BET conservation
5.8	Develop a strategic plan to engage decision makers and policy makers

OBJECTIVE 6: **Increase capacity and engagement of key stakeholders to undertake BET conservation actions.**	
Actions	
6.1	Build capacity and raise awareness for enforcement officials about the importance of BET and other freshwater turtle conservation
6.2	Build capacity and share information for the people who performs the *ex situ* husbandry and veterinary based on best practice guidelines produced
6.3	Build capacity for teachers using training programs developed about the importance of BET and other freshwater turtle conservation

OBJECTIVE 7: **Assemble and maintain robust *ex situ* populations that can serve as assurance colonies and for restoration of BET**	
Actions	
7.1	Compare provenance of existing captive and Hong Kong wild populations to gather baseline information to build assurance populations that can support species recovery *in situ*
7.2	Develop data management for captive BET and consider a need for a studbook
7.3	Develop an adaptive BET *ex situ* population management plan following the recommendations of action 7.1 considering both assurance and restoration roles and implement accordingly
7.4	Review, refine, and share existing BET *ex situ* husbandry guidelines
7.5	Review, refine, and share veterinary guidelines including disease surveillance
7.6	Optimise *ex situ* BET reproduction management strategy to improve breeding outcomes

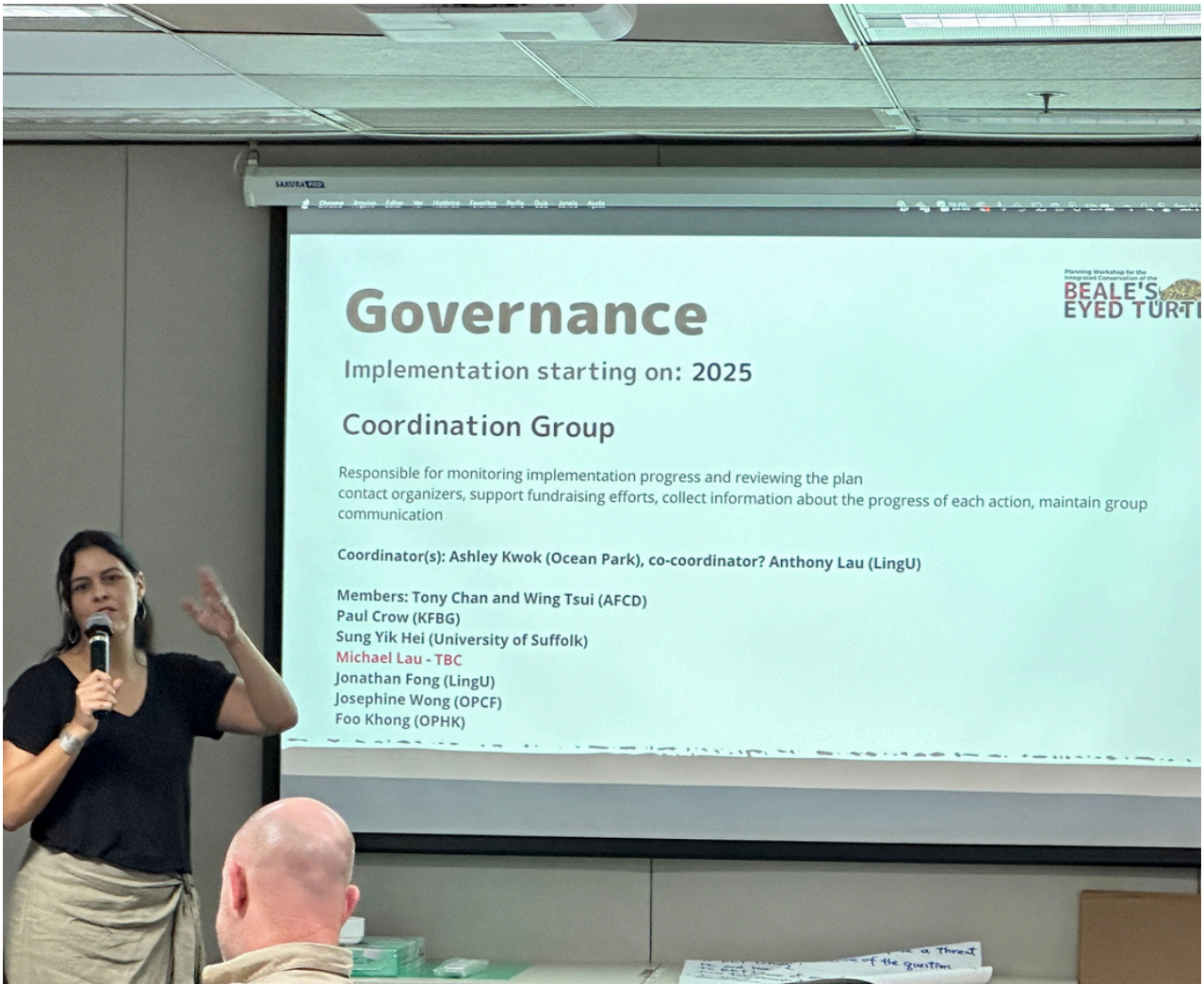
OBJECTIVE 8: **Develop management strategies to safeguard BET populations *in situ***	
Actions	
8.1	Develop an adaptive intensive management plan including potential translocation sites for existing BET populations
8.2	Develop a decision tree and protocol that allows prompt response to current and emerging threats
8.3	Establish a conservation translocation guidelines for BET and other Hong Kong freshwater turtles

Governance and implementation

The implementation of this Conservation Strategy will be monitored over a period of 5 years, with a yearly monitoring meeting, and with detailed adaptive management to be conducted after 2.5 years. A final evaluation will be undertaken at the end of the 5 years.

Implementation and monitoring of the Conservation Strategy will be overseen by a Coordination Group, that will be comprised of the following people:

Coordinator: Ashley KWOK (Ocean Park Corporation)
Co-coordinator: Anthony LAU (Lingnan University)
Members:
Tony CHAN (Agriculture, Fisheries and Conservation Department)
Wing TSUI (Agriculture, Fisheries and Conservation Department)
Paul CROW (Kadoorie Farm and Botanic Garden)
Yik-Hei SUNG (University of Suffolk)
Michael LAU (University of Hong Kong)
Jonathan FONG (Lingnan University)
Josephine WONG (Ocean Park Conservation Foundation, Hong Kong)
Foo Khong LEE (Ocean Park Corporation)



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BEALE'S EYED TURTLE

APPENDICES

APPENDIX 1
Participant list

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Michael LAU

University of Suffolk
Yik Hei SUNG


Threats and challenges


HONG KONG
18-21 JUNE 2024


低地河溪
Lowland stream
整個腹甲。
close itself.
整个腹甲。
金錢龜 金钱龟
Golden Coin Turtle
橙啡色的甲殼能融入河溪成為保護色。
The reddish brown carapace helps them blend into the stream.
橙啡色的甲壳能融入河溪成为保护色。

APPENDIX 2
Workshop agenda

Day 1 | June 18th 2024

TIME	SESSION	ACTIVITY
8:30	Arrival and registration	
9:00	**Opening session**	Welcome, workshop aim and background *Ivan Wong, Ocean Park Corporation*
		Opening speech *Simon Chan, Agriculture, Fisheries and Conservation Department*
		Introduction to CPSG, workshop process overview *Fabiana Rocha, CPSG / CSS Brazil and Paul Bamford, CPSG / Chester Zoo*
	Leveling	Conservation of Turtles in China - The work of my research team during 35 years guided under the IUCN SSC Tortoise and Freshwater Turtle Specialist Group (TFTSG) *Professor Shi Haitao, Hainan Normal University / IUCN SSC TFTSG*
10:30	Coffee break & Group photo	
11:00	**Leveling**	BET Species overview: Biology, ecology and threats *Professor Sung Yik Hei , University of Suffolk*
		Questions & Answers
		Relevant actions in place: - Baseline surveys and monitoring. *Ken Chan, AFCD* - Enforcement against the illegal trade. *Edward Lau, AFCD* - AFCD SAP framework and Species Action Plan for the big-headed turtle. *Tony Chan, AFCD*
		Ex situ efforts for the Beale's Eyed turtle *Anthony Kim Ho Chang, Ocean Park Corporation*
		Questions & Answers
13:00	Lunch break	
14:30	**Threats and challenges**	Threats and challenges assessment - introduction
		Threats and challenges - Working Groups (Tables 1–2)
15:30	Coffee break	
15:50	**Threats and challenges**	Threats and challenges - Working Groups (Tables 3–4)
		Threats and challenges plenary and discussion
17:00	Wrap-up of the day	

Day 2 | June 19th 2024

TIME	SESSION	ACTIVITY
9:00	**Opening**	Recap of Day 1 Discussions and Key Points Overview of day 2
	Threats and needs	Review of outcomes of threats and challenges assessment: *Where are we now and what needs to change?*
	Vision development	Explanation of vision and visioning process
		Vision development -Working Groups
		Discussion: consolidation and agreement of vision statement
10:40	Coffee break	
11:00	**Aim**	Plenary discussion: converting the vision into an aim for the plan
	***Ex situ* assessment**	Presentation on IUCN *Ex situ* Conservation Assessment - ECA and Q&A *Fabiana Rocha, CPSG / CSS Brazil*
	Thematic groups	Plenary Discussion: reviewing and agreeing upon proposals for thematic areas
12:40	Lunch break	
14:00	**Objectives**	Working Groups: Establishing objectives for each thematic area and assessing *ex situ* conservation roles
16:00	Coffee break	
16:30	**Objectives**	Plenary feedback: Objectives and *ex situ* roles
18:00	Wrap-up of the day	

Day 3 | June 20th 2024

TIME	SESSION	ACTIVITY
09:00	**Opening**	Recap of Day 2 Discussions and Key Points Overview of day 3
	Objectives	Working groups: review objectives and ex-situ roles following plenary feedback
	Actions	Working groups: establishing actions
10:30	Coffee break (integrated within working groups)	
10:50	**Actions**	Working groups: establishing actions
12:30	Lunch break	
14:00	**Visit to BET management facility**	
15:00	**Actions**	Working groups: establishing actions.
16:00	Coffee break	
16:20	**Actions**	Actions market activity - review and feedback of each group actions
18:00	Wrap-up of the day	

Day 4 | June 21st 2024

TIME	SESSION	ACTIVITY
09:00	**Opening**	Recap of Day 3 Discussions and Key Points Overview of day 4
	Actions	Actions market review and finalisation of action descriptions
		Final actions plenary
11:00	Coffee break	
11:20	**Actions**	Final actions plenary
	Governance, implementation and monitoring	Plenary discussion: proposal and agreement of governance structure based on the working groups' proposals, and (if time allows) final review of whole plan
12:50	Event closing: Wrap-Up and Farewell	
13:00	Lunch	
14:30	**OPTIONAL: guided visit to Ocean Park**	

APPENDIX 3
Description of the workshop process

Components of the process

Instructions
At the beginning of each of the activities, a brief presentation was made explaining the specific concepts to be worked on (Threats/Challenges, Vision, Aim, Objectives, Actions). Examples were given, and the working group approach was explained.

Group work
The participants were separated into four working groups, each one being assigned to work on actions focused on specific themes, according to the participants' affinity and experience. The working group themes were as follows:

Group 1: Habitat Protection & Policy and Legislation
Group 2: Research and monitoring
Group 3: Communication and Publicity & Capacity Building
Group 4: Species Protection – *Ex situ* management

Plenaries
These are whole group discussions, in which all participants reflect collectively on the outcomes of the working group sessions, in order to provide critical feedback. Whoever wishes to speak may request the floor and have their turn. In the plenary sessions, the contributions made by the participants are taken into account, discussed and validated.

Elements of the plan

Threat analysis
The information contained in this section is the product of a whole-group activity that was undertaken on the first day of the workshop. Key threats to the species were identified from existing conservation assessments (IUCN Red List), and through discussion with experts on the species. The workshop participants were asked exploratory questions to describe the current state of knowledge and opinion around each threat, and to define what would need to change in order to address the threats and secure the conservation of the species. The following text reflects the outcome of those discussions.

Key threats to the species were identified from existing conservation assessments (IUCN Red List), and through discussion with experts on the species.

A whole-group activity, based around an adapted version of the World Café methodology, was undertaken to reflect on how these threats would determine the evolution of the plan over the course of the workshop. The participants were divided into four groups: 1) Known threats (poaching); 2) Known threats (non-native species); 3) Possible and emerging threats (climate change, habitat-related threats, disease risk), and; 4) Knowledge gaps (priority research areas for informing BET conservation).

A member of the facilitation team was assigned to guide the discussion at each table, and a member of each group was assigned the role of note-taker and presenter. Each group spent 20 minutes at a table, before rotating to the next one, and eventually making their way around all four tables. The facilitator and note-taker remained as the only fixed participants at each table to ensure that there was a continuous train of reflection throughout the activity. During the first three rounds, the groups were asked exploratory questions by the facilitators in order to tease out and describe the current state of knowledge and opinion around each threat. During the fourth and final round, each group was asked to consider the outcomes of these discussions, and to define what would need to change in order to address the threats and secure the conservation of the species.

At the end of the activity, each table's note-taker/spokesperson gave an overview of their table's conclusions, and participants were invited to discuss these in an open plenary, or anonymously via Mentimeter.

Vision

A presentation was delivered to establish the purpose and components of a vision statement. Examples of vision statements from other conservation plans were presented, including locally relevant examples (e.g., Hong Kong's Biodiversity Strategy and Action Plan 2016–2021). Participants were then randomly divided into four groups and given 30 minutes to answer the question, 'What should the BET's status look like after 10 years of implementing the changes identified in our analysis of threats and challenges?, and to draft a vision statement around that.

At the end of the allocated time period, each group presented their draft statement. A Mentimeter poll was used to choose one of these as the basis from which the definitive final vision statement would be drafted. In a plenary session, key themes were identified from the remaining three statements, and the group discussed how to adapt the selected vision statement in order to incorporate any themes that weren't already present in the selected statement.

Aim

As with the development of the vision statement, this part of the workshop began with a presentation about the purpose and components of an aim statement. Examples of aim statements from other action plans, including locally relevant examples (Big-headed Turtle Species Action Plan, 2024–2028). The participants were asked to reflect on the question 'What do we need to do for the vision to become a reality?', in order to come up with a statement that expresses the aim of the BET Conservation Strategy.

***Ex situ* roles and thematic groupings for action-planning**

Ahead of moving into more detailed planning, the workshop participants were invited to reflect on some of the themes that conservation actions can be grouped into. A presentation was given on the roles that *ex situ* initiatives can play in a conservation plan, and to provide an overview of how the IUCN Species Survival Commission Guidelines on the Use of *Ex situ* Management for Species Conservation can guide decision-making in this area. This was followed by a discussion on the thematic areas that are proposed in the AFCD's SAP Guidelines. All of the above was used as a basis from which to establish themes for the working groups, into which all participants were subsequently divided ahead of moving on to the next stage of planning.

Objectives

The facilitators provided the participants with guidance on how to draft objectives, including considerations for ensuring that the wording was fit-for-purpose, and realistic within the proposed five-year timeframe of the action plan. Examples of objectives from other plans were presented, along with their corresponding aim statements, so that participants could appreciate how they respond to the overall purpose of the plans within which they sit. This included an example from the Big-headed Turtle conservation plan, in order to illustrate this with the aid of locally relevant plans.

The participants were divided into their respective working groups. The *ex situ* working group focused on defining the roles that *ex situ* establishments could play in the conservation of the BET, whilst the other three groups defined objectives for their thematic areas. Each working group presented the outcome of their discussions to the other participants in a plenary, with the opportunity for feedback to be given directly, or anonymously via Mentimeter. Each working group reviewed their objectives after receiving feedback, making amendments wherever necessary.

Actions

A brief presentation was given to outline the key considerations and points for reflection when planning actions. The working groups were then invited to identify the actions that would be necessary in order for their objectives to be achieved, and to nominate coordinators and potential collaborators for each one.

Once an initial suite of actions had been mapped out, these were subjected to peer review through an 'Actions Market' activity. Each working group appointed a member to stay at their table while the rest of the group rotated around the other tables to review the proposed actions, sense check and provide feedback. Once each group had reviewed all of the other groups' actions, any major corrections or discussion points were presented in a whole group plenary, where these could be reviewed and responded to by the whole group.

Additional information to guide the actions (timeframes and outputs) were left for the Coordination Group to complete as part of their preparation for putting the plan into action.

Governance and implementation

A final plenary was held with the whole group to determine the governance structure that would guide the implementation of the plan. An overview was given of the key responsibilities of the group that would be tasked with overseeing the implementation of the plan, and people were nominated to be members of the group, including two overall coordinators. A timeframe was established for the next steps toward implementation, including finalisation of the planning spreadsheet and drafting, reviewing and editing of the workshop report.

2025–2030
Integrated Conservation Strategy for the

BEALE'S EYED TURTLE

Convened by
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