

Comments and Suggestions on the

BIODIVERSITY STRATEGY AND ACTION PLAN

for Hong Kong

by

**The Environmental Management Association
of Hong Kong**

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1 Introduction

The Environmental Management Association of Hong Kong (EMAHK) was founded by a group of graduates of the Master of Science in Environmental Management from the University of Hong Kong in 2010. Today we have members who are graduates from various environment-related programmes of both local and overseas universities, and currently hold positions in different sectors applying their knowledge and experience in environment management work in Hong Kong as well as her nearby region. We aim to become a leading and recognized contributor to environmental management and sustainable development discourse as well as the advancement of environmental management as a professional field.

EMAHK applauds the HKSAR Government's initiative on the first Biodiversity Strategy and Action Plan (BSAP) for our city. EMAHK believes that good environmental management must embrace the concept of sustaining biodiversity. The conservation work and biodiversity of our city are important in the region, despite the small size of our city. The rapid urbanization and industrialization of the region in the last few decades lead to the quick loss of habitats as well as threats to endanger both marine and terrestrial species. Our local conservation work and the protection of the existing habitats and local species are of significance both in the local, regional and national context.

On the other hand, Hong Kong is not a self-sufficient city. Our ecological footprint per capita has been rising years on years, and so is our ranking among the world's countries bearing the highest footprint¹. The affluent lifestyle of our city is attributed to the imported resources, goods and products at the environmental cost of other countries. In the 1992 Rio Earth Summit, the message from United Nations is clear that excessive consumption by the affluent populations cause threats to our environment. Not only that Hong Kong has to develop strategy and action plan to up keep the local biodiversity, we also have to reduce our ecological footprint and hence our negative impacts on other parts of our Planet.

Given that our city is highly developed with high GDP per capita and a relatively high education level of our citizens, EMAHK believes that the government and citizens of Hong Kong can make a change from a consumption-oriented city towards a more "sustainable" one if we all see the need and take the will.

¹ WWF Ecological Footprint Reports 2008, 2010 & 2013.

2 EMAHK's view on BSAP Consultation

BSAP should be an action plan (as it is named), which sets goals and targets. The Government has taken a first step to set up Steering Committees consolidating the recommendations and opinions of the Working Groups and Focus Groups to set up goals and actions based on the Aichi Principles adopted in the Convention of Biodiversity (CBD).

2.1 The Importance of Biodiversity

Public Consultation Document specific questions:

How important do you think biodiversity is, in comparison with other concerns facing our society?

EMAHK has the following comment:

Biodiversity is as important as the many other concerns facing our society and it is also intertwined with the many other environment related issues that are challenging our city. Take for example, the proposed extension of SENT Landfill to the adjoining Clear Water Bay Country Park, a protected area for wildlife and habitats, has caused concern of the public. The city's waste reduction programme and management policy can reduce the pressure on landfills.

At the same time, the enjoyment of the rural landscape and the wildlife by the public at their leisure time, and the many educational and leisure activities that can be delivered within the rim of our city are also of equal importance without monetized value because they are public goods. The challenges of up keeping green belts, protected areas and private lands with various degrees of ecological value and the associated benefits of these public goods, against the pressure for land supply and income from land sales benefiting individuals and the Government, are always controversial with no consensus due to the diversified interests of different stakeholders.

Therefore, EMAHK believes that the sustainable development of Hong Kong balancing the needs of all three pillars; Environment, Society and Economy are all essential. A healthy society with a sustainable economy and quality of life can only be built on a good environment that sustains high biodiversity.

2.2 The Balance between People and the Ecosystem

Public Consultation Document specific questions:

How should we balance the needs of people (for example, adequate housing, job opportunities or food) with the needs of the ecosystem?

EMAHK has the following comment:

The needs of people vary across individuals and to a large extent subject to psychological well-being as well as value system. The Government and the society of Hong Kong must not have the misconception that the needs of people and those of the ecosystems are opposing and conflicting to each other. Housing problem is attributed

to the high land price policy and insufficient supply of public houses. The land shortage can be resolved by proper development of brown fields instead of solely by land reclamation causing the loss of natural coastline and intertidal habitats. Food production by urban farming and revitalization of agricultural lands although not able to make Hong Kong absolutely self-sufficient, can promote biodiversity, proper land use and a small percentage of local supply of fresh produce. These are not the jobs of one or two departments like Agriculture, Fisheries and Conservation Department (AFCD) and Department of Lands, but the collaboration, strategy planning, policy setting and even law changes with aligned goals to be achieved by all bureaus and departments.

In the future, a more diversified economy not as heavily dependent on land sales and property as it is now, requires good strategy planning and vision of the Government. The current trend of the world is to move towards a circular economy that is more competitive and sustainable in the future world.

EMAHK believes that mainstreaming and participatory approach to make informed decisions are the keys to align the interests of different stakeholders. Work by collaboration and partnership is the learning process and the way to balance the needs of the society by creating “wins” for multiple parties instead of certain privileged minorities. The needs of ecosystems are beneficial to many and in longer term very often though difficult to quantify sometimes, rather than just the economical rewards that are easily figured out in short term.

2.3 The Public Engagement Process

The current BSAP Public Consultation Document is a document that invites for responses from the public. It states the efforts and achievements that have been made so far. It also proposed 4 major action areas for HK’s first BSAP. Within these 4 areas, some possible actions are mentioned briefly, and comments are invited from the public. After the public consultation period, which ends on 7 April 2016, the Environmental Bureau and the AFCD shall be responsible for making the BSAP proposal based on the responses received and collated for the implementation of the BSAP.

As the chance of achieving the BSAP programme would not be maximized if it does not have the support from the community, in order to facilitate the expressions of comments from the public and stakeholders, and to enhance the transparency of the process, as well as to formulate an efficient and effective BSAP, the following suggestions are made:

- i. To further engage the public, this Public Engagement Process shall include a stage, after the public consultation and the BSAP proposal-making period, to allow another round of public commenting. Echoing the Draft Key Action item A5 from the Steering Committee Focus Group on Business Sector, a clear framework, specific topics for evaluation and a timeframe for feedback return to facilitate discussions on BSAP through consultation and engagement shall be provided.
- ii. The outcome from the engagement exercise shall be assessed against the original goal and targets, to give references and information for future decision making.

2.4 BSAP on a regional level

With reference to the primary object of HK's first BSAP in the Public Consultation document, it is to contribute to the global effort on Biological Diversity and contribute to China's National BSAP. The government is committed to developing a city-level BSAP for enhancing nature conservation and biodiversity in the city.

However, the BSAP will also need the collaborative and partnership approach across countries, regions and continents, in addition to government departments, corporates, NGOs, academic institutions, general public when addressing the current problems and challenges in conserving and enhancing the biodiversity in HK and the world. The Government should take a leading role to initiate such collaboration and partnership.

According to Draft Key Action B3 from the Steering Committee RLF, the following aspects are some areas to focus on regarding broader cross issues:

- i. Study the impact of known alien invasive species, notably *Solenopsis invicta* (Red imported fire ant), to evaluate and monitor the threat to native biota. The risk of further spread of *S. invicta* and other highly invasive species should be minimised through working with other regions.
- ii. Control the spread of invasive species, through exchange of information and collaboration in actions with responsible authorities in other jurisdictions.
- iii. Improve control local and international wildlife trade, and of invasive species, through exchange of information and actions with responsible authorities in other jurisdictions.

2.5 Comments from the Steering Committee

The Government should seriously consider and adopt the 400 recommended actions which are organized according to the 5 strategic goals and 20 Aichi Biodiversity Targets in the strategic plan of CBD. The recommended actions made by the Steering Committees are results from the efforts of members with professional expertise, knowledge and experience in the environmental fields and the biodiversity related issues.

In this submission, the comments from the Steering Committee are embraced and referenced and stated in the 4 main Action Areas.

2.6 Ensuring the Outcome of BSAP

The goals and targets should be set with a timeline and get assessed and measured. That is one basic principle of environmental management for any organization or society with a clear vision and determination of continuous enhancement and improvement in performance, and in BSAP it is the call of the Government for the long-term benefits of the HK Society and the planet (which are our home). Furthermore, this BSAP shall set long-term targets and actions of biodiversity conservation to include actions that require longer than 5 years to achieve.

2.7 Work Collaboratively

The BSAP also needs the collaborative and partnership approach across countries, regions and continents, in addition to government departments, corporates, NGOs, academic institutions, general public when addressing the current problems and

challenges in conserving and enhancing the biodiversity in HK and the world. The Government should take a leading role to initiate such collaboration and partnership.

2.8 Right Amount of Resources

Appropriate resources should be allocated to the departments, academicians, NGOs and the Society in achieving the goals and adopting the actions as recommended by the Steering Committees.

3 Conservation

Efforts in conservation on biodiversity in terms of habitat protection, species protection and the encouragement of planting native species shall exert direct and positive effect in promoting the biodiversity.

Suggestions from our members are included in this chapter. Also, EMAHK embraces the suggestions given by the BSAP steering committee and the working groups, their relevant suggested actions are listed.

3.1 EMAHK Suggestions

- i. Habitat preservation yielded some positive results, but there are still areas that can be improved:
 - a. Enclave areas within country parks and private wetland: Those areas are highly vulnerable to development, yet with high ecological values. And currently those areas are frequently under high pressure for development (e.g.: residential or niches). In fact, government should examine all those highly sensitive enclaves and NO development should be allowed before thorough assessment is completed. If needed, those areas need to be protected by zoning and prevent from improper development that causes degradation or loss of ecological values of these areas. Many of these enclaves are private lands owned by indigenous villagers. A nature conservation trust² as lobbied by many NGOs should be established to conserve these private lands with high ecological values.
 - b. The government should pay high priority to protecting existing country parks in Hong Kong and prevent them from ANY types of development. It is against the principle of biodiversity conservation should there is any form of development within the country parks. The ecological value of the country park should be enhanced by various types of restoration work like planting of native species, prevention of the expansion of invasive species and promotion / education activities etc
 - c. Protected marine areas in Hong Kong accounts for only a tiny portion of the total waters in Hong Kong. Compared to the terrestrial protected areas, our marine environment is much more ignored. With the anticipated busier marine traffics in the area (between Guangdong / Macau and Hong Kong) and the building of Hong Kong-Zhuhai-Macau Bridge, the western waters of Hong Kong can just be anticipated to be under high disturbances. And this will certainly impact the marine environment, especially for the Chinese White Dolphin. Numerous reports have already pointed out the deteriorating population of the Chinese White Dolphin in the areas, if measures are not to be taken, their population will not be recovered even if protected areas are built after all the projects are finished.
 - d. Besides, many vulnerable coastal areas are not under protection, like those in

² Hau, C.H. (2006). Hong Kong Nature Conservation Trust. *Porcupine: Newsletter of the Department of Ecology & Biodiversity, The University of Hong Kong, September issue: 2006*

Lung Mei and Shui Hau. The ecological values of those areas are often found to be exceptionally high by surveys carried out by non-officials, yet these areas are not being protected and may be under pressure for various types of development.

ii. Others

- a. For the protection of species and public health, environmental toxins like antibiotics, other drug pollution, many endocrine disruptors should be included in the current water quality monitoring programme of Environmental Protection Department, in addition to the soil and produce tests of local farms by AFCD and Vegetable Marketing Organization.
- b. The seeds of native features and DNA data of native creatures should be preserved and recorded, and the bank of seeds of native flora should be set up.

3.2 From the Steering Committee

The following Draft Key Actions and their relevant Specific Actions from the Steering Committee are all valuable suggestions and shall be implemented to enhance the biodiversity conservation under BSAP.

Draft Key Action:

B2 Continue to enhance the environmental impact assessment (EIA) process to better address significant impacts on biodiversity through subjecting designated projects to the EIA process.

Specific Actions:

The EIA process is the major statutory process to address the impacts from designated project on biodiversity from the planning stage, and thus it shall be further enhanced:

- a. Continue to implement the EIA process and develop assessment tools to mitigate significant ecological impacts of development projects.
- b. Conduct ecological surveys prior to EIA Study to collect adequate ecological data in early stage.
- c. Develop guidelines and best practice notes on ecological mitigation measures including species translocation, on-site/off-site compensation and wetland compensation drawing reference from local and international experiences.
- d. Estimate, identify and enhance biodiversity benefits under the EIA process.
- e. Explore opportunities for new and additional ecological compensation measures on a territorial or project scale (e.g. expanding protected areas; 'development tax' to fund high-priority conservation needs; etc.)
- f. Ensure mitigation measures for marine species under development projects are assessed for their effectiveness (before they are accepted in the issue of environmental permit especially for projects that can lead to significant deterioration of habitats or threats to species).
- g. Consider the environmental impact of any increase in population or visitor numbers in any environmentally sensitive area when taking any expansion project forward.
- h. Compensation or mitigation should start along with or even before the project

works start, so as to ensure that the measures work and allow the species to migrate or populate in the new environment. If compensation or mitigation measures start when the project works finish, the remediation may not be in time to protect the species concerned.

Draft Key Action:

B3 Study the impacts of invasive alien species in Hong Kong, and implement monitoring, management and control plans for priority invasive alien species identified.

Specific Actions:

Invasive species is known to cause adverse impact to indigenous species and local biodiversity and there are several means to control the release and import of exotic species:

- a. Control the spread of invasive alien species in Hong Kong.
- b. Build an inventory of invasive alien species in Hong Kong, and conduct a preliminary risk assessment.
- c. Monitor the spread and impacts of alien fish species on native fish and other freshwater species and formulate plan to control these alien species.
- d. Prevent the unregulated release of exotic species, and the unregulated importation of invasive species through the pet trade or for the aquaculture business. Address the release of predatory species of concern in religious fish release ceremonies. Review to ensure controls are put in place to prevent the purchase and release of non-native voracious predatory fish which originated from the local mariculture industry.
- e. Study the impacts of Red Imported Fire Ants and other invasive species such as Tilapia and Mosquito fish on Deep Bay wetlands and their biota.
- f. Study the impacts of Green House Frog (*Eleutherodactylus planirostris*) on native amphibian fauna.
- g. Issue an advisory note by the Drainage Services Department to prevent the spread of cord grass during flood prevention works in Deep Bay.
- h. Study the impact of known alien invasive species, notably *Solenopsis invicta*, to evaluate and monitor the threat to native biota. The risk of further spread of *S. invicta* and other highly invasive species should be minimized through working with other regions.
- i. Control the spread of invasive species, through exchange of information and collaboration in actions with responsible authorities in other jurisdictions.
- j. Improve control local and international wildlife trade, and of invasive species, through exchange of information and actions with responsible authorities in other jurisdictions.

Draft Key Action:

B6 Develop a standardized classification of habitat types to monitor the status and trends of habitats.

Specific Actions:

- a. Enhance the classification, identification and assessment of terrestrial habitats in

- Hong Kong, and their rate of loss or transformation.
- b. Develop a standardized classification of habitat types, and develop a GIS habitat map, reflecting irreplaceability, ecological integrity, representativeness, management-dependence, connectivity and other relevant factors.
 - c. Review and consolidate different habitat inventory classification systems.

Other Draft Key Actions:

B4 Control pollution and reduce its impacts on biodiversity

B7 Develop innovative methods to enhance the conservation of ecologically important sites on private land.

B8 Implement the Mai Po Inner Deep Bay Ramsar Site Management Plan.

B9 Further study and enhance the practice on the identification, assessment, protection, restoration and management of local habitats.

B10 Designate Fisheries Protection Areas to protect important fish spawning and nursery grounds, as well as effectively and sustainably manage fisheries resources.

B11 Promote the sustainable use of marine resources and reduce their unsustainable use.

B12 Conduct research on fisheries resources and fishing activities to inform sustainable fisheries management.

B13 Promote sustainable consumption of natural resources, and engage stakeholders to assess and address Hong Kong's ecological footprint.

C1 Assess the conservation status of species in Hong Kong to guide conservation actions.

C2 Prepare and implement biodiversity management plans for country park, special area, marine park and marine reserve to enhance biodiversity conservation in these protected areas.

C3 Maintain and enhance the Protected Area System (PAS), and extend where possible, to cover ecologically important habitats currently outside the PAS.

C4 Ensure proper protection of flora and fauna, in particular threatened species, through enforcing legislation related to species protection.

C5 Formulate and implement species conservation measures and action plans, including both in-situ and ex-situ conservation, for both fauna and flora species of conservation concern, in particular highly threatened and important species.

C6 Conduct long-term territory-wide biodiversity surveys and monitoring to guide conservation actions.

C7 Protect and conserve natural streams and rivers and their riparian zones.

C8 Control the environmental release of genetically modified organisms.

C10 Develop a marine hotspot map to guide conservation actions.

D1 Identify opportunities for habitat enhancement at existing river channels, and provide ecologically friendly measures for new river improvement works.

D2 Safeguard and restore important ecosystems to ensure that the ecosystem services they provided are maintained.

D3 Enhance biodiversity by using native species for afforestation and enrichment planting in urban areas, countryside and country parks.

4 Mainstreaming

Incorporating biodiversity considerations into planning and decision-making across the society, in public and private sectors, is an effective mean to implement the element of protecting and conserving biodiversity in the development activities in Hong Kong, and thus is very important.

Suggestions from our members are included in this chapter. Also, EMAHK embraces the suggestions given by the BSAP steering committee and the working groups, their relevant suggested actions are listed.

4.1 EMAHK Suggestions

- i. Mainstreaming is one of the areas that need to be greatly enhanced. Biodiversity conservation are not very much considered in various aspects of development. For example the proposal of Lantau Island development or 3rd runway of the airport. the plans are actually not taking biodiversity into consideration. If conservation of biodiversity is put into agenda in every big development project or proposal, this will definitely provide a much more comprehensive vision on many of the issues.
- ii. The business sectors should be engaged more for this. Many of the major corporates in Hong Kong are in fact developers. The construction of buildings and their design are closely related to biodiversity conservation, it is therefore beneficial to get their involvement in ensuring a balance between biodiversity conservation and development.
- iii. Consumer markets engagement is also in great need to be involved. Currently some NGOs are taking initiative in promoting sustainable consumerism like sustainable seafood choices. But government in fact should take lead in engaging the various sectors involved in trading of potential goods that may be violating the conservation of biodiversity like the traditional Chinese medicine, luxury goods, high-end cuisines, fishery and fish markets, furniture/fashion industry. Various forms of encouragement can be given to those importers to import goods that are produced from sustainable sources and recognition system should be developed and promoted for implementation at consumers' level.
- iv. For the controlling of the development in the suitable scale, the town planning on land and the zoning of marine shall be considered the accessibility of creatures. For example, no high rise building to block the flight route of birds to the habitat; and no dredging and damping work on the main route for marine creatures.
- v. Mainstreaming in the Government and the Society is extremely important in the successful alignment of interests of the different stakeholders in the Society as well as government departments and bureaus, and hence the successful implementation of politics. The core of the subject is the value recognition and value change in biodiversity. Education and the promotion of sustainable lifestyle especially on sustainable consumption are urgent since it takes time to see the results.

4.2 From the steering committee

Draft Key Action:

A1 Continue to enhance the consideration of strategic environmental and sustainability issues in major planning and sectoral studies to facilitate integration of biodiversity considerations at an early stage of formulation of plans or programmes.

Specific Actions:

These actions are involved in the planning stage of large scale development and thus exert very significant influence in mainstreaming biodiversity. All specific actions proposed by the working groups are essential to achieve the target and thus should be implemented:

- a. Carry out a comprehensive review on the HK2030 Study, including the need to conduct a Strategic Environmental Assessment (SEA) to provide an environmental baseline and assess development options.
- b. Consider strategic environmental issues as part of major planning studies at an early stage of the formulation process.
- c. Incorporate a territory-scale review to assess the cumulative environmental impacts in SEA.
- d. Conduct SEA including cumulative impact assessments on policy initiatives and plans, and identify and assess biodiversity gains and losses under alternative scenarios.
- e. Review rural and new town development to minimize the associated impacts on biodiversity and formulate an effective mechanism for monitoring and mitigating post-construction impacts.
- f. Ensure that new strategic initiatives or major programmes which may bring about noticeable or persistent implications on the economic, environmental and social conditions in Hong Kong are subject to sustainability assessments.

Draft Key Action:

A2 Promote the concept and awareness of biodiversity among stakeholders.

Specific Actions:

The awareness of biodiversity among different stakeholders in the society shall be enhanced, this would involve a wide engagement process, nonetheless, the outcome would be very much beneficial for mainstreaming biodiversity:

- a. Raise public awareness and enhance education on impacts to habitats.
- b. Increase public and government awareness and appreciation of the value and biodiversity of Hong Kong's marine environment.
- c. Encourage catch and release amongst commercial and recreational fishers
- d. Enhance understanding of best-practice fisheries management
- e. Enhance understanding within other communities that use the sea
- f. Educate the spear gun fishing community on the moves to transform the fishery towards sustainability.
- g. Conduct awareness raising activities to vessel owners on coral areas.
- h. Raise awareness on the potential impact of diversion/disruption of stream flows on marine biodiversity.

- i. Develop Code of Conduct for all eco-tourism, and increase knowledge and buy-in of the Code of Conduct for diving and snorkeling.
- j. Increase public awareness, and educate the key stakeholders of the benefits of the MPAs.
- k. Produce biodiversity videos, apps to promote BSAP.
- l. Organize roving exhibitions, public lectures, eco-film shows, engagement workshops, seminars, field trips, wildlife photo exhibitions and conservation essay competitions.
- m. Facilitate the booking of LCSD or museum venues to run biodiversity exhibitions, workshops and seminars for the public.
- n. Conduct surveys on knowledge, public knowledge and attitudes, participation in voluntary and/or environmental activities towards biodiversity in Hong Kong on a regular basis (e.g. every 2 years).
- o. Explore appropriate multi-stakeholder engagement opportunities, to raise awareness and enhance public involvement in implementing BSAP and establish regular stakeholder forums to share and discuss plans, development and management of biodiversity in Hong Kong.
- p. Launch a Hong Kong Nature Expo

Draft Key Action:

A3 Incorporate the concept of biodiversity into education curriculum and provide capacity building for teachers on biodiversity

Specific Actions:

Education is the most effective way in mainstreaming biodiversity and to implement the concept of the value of biodiversity into our next generation:

- a. Establish biodiversity conservation and sustainable use as part of the core curriculum in all primary and secondary school systems. Sort out the linkages between biodiversity education and the primary/secondary curriculum.
- b. Encourage teachers to include programmes and activities related to biodiversity in different subjects.
- c. Sponsor green NGO-school partnerships for extra- curricular green activities and school projects and to organize school talks, class based activities or/and field trips to study biodiversity of Hong Kong..
- d. Include the information of relative short and long term natural history of wildlife in Hong Kong including estimated time lines for localized extinctions due to the continued effects of pollution and development.
- e. Encourage students and individuals to organize biodiversity awareness-raising campaigns.
- f. Include BSAP in the training of teachers and teacher trainees.

Draft Key Action:

A4 Engender broader participation of the society in raising public awareness on biodiversity through partnering with the wider NGO sector.

Specific Actions:

- a. Develop a citizen science monitoring scheme on biodiversity, i.e. participation of citizen in data collection in scientific study/research.
- b. Invite schools, NGOs, retirees, and others to work together to promote BSAP.
- c. Work with green NGOs on ways of promoting BSAP, conservation and environmental protection.
- d. Set up a BSAP-grant mechanism for school-NGO partnership and for BSAP community-partner activities. Develop specific government-funded mechanisms for the implementation of BSAP. Projects should be assessed based on how the activity contributes to the achievement of BSAP objectives and targets.
- e. A BSAP Project Manager (Website & Media) and Community Scientists shall be in place to communicate the goals, purpose and importance of the BSAP to the public in a compelling and understandable manner.
- f. Give priority to biodiversity education projects in QEF and ECF. Give the focus groups permission to apply for funding sources in the name of BSAP so that dedicated focus groups can use the seed money to run specially designed programmes or activities for biodiversity education and mainstreaming activities.
- g. Launch a volunteer nature warden scheme to monitor changes in the territory's environmental and biodiversity condition. Initiate a district-based volunteer-reporting eco-survey scheme
- h. Provide incentives to university scientists /researchers to help citizens collect data for biodiversity study and conservation.
- i. Develop a publicly funded citizen science programme and data-sharing app to enhance knowledge and experience with biodiversity.
- j. Design and prepare an info pack for NGOs to do outreach activities. This pack could include suggested activities, maps and biodiversity surveying tools, etc.

Draft Key Action:

A5 Raise awareness and engage the business sector on biodiversity through various platforms, including chambers of commerce.

Specific Actions:

As a major part in the society, the business sector has very significant influences in the recognition of biodiversity, and incorporating the business perspective in BSAP is essential in order to raise their awareness and participation. With the consideration on economic aspect, the biodiversity can be sustainable:

- a. Encourage the business sector to recognize sustainability as a business opportunity rather than a responsibility.
- iii. Encourage the financial sector and supply chain companies in adopting biodiversity policy into operations.
- iv. Incorporate business perspective in BSAP as business is expected to drive changes faster more than governments because of the possession of talent, resources, contacts and employment power. Business can be one of the solutions to a sustainable society, a sustainable society will generate opportunities for business development.
- v. Use BSAP to help establish baseline/priorities to the society and provide information for a better informed debate on potential conflicts between development and conservation.

- vi. Encourage partnership between government and business sector in biodiversity conservation.
- vii. Produce accurate biodiversity mapping and priorities in Hong Kong. Outline Zone Plan is inadequate to determine the biodiversity value of the agricultural zoned land.
- viii. Provide a clear framework, specific topics for evaluation and a timeframe for feedback return to facilitate discussions on BSAP through consultation and engagement.
- ix. Encourage the use of sustainable supply chain model e.g. FSC. Further roll out of the model may require legislative support and capital incentive.
- x. Promote a better understanding of the concepts on biodiversity, sustainability, ecological services and natural capital etc in business sector.
- xi. Encourage BSAP outreach to business sector through the chambers.

A6 Promote the use of media and Internet as means to showcase Hong Kong's natural beauty and raise public awareness on biodiversity

- a. Set up an incentive scheme to encourage the media to produce multimedia materials on biodiversity of Hong Kong in the short-term.
- b. Promote the concept of biodiversity conservation through the enhanced usage of existing quality media projects for the cause of biodiversity conservation and environmental protection through various Government/NGO channels.
- c. Provide adequate funding support to enable, coordinate, disseminate, and optimize the educational output of environmental education networks.
- d. Hire a marketing company to develop a BSAP Brand Identity Document, as well as to develop a marketing plan for the BSAP to showcase Hong Kong's natural beauty. The marketing plan should work in conjunction with, and take advantage of, existing promotional materials.
- e. Arrange media tours to showcase the value of BSAP and improve public communications about biodiversity conservation. Tours should be arranged before and after the launch of BSAP to raise awareness about opportunities for involvement in BSAP activities, and to build and maintain momentum about biodiversity issues. This should be part of an overall marketing effort to launch BSAP.

5 Knowledge

The knowledge of biodiversity is key to determine the correct biodiversity conservation strategy and allocation of correct resources as well as to provide data from further scientific study.

Suggestions from our members are included in this chapter. Also, EMAHK embraces the suggestions given by the BSAP steering committee and the working groups, their relevant suggested actions are listed.

5.1 EMAHK Suggestions

- i. The Species in Cap 170 may need to be updated. Survey may need to be conducted to include new species that is locally important or endemic in the regions.
- ii. Many important habitats that is previously not protected actually contains high ecological values e.g. Lung Mei, Shui Hau, Po Toi. Besides EIA report, the government may need to investigate the ecological importance of many of these sensitive areas (Question 3)
- iii. Marine fishes / mammals and invertebrates are not mentioned in the consultation papers. Actually the marine biodiversity of Hong Kong waters is rich and effort should be paid to fill up the knowledge gap.
- iv. Rapid species identification for shark products are important as shark fins are still actively sold in many of the traditional stores. This is important as many sharks species are actually under protection by the CITES.
- v. For the genetic diversity, data of DNA of single species shall be collected, and the databank shall be built up.
- vi. For the species diversity, develop a modelling method to predict the coming dominated species to against the growth of other species.

5.2 From the steering committee

Key Action:

B1 Develop practical methods for assessing, reporting and reducing natural habitat loss.

Specific Actions:

- a. Monitor and report annually the actual and the anticipated rate of loss in extent and quality of terrestrial habitats.
- b. With the implementation of the Convention on Biological Diversity, the cumulative impacts of ongoing, planned and committed development on the loss of habitats and biodiversity will need to be adequately assessed and recognized. Increased conservation commitment and resources are needed to account for and mitigate these inherent losses, including by adjusting existing policies, guidelines and mechanisms aimed at minimizing biodiversity losses.
- c. Identify the land areas where development and infrastructure is permitted,

planned, committed or in progress, and the areas of surrounding land susceptible to impacts from such developments, and estimate the expected loss of habitats.

- d. Set up a geographic information system (GIS) database for quantifying the overall habitat loss due to development projects during the course of environmental impact assessment (EIA) study to facilitate impact assessment in terms of the preparation of habitat map and habitat loss calculation, and the database should be compatible with the existing GIS system of AFCD.

Key Action:

B6 Develop a standardized classification of habitat types to monitor the status and trends of habitats.

Specific Actions:

- a. Enhance the classification, identification and assessment of terrestrial habitats in Hong Kong, and their rate of loss or transformation.
- b. Develop a standardized classification of habitat types, and develop a GIS habitat map, reflecting irreplaceability, ecological integrity,

Key Action:

C6 Conduct long-term territory-wide biodiversity surveys and monitoring to guide conservation actions.

Specific Actions:

- a. Monitor the condition of vegetation in fung shui woods and freshwater wetlands.
- b. Launch long-term, territory-wide survey programmes using standardised methodology for the land bird communities in order to gather quantitative data that can be compared between sites/habitats/years to facilitate Red List assessment.
- c. Carry out more field surveys of *Dendrelaphis hollinrakei* and *Ahaetulla prasina medioxima* in Shek Kwu Chau to clarify their local status, and work closely with the organization managing the island for protection of the important habitats for these and other threatened species.
- d. Carry out more field survey in the Keung Shan area on Lantau in order to find more specimens of the documented unidentified snake and to ascertain its taxonomic status.
- e. Carry out more targeted field surveys on little-known and highly restricted reptile species including *Plestiodon tamdaoensis*, *Typhlops lazelli* and *Ramphotyphlops albiceps* to find out their distribution, habitat use and ecology so that appropriate conservation actions can be designed and implemented.
- f. Carry out more surveys on understudied areas that may support rare species, including lowland forests on Hong Kong Island, Lantau Island and small remote offshore islands.
- g. Carry out target monitoring/surveys with focus on collecting information that can help guide amphibian conservation, with regular analysis and dissemination of findings built into such a programme, including (1) targeted surveys to find out the distribution of South China Cascade Frog; (2) the impact on amphibians and their habitats of mosquito control measures such as oiling, removal of boulders to

straighten the stream course and the removal of trees on stream banks in hill streams.

- h. Launch a long-term, territory-wide and systematic freshwater fish monitoring/survey programme, using standardized methodology, to gather quantitative data that can be compared between sites, habitats and years to facilitate Red List assessment. The survey programme should cover areas that have received little survey effort in the past (e.g. western New Territories, Frontier Closed Area).
- i. Monitor fish hotspots regularly to record trends in target species and their habitat condition for collecting up-to-date data, formulating necessary conservation actions and making informed decisions.
- j. Implement a consolidated survey and monitoring programme between the various stakeholders such as AFCD, NGOs and individuals on a suite of taxa selected based on available resources and local knowledge to increase our knowledge of the local aculeate fauna by implementing a consolidated survey and monitoring programme.
- k. Conduct surveys on macrofungal diversity to collect information on ecosystem functioning including the prevalence, diversity and phenology of pathogenic, mycorrhizal and saprotrophic fungi. A comprehensive survey is recommended to start in Tai Po Kau Nature Reserve and the more ecologically-intact fung shui woods (e.g. Mui Tsz Lam). Mycorrhizal fungi such as *Boletus*, *Russula* or *Lactarius* are recommended to be priority genera for study. These genera have tight plant-fungus association, are sensitive to disturbance and are potential candidates for indicator species of forest quality. After such study, flagship species may be identified for fungal conservation.
- l. Support and encourage local academic institutes to carry out more ecological studies on lesser known taxa groups including algae, lower plants such as bryophytes, lichens, invertebrate groups such as spiders, land snails, insects, etc. More training and exchange to build up local expertise/capacity is needed, and studies should be encouraged.
- m. Review and adapt, if necessary, current biodiversity monitoring approaches to ensure they are adequate to track changes related to climate change, on species, habitats and / or ecosystems most at risk from climate change, and on potentially threatening invasive species.
- n. Carry out a study on mammal species that have been categorized as Data Deficient or Not Applicable (for presumed vagrant species) to determine their status in Hong Kong. This will include further DNA work for mammals that form species complexes and more intense surveys of islands and sea caves.
- o. Carry out a study on the bird community and the types, locations, ecological value of different types of grassland habitat to determine the degree of threat, the distribution and abundance of species and the conservation actions needed.
- p. Develop a strategy for monitoring marine species, especially commercially important or threatened species, in terms of biology, ecology, use and population trends, as well as identifying key habitats, such as spawning and nursery areas. Such monitoring and research needs to be conducted in a consistent, scientifically based, and standardized way that encompasses long term data collection planning and monitoring to evaluate the effectiveness of introduced actions. Such monitoring can be selectively designed to address key species, issues and concerns. There are a number of modeling and fishery assessment approaches available for multi-species fisheries. Species action plans are needed for marine species considered to be threatened by regional red list assessments.

- q. Encourage research institutes to apply for the Sustainable Fisheries Development Fund to conduct research projects that are consistent with the scope of the Fund to fill the information gaps identified. Additionally, a mechanism by which the suggested Advisory Committee for the Sustainable Use of Marine Resources could share recommendations on the research it considers most urgent with the Advisory Committee for the Sustainable Fisheries Development Fund, in order to facilitate such research from being undertaken, should be put into place.

Other Key Actions:

B3 Study the impacts of invasive alien species in Hong Kong, and implement monitoring, management and control plans for priority invasive alien species identified.

E2 Establish a publicly accessible biodiversity information hub to improve information sharing.

E3 Conduct additional research on information gaps identified in particular in relation to ecosystem services and resilience of keystone and functionally important species.

E4 Develop indicators to monitor the status and trend of local biodiversity and conservation efforts.

E5 Explore the setting up of a natural history museum in Hong Kong with non-governmental funding.

E6 Study, stock take and consider the adaptive use of traditional knowledge, innovations and practices of indigenous and local communities relevant to conservation and sustainable use of the biodiversity in Hong Kong through involving the indigenous and local communities.

6 Community Involvement

The appreciation of biodiversity among different sectors in the society would guide people to take appropriate actions, and the community involvement shall be developed on long-term and collaborative basis.

Suggestions from our members are included in this chapter. Also, EMAHK embraces the suggestions given by the BSAP steering committee and the working groups, their relevant suggested actions are listed.

6.1 EMAHK Suggestions

- i. Many of the community involvement are actually done by the NGOs, government should in fact take up more central role in organizing and supporting the community education work, either financially or administratively. Popular science are one of the rapidly evolving areas in many parts of the world, and the results can provide valuable information on local ecological and environmental issues, these can be promoted and support should be offered by government to NGOs for executing various projects.
- ii. Sustainable use of resources are important and central to the theme of biodiversity conservation, education should be given to the public regarding this. Actually many aspects of citizens' daily activities are related to a healthy biodiversity and ecosystem. Yet the understanding of knowledge in this area is still weak. This should be enhanced to both children and adults so that the implementation of various actions can be smoother.

6.2 From the Steering Committee

Draft Key Actions:

Along with the actions in Mainstreaming, the following actions are important parts to get the community involved:

A4 Engender broader participation of the society in raising public awareness on biodiversity¹² through partnering with the wider NGO sector.

A5 Raise awareness and engage the business sector on biodiversity¹⁷ through various platforms, including chambers of commerce.

A6 Promote the use of media and Internet as means to showcase Hong Kong's natural beauty and raise public awareness on biodiversity.

Along with the actions in Conservation, the following actions are important parts to get the community involved:

B10 Designate Fisheries Protection Areas to protect important fish spawning and nursery grounds, as well as effectively and sustainably manage fisheries resources.

B11 Promote the sustainable use of marine resources and reduce their unsustainable use.

B12 Conduct research on fisheries resources and fishing activities to inform sustainable fisheries management.

And along with the actions in Knowledge, the following actions are important parts to get the community involved:

E5 Explore the setting up of a natural history museum in Hong Kong with non-governmental funding.

7 Conclusions

This is the first BSAP for Hong Kong, the suggestions listed in this document are proposed for the four Action Areas, as well as the Public Engagement Process, the scope of BSAP, the parties involved, the resources allocation and how to ensure the outcome. The comments are suggested with the basis on getting supports from the society, and the necessary actions to achieve a successful BSAP.

EMAHK believes, with these suggestions, Hong Kong will be successful in achieving the objectives of BSAP, and to improve and conserve biodiversity, in a way to contribute to global biodiversity and enhance its sustainability.