

**Advisory Council on the Environment  
Nature Conservation Subcommittee**

**The Proposed Action Plan for the  
Conservation of Amphibians in Hong Kong**

**Purpose**

This paper briefs Members on the proposed action plan for the conservation of amphibians in Hong Kong.

**Background**

2. Amphibians are animals that spend part of their life in water and part on land. The most distinct feature of amphibians is their two distinct life phases. Amphibians hatch out from eggs as aquatic larvae, breathing through gills. As they mature, they develop lungs and legs by a process called metamorphosis, so they are able to leave the water and live on land, but they typically need to return to water to breed.

3. Amphibians comprise a group of animals with highly varied external morphology and habits. Based on morphological characteristics, amphibians are subdivided into three major orders: Caudata (newts and salamanders), Anura (frogs and toads) and Gymnophiona (caecilians).

4. Agriculture, Fisheries and Conservation Department (AFCD) initiated a biodiversity survey programme since 2002 for the purpose of collecting essential and up-to-date information on the diversity, abundance and distribution of the flora and fauna of Hong Kong. The programme includes a territory-wide survey on the diversity and distribution of amphibians of Hong Kong. The findings are being used for drawing up an action plan for the amphibians so as to enhance their conservation.

**Diversity and Distribution**

5. At present, there are some 4,000 species of amphibians recorded worldwide. The amphibian fauna of Hong Kong is rather diverse. There are 24 species of amphibians native to Hong Kong (Annex 1), accounting for 8% of the over 300 amphibian species occurring in China. This is mainly attributed to the presence of a

wide range of habitats providing suitable foraging grounds and breeding sites for them. Among the 24 species of amphibians, there are 23 species of toads and frogs but only one species of newt. Caecilians are not known to occur in Hong Kong.

6. The territory-wide surveys conducted by AFCD during the period from 2002 to 2008 provided essential and updated information on the distribution and relative abundance of the native amphibians. A few species such as Chinese Bullfrogs and Lesser Spiny Frogs which had once thought to be uncommon previously were found to be more widespread and abundant. Some common amphibian species such as Günther's Frogs and Asian Common Toads can be found in different habitats at all attitudes throughout the territory, even in urban parks. On the other hand, some species have specific habitat requirements and are locally restricted in distribution. For example, Romer's Tree Frogs only occur naturally on four islands, namely, Chek Lap Kok, Lamma Island, Lantau Island and Po Toi, whereas Giant Spiny Frogs are only found at Tai Mo Shan.

### **Species of Conservation Concern**

7. Amongst the 24 species of amphibians native to Hong Kong, five of them are of special biogeographical interest: the Romer's Tree Frogs and Short-legged Toads were believed to be endemic to Hong Kong; the Hong Kong Newts and Hong Kong Cascade Frogs were first found in Hong Kong but were later also reported to occur in southern Guangdong; and the South China Cascade Frogs were common and widespread in southern China but were only found at two localities on Lantau Island in Hong Kong. In order to elucidate the endemic and taxonomic status of these species, AFCD has commissioned the Chengdu Institute of Biology of the Chinese Academy of Sciences to undertake a study on the genetic diversity of these species. Preliminary results indicated that the local populations of these species are genetically distinct from their mainland counterparts.

8. In May 2008, Amphibian Ark in collaboration with Ocean Park Hong Kong organized a prioritization workshop for the amphibian species in Hong Kong and Guangdong. The workshop aimed to identify priority species that are most in need of *ex situ* assistance by establishing assurance populations through long-term captive breeding programme. With the participation of amphibian experts from Hong Kong and China, a total of 66 species were evaluated during the workshop. Among them, Romer's Tree Frogs and Giant Spiny Frogs are accorded with a higher priority for *ex situ* conservation consideration.

9. Based on the results of our surveys and studies, a review on the local

conservation status of amphibians was conducted. Particular focus has been put on the local rarity and restrictedness in distribution of each amphibian in order to find out which species is highly restricted in distribution or thinly spread over a large area, and thus those species would warrant more attention for their conservation as they would be more susceptible to loss or damage of their habitats and other anthropogenic or natural threats within the context of the small territory of Hong Kong. The conservation status of local amphibians is grouped under the following categories:

- a) Immediate Concern – This category includes species which are rare and highly restricted in local distribution; uncommon species subject to immediate threat; and species of special conservation interest (e.g. endemic species). They are considered to have a higher risk of its population being threatened as a result of habitat loss and other anthropogenic or natural causes. Special attention would be given to these species and adoption of appropriate conservation measures would be considered;
- b) Potential Concern – This category includes species which are rare/uncommon but not facing immediate threat and common species facing immediate threat or of potential global/regional concern. The potential impacts on the species in this category due to loss of some of their habitats would raise concern on the survival of the species in the context of the local territory;
- c) Least Concern– species in this category are common and widespread species not facing immediate threat. They are less likely to be substantially affected in case of loss of some of their habitats or other threats;
- d) Uncertain – There is insufficient data to assess the status of the species in this category.

10. Our findings suggested that two species are of immediate concern either due to their rarity or of special conservation interest (including Giant Spiny Frogs and Romer's Tree Frogs). On the other hand, seven species are of potential concern. They are either rare/uncommon species not facing immediate threats (including South China Cascade Frogs, Big-headed Frogs and Two-striped Grass Frogs) and common species of potential global or regional concern (including Short-legged Toads, Hong Kong Newts, Hong Kong Cascade Frogs and Lesser Spiny Frogs). The conservation status of all native species of amphibians is shown at Annex 1.

## **Sites of Conservation Importance**

11. Our survey results were also used to identify sites of conservation importance for amphibians. Such sites are defined as either having unique amphibian interest (e.g. being a unique site for the species of conservation concern) or of high species richness for amphibians. These sites should be properly protected or managed for conservation of their amphibian fauna. A total of 20 sites were identified as of conservation importance for amphibians, of which four are of unique amphibian interest and 16 are of high species richness for amphibians. A list of sites of conservation importance for amphibians is given at Annex 2 and a location map of these sites is attached at Annex 3.

## **Threats**

12. Throughout the world, amphibians are facing an unprecedented rapid decline in population numbers and diversity. The major threats to the survival of amphibians include habitat loss and degradation, pollution, climate change, over-harvesting, and a recent spread of fungal disease (chytridiomycosis) which endangers many amphibian species.

## **Conservation Action Plan**

13. Based on the survey and research works done on the native amphibians, we are drawing up an action plan for the conservation of the native amphibians. The action plan comprises various components including habitat protection, site monitoring, species action plan, research as well as education and publicity to provide for a sustainable long-term conservation programme for the native amphibians.

### *Habitat Protection and Enhancement*

14. Most of the identified sites of conservation importance for amphibians fall either exclusively or partially within protected areas such as Country Parks, Sites of Special Scientific Interest (SSSI) and Conservation Areas, and thus are protected against incompatible development and human encroachment. For example, the important breeding site for Romer's Tree Frogs at Ngong Ping has been designated as SSSI. The streams and the surrounding habitats at Tai Mo Shan, which are the sole habitats for the rare Giant Spiny Frogs, are largely situated within Country Park, as well as being SSSI.

15. The only site of conservation importance for amphibians located wholly outside the protected areas is Po Toi. Po Toi is one of the four localities with naturally occurring population of Romer's Tree Frogs. In terms of population size, the Po Toi population is the smallest. Habitat enhancement works in terms of creation of small breeding pools, placing of breeding pots and tree planting would be made to provide for more amphibian breeding sites on Po Toi as part of the species action plan for Romer's Tree Frogs.

#### *Monitoring of Sites of Conservation Importance –*

16. A total of 20 sites were identified as of conservation importance for amphibians. Regular monitoring of these sites is essential to keep track of their condition as suitable habitat for amphibians. During the monitoring visits, particular attention is given to occurrence of any habitat loss or degradation, illegal hunting and invasion of exotic species. The species richness and abundance of amphibians is also recorded during regular monitoring of these sites. The site monitoring is conducted annually during the wet season.

#### *Species Action Plan*

17. Species action plans are developed for the specific conservation needs of the amphibian species of highest conservation concern. A species action plan includes an inventory of biological information, an assessment on conservation status, and the conservation objectives for a target species, as well as the essential information on budget establishment, timelines and institutional partnerships for implementation. At present, a draft 5-year species action plan has been developed for Romer's Tree Frogs and liaison with other relevant parties is being made to finalize and implement the species action plan. The major conservation efforts of the species action plan for Romer's Tree Frogs include protection and habitat enhancement of important breeding sites, population monitoring, exploration of suitable translocation sites, trial establishment of captive breeding population and educational programmes.

#### *Research*

18. In view of the global threat of the fungal disease, chytridiomycosis, to amphibian population worldwide. AFCD in collaboration with the James Cook University undertook a preliminary survey for the fungus in the native amphibians of Hong Kong in 2006. Although results showed that the fungus was apparently absent from the wild amphibian fauna of Hong Kong, the risk of infection cannot be ruled

out and monitoring in this respect shall be continued. Subject to availability of funds, a monitoring programme for chytridiomycosis in the native amphibians would be implemented.

### *Education and Publicity*

19. Education of the public plays an important role in conservation. Various education and publicity programmes have been held on the conservation of amphibians. For example, a “Year of the Frog” programme was conducted by the Hong Kong Wetland Park in 2008. The programme included thematic exhibition, origami exhibition and workshop as well as *ex situ* breeding programme of native frogs. There were highly favourable responses from the public with over 70,000 visitors participated in the programme. The joint native species educational display programme of the Ocean Park Hong Kong and AFCD in 2007 also attracted considerable number of visitors. Besides, AFCD and the Friends of Country Parks published a field guide on native amphibians in 2005 to raise public awareness about the importance of wildlife protection and nature conservation. Further education and publicity programmes would be arranged with relevant parties to enhance public understanding of our native amphibian diversity and arouse public awareness of the global amphibian crisis and the conservation needs of our native amphibians.

### **Advice Sought**

20. Members are invited to note and comment on the proposed action plan for the conservation of amphibians native to Hong Kong.

**Agriculture, Fisheries and Conservation Department**  
**June 2009**

**List of Amphibian Species Native to Hong Kong and their Conservation Status**

Common Name	Chinese Name	Scientific Name	Conservation Status	Remarks
Asian Common Toad	黑眶蟾蜍	<i>Bufo melanostictus</i>	Least Concern	<ul style="list-style-type: none"> <li>● IUCN Red List: Least Concern</li> <li>● Very common and widespread throughout Hong Kong</li> </ul>
Asiatic Painted Frog	花狹口蛙	<i>Kaloula pulchra pulchra</i>	Least Concern	<ul style="list-style-type: none"> <li>● IUCN Red List: Least Concern</li> <li>● Common and widespread in Hong Kong</li> </ul>
Big-headed Frog	福建大頭蛙	<i>Limnonectes fujianensis</i>	Potential Concern	<ul style="list-style-type: none"> <li>● IUCN Red List: Least Concern</li> <li>● Locally restricted to central and northeastern New Territories</li> </ul>
Brown Tree Frog	斑腿泛樹蛙	<i>Polypedates megacephalus</i>	Least Concern	<ul style="list-style-type: none"> <li>● IUCN Red List: Least Concern</li> <li>● Very common and widespread throughout Hong Kong</li> </ul>
Brown Wood Frog	闊褶蛙	<i>Rana latouchii</i>	Least Concern	<ul style="list-style-type: none"> <li>● IUCN Red List: Least Concern</li> <li>● Locally common in scattered localities in the New Territories</li> </ul>
Butler's Pigmy Frog	粗皮姬蛙	<i>Microhyla butleri</i>	Least Concern	<ul style="list-style-type: none"> <li>● IUCN Red List: Least Concern</li> <li>● Common and widespread in the New Territories</li> </ul>
Chinese Bullfrog	虎紋蛙	<i>Hoplobatrachus chinensis</i>	Potential Concern	<ul style="list-style-type: none"> <li>● IUCN Red List: Least Concern</li> <li>● List of State Key Protected Wildlife in China: Class II Protected Animal</li> <li>● Common and widespread in the New Territories and Lantau Island</li> </ul>
Giant Spiny Frog	棘胸蛙	<i>Paa spinosa</i>	Immediate Concern	<ul style="list-style-type: none"> <li>● IUCN Red List: Vulnerable</li> <li>● China Red Data Book: Vulnerable</li> </ul>

				<ul style="list-style-type: none"> <li>● Locally restricted to the summit area at Tai Mo Shan only</li> </ul>
Green Cascade Frog	大綠蛙	<i>Rana chloronota</i>	Least Concern	<ul style="list-style-type: none"> <li>● IUCN Red List: Least Concern</li> <li>● Common and widespread in Hong Kong</li> </ul>
Günther's Frog	沼蛙	<i>Rana guentheri</i>	Least Concern	<ul style="list-style-type: none"> <li>● IUCN Red List: Least Concern</li> <li>● Very common and widespread throughout Hong Kong</li> </ul>
Hong Kong Cascade Frog	香港湍蛙	<i>Amolops hongkongensis</i>	Potential Concern	<ul style="list-style-type: none"> <li>● Cap.170: Protected Species</li> <li>● IUCN Red List: Endangered</li> <li>● Restricted to Hong Kong and Southern Guangdong</li> <li>● Common and widespread in the New Territories and Hong Kong Island</li> </ul>
Hong Kong Newt	香港瘰螈	<i>Paramesotriton hongkongensis</i>	Potential Concern	<ul style="list-style-type: none"> <li>● Cap.170: Protected Species</li> <li>● IUCN Red List: Near Threatened</li> <li>● Restricted to Hong Kong and southern Guangdong</li> <li>● Common and widespread in Hong Kong</li> </ul>
Leaf-litter Toad	福建掌突蟾	<i>Leptolalax liui</i>	Least Concern	<ul style="list-style-type: none"> <li>● IUCN Red List: Least Concern</li> <li>● Locally common in scattered localities in the New Territories and Lantau Island</li> </ul>
Lesser Spiny Frog	小棘蛙	<i>Paa exilispinosa</i>	Potential Concern	<ul style="list-style-type: none"> <li>● IUCN Red List: Vulnerable</li> <li>● Common and widespread in Hong Kong</li> </ul>
Marbled Pigmy Frog	花姬蛙	<i>Microhyla pulchra</i>	Least Concern	<ul style="list-style-type: none"> <li>● IUCN Red List: Least Concern</li> <li>● Common and widespread in Hong Kong</li> </ul>
Ornate Pigmy Frog	飾紋姬蛙	<i>Microhyla ornata</i>	Least Concern	<ul style="list-style-type: none"> <li>● IUCN Red List: Least Concern</li> <li>● Common and widespread in Hong Kong</li> </ul>
Paddy Frog	澤蛙	<i>Fejervarya limnocharis</i>	Least Concern	<ul style="list-style-type: none"> <li>● IUCN Red List: Least Concern</li> <li>● Very common and widespread throughout Hong</li> </ul>



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Romer's Tree Frog	盧氏小樹蛙	<i>Liuixalus romeri</i> ( <i>Philautus romeri</i> )	Immediate Concern	<ul style="list-style-type: none"> <li>● Cap.170: Protected Species</li> <li>● IUCN Red List: Endangered</li> <li>● Endemic to Hong Kong</li> <li>● Naturally occurring populations found in Chek Lap Kok, Lantau Island, Lamma Island and Po Toi only</li> </ul>
Rough-skinned Floating Frog	尖舌浮蛙	<i>Occidozyga lima</i>	Uncertain	<ul style="list-style-type: none"> <li>● IUCN Red List: Least Concern</li> <li>● Last record from Lantau Island but not seen again in recent years</li> </ul>
Short-legged Toad	短腳角蟾	<i>Xenophrys brachykolos</i>	Potential Concern	<ul style="list-style-type: none"> <li>● IUCN Red List: Endangered</li> <li>● Possibly endemic to Hong Kong</li> <li>● Locally common in scattered localities in the New Territories</li> </ul>
South China Cascade Frog	華南湍蛙	<i>Amolops ricketti</i>	Potential Concern	<ul style="list-style-type: none"> <li>● IUCN Red List: Least Concern</li> <li>● Locally restricted to Lantau Island</li> </ul>
Spotted Narrow-mouthed Frog	花細狹口蛙	<i>Kalophrynus interlineatus</i>	Least Concern	<ul style="list-style-type: none"> <li>● IUCN Red List: Least Concern</li> <li>● Common and widespread in the New Territories</li> </ul>
Three-striped Grass Frog	長趾蛙	<i>Rana macrodactyla</i>	Least Concern	<ul style="list-style-type: none"> <li>● IUCN Red List: Least Concern</li> <li>● Common and widespread in the New Territories and Lantau Island</li> </ul>
Two-striped Grass Frog	台北蛙	<i>Rana taipehensis</i>	Least Concern	<ul style="list-style-type: none"> <li>● IUCN Red List: Least Concern</li> <li>● Locally common in scattered localities in the New Territories</li> </ul>

Note: Cap.170 = Cap.170 Wild Animals Protection Ordinance

**List of Sites of Conservation Importance for the Amphibians of Hong Kong**

<b>Site</b>	<b>Conservation Importance</b>	<b>Protection Status</b>
Cheung Sheung	An amphibian hotspot	Partly within Sai Kung West Country Park
Ho Pui	An amphibian hotspot	Within Conservation Area
Jubilee Shing Mun Reservoir Catchment	An amphibian hotspot	Within Shing Mun Country Park
Kadoorie Farm and Botanic Garden	An amphibian hotspot	Within Kadoorie Farm and Botanic Garden
Keung Shan Catchment	An amphibian hotspot	Within Lantau South Country Park
Lamma Island	One of the 4 sites with naturally occurring populations of Romer's Tree Frogs	Major localities are within Conservation Area
Lau Shui Heung	An amphibian hotspot	Within Pat Sin Leng Country Park
Mui Wo	An amphibian hotspot	Partly within Conservation Area.
Ngong Ping, Lantau Island	Site supporting the largest population of Romer's Tree Frogs	Within Ngong Ping SSSI
Po Toi	One of the 4 sites with naturally occurring populations of Romer's Tree Frogs	Outside protected areas but is remote and isolated
Pui O Marsh	An amphibian hotspot	Within Coastal Protection Area
Sha Lo Tung and Ping Shan Chai	An amphibian hotspot	Partly within Sha Lo Tung SSSI and Pat Sin Leng Country Park
Shek Kong Catchment	An amphibian hotspot.	Within Tai Lam Country Park
Shek Pik Catchment	An amphibian hotspot	Within Lantau South Country Park
Tai Lam	An amphibian hotspot	Within Tai Lam Country Park
Tai Lam Wu	An amphibian hotspot	Within Ma On Shan Country Park
Tai Mo Shan Summit	The only site in which Giant Spiny Frogs occur.	Within 1) Tai Mo Shan Country Park; 2) Tai Mo Shan Montane Shrub Forest SSSI; and 3) Tai Mo Shan SSSI
Tai Po Kau Nature Reserve	An amphibian hotspot	Within Tai Po Kau Special Area
Tai Tam	An amphibian hotspot	Within Tai Tam Country Park
Tsing Tam Reservoir Catchment	An amphibian hotspot	Within Conservation Area

### Location Map of Sites of Conservation Importance for the Amphibians of Hong Kong

