

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

**Nature Conservation Management Agreement Project -
Progress of Implementation of the Fishpond Management Agreement
Projects in Northwest New Territories in 2013-2015**

Purpose

This paper seeks to update Members on the latest progress of implementation of the two Nature Conservation Management Agreement (MA) projects implemented by the Hong Kong Bird Watching Society (HKBWS) in the Northwest New Territories.

Background

2. The fishponds located in the Northwest New Territories are the largest stretch of continuous and contiguous wetland remaining in Hong Kong. They are of intrinsic ecological value, providing important feeding and roosting grounds for a diverse assemblage of bird species. They are an integral part of the Mai Po and Inner Deep Bay wetland ecosystem, supporting over 50,000 waterbirds each year.

3. With a view to enhancing the ecological functions of fishponds through wise use of the wetland and preserving the traditional fish farming as part of the local cultural heritage, the HKBWS conducted a 14-month pilot wetland management programme for fishponds under MA from January 2012 to February 2013. In view of the success of the pilot project in restoring and enhancing of the ecological value of commercial fishponds in the Inner Deep Bay area, as well as in increasing the awareness on the aquaculture and bird conservation issues, HKBWS subsequently proposed two MA Projects for fishpond conservation in the Deep Bay area. The two projects namely “Fishpond Conservation Scheme in Ramsar Site 2013 – 2015” (Project 1) and “Hong Kong Got Fishpond - Eco-fishpond Management Agreement Scheme 2013 – 2015” (Project 2) cover the two Priority Sites “Ramsar Site” and “Deep Bay Wetlands outside Ramsar Site” respectively, collectively covering the majority of fishponds in the Deep Bay area.

4. Under the Projects, fishpond operators are required to conduct annual drain-down of the fishponds to provide more suitable feeding habitats for waterbirds. Meanwhile, HKBWS conducts ecological surveys on the ponds to provide up-to-date ecological information of the fishpond habitats. HKBWS also conducts a wide range of public education programmes to arouse interests in the conservation of fishponds. The project is hence a win-win solution that promotes wise use of the wetlands. While both Projects aim to conserve the ecological value of fishponds through collaboration with the fishpond operators, Project 2 emphasizes on public education to enhance public awareness on the cultural value of aquaculture in Hong Kong. A summary of the two MA Projects is found in **Annex A**.

5. At the meeting of the Nature Conservation Subcommittee (NCSC) on 30 January 2013, the two applications were deliberated. The NCSC gave support to the MA application, but advised HKBWS the following:

- (a) HKBWS should make clear in the proposal that the major objective of the projects is to enhance the feeding grounds for waterbirds. On top of waterbirds and other taxa groups as proposed in the application, HKBWS was required to conduct ecological baseline studies on the vegetation cover on fishpond bunds, and to include the management of fishpond bunds that benefits the wetland ecosystem;
- (b) HKBWS was required to use benchmarks in assessing the effectiveness of the habitat conservation management measures. HKBWS should also assess the impacts of the conservation management measures on the abundance and distribution of waterbirds in Deep Bay. The results should be reported to NCSC at regular intervals;
- (c) HKBWS was suggested to incorporate a volunteer programme with a view to raising the awareness of the public in nature conservation;
- (d) On public education aspect, HKBWS was required to conduct visitor surveys to facilitate the evaluation of the effectiveness of the projects in enhancing the visitors' awareness and recognition on nature conservation. The design of this questionnaire needs to be vetted and approved by the Agriculture, Fisheries and Conservation Department; and

- (e) HKBWS was required to conduct education programmes for the fishpond operators so as to promote the sustainability of the traditional fish-farming practices and enhance their awareness on the importance of fishpond conservation.

6. Upon considering the views of the NCSC, the Environment and Conservation Fund (ECF) granted a total of \$11,590,224 (\$4,925,172 and \$6,665,052 for Project 1 and Project 2 respectively) to HKBWS for implementing the projects on a total of about 730 ha of fishponds for two years from March 2013 to February 2015. A map showing the areas of the two Priority Sites can also be found in **Annex A**. It was also recommended that the recipient organization should report the progress of the ongoing MA projects regularly to the ACE-NCSC for better monitoring of MA projects.

7. HKBWS has prepared a progress report at **Annex B** to report their implementation of the two MA Projects during the period from 1 March 2013 to 31 August 2014.

8. As required by the ECF, HKWBS has submitted progress reports with statement of accounts to the Agriculture, Fisheries and Conservation Department and the Environmental Protection Department every six months during the project period. Both departments have vetted the progress reports and it is considered that the Projects have been satisfactorily implemented.

Advice Sought

9. Members are invited to give views on the implementation and progress of the Project.

Agriculture, Fisheries and Conservation Department
Environmental Protection Department
October 2014

Annex A

Summary of Management Agreement Projects

	Project 1	Project 2
Project Title	Fishpond Conservation Scheme in Ramsar Site 2013 - 2015 拉姆薩爾濕地漁塘保育計劃 2013 - 2015	Hong Kong Got Fishpond - Eco-fishpond Management Agreement Scheme 2013 - 2015 香港有漁塘－生態漁塘管理協議計劃 2013 - 2015
Site involved	“Ramsar Site” Priority Site for Enhanced Conservation	The “Deep Bay Wetland outside Ramsar Site” Priority Site for Enhanced Conservation
Proponent	Hong Kong Bird Watching Society (HKBWS) 香港觀鳥會	
Size of Management Area	226 ha engaged (out of 331 ha in total)	316 ha (out of 402 ha in total)
Project Description	This project aims at continuing to enhance the conservation value of commercial fishponds in the Northwest New Territories, especially for avifauna, through a partnership programme between HKBWS and local fishermen. Baseline ecological monitoring on various taxa groups is also proposed to provide insights into the ecological value of the fishpond habitats.	In addition to enhancing the conservation value of commercial fishponds in the Northwest New Territories through a partnership programme between HKBWS and local fishermen, the project emphasises on increasing awareness on the aquaculture and bird conservation issues in the Deep Bay area through an array of public education programmes.
Key Conservation	– To continue to enhance the conservation value of	

Objectives	<p>commercial fishponds in Northwest New Territories;</p> <ul style="list-style-type: none"> - To maintain the harmonious relationship between local fish farming and bird conservation; - To preserve the cultural heritage of local traditional practice of fish farming; - To provide up-to-date ecological information and formulate strategies for long-term ecological conservation in the area; and - To raise public awareness on the ecological value of fishponds. This is particularly emphasised in Project 2 in which an array of public education activities are proposed. 	
Duration	24 months (1 March 2013 – 28 February 2015)	
Funding approved	\$ 4,925,172	\$ 6,665,052

Fishponds within the two Priority Sites “Ramsar Site” (yellow) and “Deep Bay Wetland outside Ramsar Site” (green)



Annex B

Summary of Progress of Fishpond Management Agreement Projects
From 1 March 2013 to 31 August 2014

Objectives and Goals

Project 1

- To enhance the conservation value of commercial fishponds, especially for avifauna, in Ramsar Site;
- To continue the collaboration with local fishermen and the Hong Kong New Territories Fish Culture Association (HKNTFCA) to implement fishpond management measures;
- To monitor the effectiveness of conservation measures so as to enhance better management of the fishponds, waterbird surveys and baseline studies are conducted to fill up information gap and provide ecological information.

Project 2

- To enhance the conservation value of commercial fishponds, especially for avifauna, in Deep Bay Wetland outside Ramsar Site;
- To continue the collaboration with local fishermen and the Hong Kong New Territories Fish Culture Association (HKNTFCA) to implement fishpond management measures;
- To monitor the effectiveness of conservation measures so as to enhance better management of the fishponds, waterbird surveys and baseline studies are conducted to fill up information gap and provide ecological information;
- To organize different kinds of educational activities promoting fishpond conservation and local freshwater fish culture to the general public, so as to convey the message of “Birds and Human in Harmony” to both fishermen and the general public.

Habitat Conservation Management

With the full support from the Hong Kong New Territories Fish Culture Association, over 85% of fishpond operators are engaged to the project as partners to carry out fishpond management works. Communication and partnership between HKBWS and fishpond operators have been strengthened to facilitate smoother implementation of the management measures.

	2013-14			2014-15 (up to 31 Aug 2014)		
	Project 1	Project 2	Total	Project 1	Project 2	Total
Total no. of eligible fishpond operators*	78	102	168	73	98	162
No. of engaged fishpond operators# [% of participation]	69 [88.5%]	89 [87.3%]	149 [87.7%]	66 [90.4%]	81 [82.7%]	139 [85.8%]
Area of eligible fishponds (ha)	331	402	733	330	399	729
Area of engaged fishponds (ha)# [% of eligible fishpond area]	280.5 [84.7%]	355.3 [88.4%]	635.8 [86.7%]	319.8 [96.9%]	344.8 [86.4%]	664.6 [91.2%]
Area of drained fishponds (ha) [% of engaged fishpond area]	262.2 [93.5%]	316 [88.9%]	578.2 [90.9%]	136.3 [42.6%]	165.3 [47.9%]	301.6 [45.4%]

*Fishponds within the Priority Sites, with fishpond operators registered under the AFCD's Voluntary Registration Scheme

#The decrease in the number of engaged fishpond operators and the increase in total area of engaged fishponds from the first year (2013-14) to the second year (2014-15) were due to the engagement of an operator with a large area of fishponds and the withdrawal of several operators with small areas of fishponds in the second year. The operators withdrew in the second year mainly due to the land owners claimed back the fishponds near Lok Ma Chau and the cost of drain-down was too high to some non-commercial fishponds.

Waterbird Monitoring

Waterbird surveys are conducted in selected drained fishponds. In each project site, 36 and 12 fishponds are selected for regular and intensive waterbird survey respectively.

Since the commencement of MA projects in the Deep Bay area in January 2012, a cumulative of 69 bird species have been recorded utilizing drained fishpond during the waterbird monitoring surveys in which 5 species are globally endangered: Spoon-billed

Sandpiper (CR) [Max.: 1], Black-faced Spoonbill (EN) [Max.: 102], Great Knot (VU) [Max.: 1], Greater Spotted Eagle (VU) [Max.: 1] and Collared Crow (NT) [Max.: 20]. These sightings indicate that these globally threatened birds also utilize the fishponds as feeding and/or temporary roosting sites.

From the monitoring results, it is noted that the number and diversity of all groups of waterbirds and wetland-dependent birds are increased during drain-down, indicating that the conservation management measure of drain-down can effectively enhance the utilization of waterbird in the corresponding fishponds.

Bird monitoring data of March 2013 – August 2014

Number of Surveyed Ponds = 148	Before Drain-down	During Drain-down
Mean abundance	8	110
Mean no. of waterbird species	1	7
No. of waterbird species in all ponds	30	57
<i>Great Egret</i>	3	23
<i>Little Egret</i>	2	52
<i>Black-faced Spoonbill</i>	0	5
Mean abundance of Grebes	0	1
Mean abundance of Cormorants	1	3
Mean abundance of Pelicans	0	0
Mean abundance of Ducks	0	1
Mean abundance of Ardeids	5	83
Mean abundance of Storks, Ibises and Spoonbills	0	5
Mean abundance of Rails	0	1
Mean abundance of Shorebirds	0	9
Mean abundance of Gulls & Terns	0	1
Mean abundance of Kingfishers	0	1
Mean abundance of Collared Crows	0	1
Mean abundance of Red-billed Starlings	0	6
Mean abundance of Raptors	0	0

Little Egret *Egretta garzetta*, which occurs in large numbers in wetland; Great Egret *Ardea alba*, which is of regional conservation concern and Black-faced Spoonbill *Platalea minor*, which is listed as Endangered in IUCN red list are selected as the benchmark for effective

adaptive management. All three species utilize fishpond for feeding and loafing regularly, thus setting these species as benchmark could reflect the effectiveness of management measures. The benchmark is used as a standard reference for a unit area. The benchmark of each species are calculated by taking the mean abundance of birds per hectare in fishpond from ten years of data recorded in fishponds which is extracted from Waterbird Monitoring Programme. The figures in “Drained Fishponds” refer to the mean abundance of birds per hectare in drained fishponds since 2013.

Benchmark of Key Species (Mean no. of individuals per hectare)

	Benchmark from Monthly Waterbird Count	Drained Fishponds (Mar 13 - Aug 14)
<i>Great Egret</i>	0.25	18
<i>Little Egret</i>	0.53	40
<i>Black-faced Spoonbill</i>	0.020	4.0

Rounded to 2 significant figures.

Some of the fishponds were fully drained (>50% of exposed bottom) and some were partially drained. It is found that the number of birds recorded in fully-drained ponds is significantly higher than that in partially-drained ponds. Apart from the level of draining, pond size is another factor affecting utilization of waterbirds that higher bird diversity is recorded at larger fishponds.

As mentioned, all groups of waterbirds and wetland-dependent birds increased in number during drain-down. However, it is observed that taller waterbirds such as Ardeids and Spoonbills preferred the earlier phase of drain-down period when there were shallow water and pools with living fish and shrimps, while shorter shorebirds preferred the later phase when there were a thin layer of water and exposed bottom for them to feed on invertebrates. Preliminary studies of feeding observation showed that most of the bird species utilizing drained ponds preferred small prey items that were smaller than half size of their beaks, though Great Egrets generally preferred larger preys.

Results showed that drained ponds were much more attractive to the key bird species by providing more feeding and loafing opportunities. By regularly providing drained fishponds in the Deep Bay area, the overall ecological value of the habitats can be enhanced as the fitness of the birds increase with sufficient food.

Ecological Baseline Studies

In order to gain a better understanding of the integral ecological importance of the fishpond areas, ecological baseline surveys for birds, amphibians and reptiles, Odonata and fish is conducted to fill the information gap. Species and abundance of the target taxa are recorded during regular surveys, and preliminary analysis to study the wildlife distribution and bund vegetation cover was also conducted.

Bird

A total of 143 bird species were recorded in fishpond area during the baseline survey 2013-2014, in which 7 globally endangered species are recorded: Spoon-billed Sandpiper (CR) [max.: 1], Black-faced Spoonbill (EN) [max.: 39], Yellow-breasted Bunting (EN) [max.: 3], Eastern Imperial Eagle (VU) [max.: 2], Greater Spotted Eagle (VU) [max.: 1], Japanese Yellow Bunting (VU) [max.: 2] and Collared Crow (NT) [max.: 74].

**max. = maximum count in one survey area in a survey*

The highest number of birds was recorded in December 2013, with a total of 7,306 individuals counted in the six survey areas. Among the survey areas, Tai Sang Wai in the Ramsar Site has the highest abundance of birds throughout the year on average (no.: 1,682), while San Tin outside the Ramsar Site has the highest bird diversity that 70 species were recorded in a single survey.

Amphibian and Reptile

12 amphibian and 10 reptile species were recorded during baseline survey, including the IUCN vulnerable Burmese Python and the Class II protected Chinese Bullfrog (Listed as State Key Protected Wildlife in China). The exotic Greenhouse Frog was also recorded in the survey. Study found that the fishpond area supported high diversity of amphibian species with over 45% of local amphibian species, which is the second most diverse taxa.

Odonata

29 Odonata species were recorded in baseline survey, including the IUCN near threatened Four-spotted Midget. Survey found that Fung Lok Wai and Mong Tseng area have the highest average no. of individuals while Nam Sang Wai has the highest species diversity.

Fish

Eight fish species including a commercial species (Flathead Mullet) were recorded in baseline survey. Three exotic species were found: Mosquito Fish, Tilapia and Climbing

Perch, Mosquito Fish and Tilapia were recorded in large amount while only two individuals of Climbing Perch were found. The high abundance of invasive species may be one of the causes of low diversity of native fish species.

Vegetation Cover of Pond Bund

Proportion of vegetation cover, which was categorized into bare land, grass, reed and shrub, was recorded and tested to see if they had any relationship with the wildlife distribution. Results of preliminary analysis showed that there was no significant correlation between vegetation cover and distribution of herpetofauna and odonates, while different types of vegetation might be associated with the distribution of birds in different seasons.

Community Participation, Education and Publicity

Education activities have been increased and diversified under the current projects compared to the pilot project conducted in 2012-13. They included eco-tour, night safari, various workshops, education kiosk, talk and exhibition etc. that more people are able to get in touch with fishpond and fishermen. They understood more about the ecology and the conservation value of fishponds as well as local freshwater fish culture via all these education activities. Fishermen are invited to participate in many of these activities by sharing their experience, stories and the operation of fishpond with the participants from all walks of life.

Volunteer Scheme

In response to recommendation from NCSC, a fishpond conservation volunteer scheme was set up. A total of 62 volunteers were recruited and a basic training was provided. Volunteers were involved in different kinds of voluntary works after the basic training, such as provide assistance and interpretation in the education kiosk and eco-tour. Volunteers are required to fulfil 18 service hours after the training in order to become accredited volunteers. 39 volunteers (about 63%) have completed the basic 18 service hours. Several additional trainings and gatherings were provided to the volunteers in order to increase their knowledge on the ecology and conservation value of fishponds.

Eco-tour Guide Training and Eco-tours

36 participants finished all the practical training and became accredited eco-tour guides. Results from questionnaires showed that 60.5% and 39.5% agreed the training was “useful” and “very useful” respectively on guiding an eco-tour. Besides, 92.1% was interested in advance level of eco-tour guide training in future.

For Project 1, 21 eco-tours with a total of 717 students, parents and teachers were held at Tai Sang Wai. For Project 2, 14 tours with a total of 320 participants from public or cooperate joined the eco-tours to Nam Sang Wai and Tai Sang Wai.

680 questionnaires (Project 1) and 298 questionnaires (Project 2) were collected after the eco-tours. 90.1% (Project 1) and 91.9% (Project 2) of participants agreed that their knowledge on fishpond ecology have been increased. 84.7% (Project 1) and 80.9% (Project 2) of participants agreed that their interest in consuming local freshwater fish have been furthered.

Education Kiosk

To further our cooperation with fishermen, an education kiosk was set up in Nam Sang Wai next to a fishpond from November 2013 to April 2014. Information such as exhibition boards on bird information were set up so that visitors are able to access fishpond related information even in weekdays. In designated weekends, booths and games were set up as well as exhibition interpretation was provided and many visitors were attracted to the education kiosk. Participants and visitors not only showed great interest and actively participated in all these activities, many of them, for the first time, understood that fishpond has high conservation value. In addition, some regular exhibition boards and display board on bird information were put in another fisherman's fishpond which is near the grassland in Nam San Wai in July 2014 so that public visitors have a greater chance to access information about the fishponds.

Fishpond Festival

The proposed Fishpond Festival is up-scaled to become a large-scale programme consists of a series of activities including talk, exhibition, eco-tours, photo contest, experience workshop, carnival etc. Highlight of the Festival is a two-day carnival which will be held on 14 & 20 Dec 2014 in Yuen Long Town and Tai Sang Wai fishpond area. The aim of organizing Fishpond Festival is to promote and raise public awareness on fishpond conservation and local freshwater fish culture. This also provided great opportunity to initiate communication and cooperation with local communities and villages. Tai Sang Wai village and the village representatives are playing the roles as the supporting organization and advisor of the Fishpond Festival respectively. This is an important step to involve local communities of fishpond peripheral areas to participate in fishpond conservation, education and promotion. The projects also realize the wise use concept of involving the stakeholders in wetland conservation.

Education Programmes for Fishpond Operator

In response to recommendation from NCSC, a meeting with fishermen was organized in February 2014 in which a talk by HKBWS and AFCD about the importance of fishponds to wetland conservation and the close relationship between fishermen, fish, fishponds and birds was delivered to the fishermen. Besides, by involving fishermen and local communities in education activities, they know more about the importance of fishpond conservation, raising public awareness on local freshwater fish culture and fishpond conservation. Through passive and active way of education, fishermen can acquaint more about the nature, and the conflict between birds and human can be dissolved gradually.

Education and Publicity Materials

100 copies of eco-tour guide training manual were produced and distributed to all eco-tour guides. About 2,000 copies of New Territories Fishpond Festival posters were printed and sent to all primary and secondary schools, community centres (youth, family and elderly), offices of district board members, etc. to promote the series of activities in the Festival. Good responses were received especially on schools' applications for talk, exhibition and eco-tours. Another series of publicity is in progress in October, including production of posters, banners and advertisement in MTR stations to further promote the Festival.

	Programmes	Target no. of participants	Total no. of participants (at 31/8/2014)	Completion	Remarks
1	Eco-tour guide training	25	41	164%	
2	Eco-tour (school)	800	804	100.5%	
3	Teacher workshop	25	20	80%	Estimated an addition of 15 participants from another workshop scheduled on 1 Nov and is still under recruitment
4	Education Kiosk	30,000	23,320	77.7%	
5	Eco-tour (public & corporate)	1,250	320	25.6%	Estimated an addition of 747 participants from scheduled tours from Sep 14 – Feb 15
6	Night Safari	125	135	108%	
7	Workshops (Art, photography, videography and	131	48	36.6%	2 workshops with 41 participants will be held on 5, 9 & 11 Oct. Another scheduled workshop in Nov

	fishpond experiencing)				is under recruitment.
8	Exhibition	31,000	59,126	190.7%	
9	School Exhibition	5,000	6,300	126%	
10	Volunteer Scheme ¹	-	62	-	
11	School Talk ²	15	-	0%	12 talks are scheduled from Sep 14 – Feb 15
12	Photo Contest ²	200	-	0%	Promotion started in early Sep and deadline for photo submission will be on 15 Nov.
13	Fishpond Festival Carnival ²	4,300	-	0%	The carnival is up-scaled and scheduled on 14 & 20 Dec 14.
Total no. of participants		72,871	90,242	123.8%	

Notes:

No. 1-3 are activities under “Fishpond Conservation Scheme in Ramsar Site 2013-2015”.

No. 4-13 are activities under “Hong Kong Got Fishpond - Eco-fishpond Management Agreement Scheme 2013-15”.

¹ Volunteer Scheme is set up in response to NCSC’s comments, no target is specified.

² These activities are under the “New Territories Fishpond Festival”. The Festival began in Sep 2014 and most of the activities are scheduled in Sep to Dec 2014.

Project Sustainability

In order to increase financial return for the projects, most of the activities mentioned above are fee-charging. Since Project 1 focuses on habitat management and only a minimum number of education activities is held, only \$42,200 of income has been generated, while \$136,761.31 has been generated from Project 2 which focuses more on education and publicity. A total income of \$178,961.31 (about 46.5% of expected total income) has been generated from the two projects altogether up to end of August 2014.

Challenges

Administrative Procedures for Implementation of Education Kiosk

Lands Department rejected the application for temporary occupation of Government land for the education kiosk operation in Nam Sang Wai due to lack of Town Planning Board’s permission while the subject site falls within the “Other Uses (Comprehensive Development with Wetland Enhancement Area)” zone and “Wetland Conservation Area”. The Kiosk operation has ceased since May 2014 and a great effort was put on the planning application to Town Planning Board (TPB). Approval from TPB was received in late

September and HKBWS is now following up with the Lands Department on the application for temporary occupation of Government land.

Promotion of Eco-tours

In the ECF application, it was proposed that 30 general public tours and 20 corporate tours would be organized during the project period. The project team has tried many different ways to contact and promote the eco-tours such as sending brochures and emails to community centres, offices of District Councillors, organizations and companies etc. However, response rate was low and only several tours were organized successfully. Many of the potential participants opined that the fee was too high while some were not familiar with the fishpond environment and were not interested. The project team then personalized the content of each tour and adjusted the price to suit different applicants' needs. As on 31 Aug 2014, only 25% of proposed target no. of participants was fulfilled. Nevertheless, after a few mass media reports on the fishpond eco-tours, some more applications were received and scheduled from September onwards. From the latest applications received, the projects are predicted to achieve about 85% of proposed no. of participants and 62% of proposed income. The project team will try hard to achieve the proposed amount.

Finding Alternative Sources of Funding

In view of the large amount of budget required for the fishpond MA projects due to the vast area of fishponds engaged, it is difficult to generate income of a significant proportion to cover the project expenditure. The project team has implemented a relatively new idea of designing and producing souvenirs and products related to birds, fish and fishpond to generate income for the MA projects. Several items have been produced under the projects: stickers, coasters, T-shirts and postcards. Some were sold out in a short period of time. Manpower and resources were spent on sales and marketing such as exploring different venues and opportunities for selling souvenirs such as education kiosk, overseas bird fairs and the internet (including social media) to increase exposure of the projects and the products. Apart from generating revenue for the projects, the souvenir items also help to increase public awareness and interests in fishpond culture and the MA projects.