

BirdLife International IBA DATA FORM



1 Compiler: 2 Date:

4 Temporary IBA Code: 5 Final IBA Code:

GENERAL DATA

6 National Site Name:

7 International Site Name:

8 Country:

9 Administrative Region (Level 1)

10 Administrative Region (Level 2)

11 Area (ha): 12 Area Accuracy (A, B, C or D):

13 Central Coordinates (Lat/Lon): /

14. Altitude (m):
 Min: Max:

15 Map (Y, N): 16 Management Plan (Y, N) : 17 Ownership (P, S, C, R, I, X, O, U):

18 General Description:

Shenzhen River catchment and Inner Deep Bay is an estuarine area comprising a variety of habitats, including freshwater wetland, marine-coastal (intertidal mudflats and mangroves) and man-made (aquaculture fish ponds, tidal shrimp ponds *gei wai*) and oyster farms) habitats. The freshwater wetlands are situated at Mai Po and at a flood plain area at the southern side of Shenzhen River namely Long Valley, this is an area of actively managed agricultural land. The mudflats of inner Deep Bay are situated across the Shenzhen River, from Mai Po/Tsim Bei Tsui peninsula of Hong Kong side to Fu Tian of Shenzhen side. A thick belt of coastal mangroves encloses these sites. The inland area consists mainly of farmland, fishponds and tidal shrimp ponds. Surrounding and among these are construction sites, residential area and industrial area.

On 4 September 1995, a 1,500 ha of wetlands on the Hong Kong side of the estuary area (Inner Deep Bay) was declared a Ramsar Site, including Mai Po Nature Reserve.

Shenzhen River catchment and Inner Deep Bay lies in the northwestern part of the New Territories of Hong Kong. The names of the area includes (1) agricultural lands at Long Valley; (2) fishponds at Ma Tso Lung, Lok Ma Chau, San Tin, Lin Barn Tsuen, Mai Po, Pak Hok Chau, Lut Chau, Tai Sang Wai, Nam Sang Wai, Tin Shui Wai and Tsim Bei Tsui; (3) Mai Po Marshes Nature Reserve; (4) Inner Deep Bay mangroves and inter-tidal mudflat; and (5) mudflat and oyster farm at Sheung Pak Lai (*see attached map*).

CRITERIA

19 EBA code for proposed IBA: 20 Biome code for proposed IBA: 21 Criteria Proposed IBA:

22 Criteria Notes:

BirdLife International IBA DATA FORM



1 Compiler:

Ms. Carrie K. W. Ma

2 Date:

March 2000

4 Temporary IBA Code:

5 Final IBA Code:

BIRD SPECIES DATA

23 Species	24 Season	26 Abund.	31 Criteria	32 Notes
Globally threatened species				
<i>Pelecanus crispus</i>	W	B	A 1 A 4 i	<p>Winter visitor in Deep Bay area. In 1960s, the average winter population was about 50-70, with a maximum count of 85 individuals on 21 February 1960 (HKBWS 1960-69). In 1970s, the winter population was about 40-80 (HKBWS 1970-79). In 1980s, the average winter population was about 20-40, with the maximum count of 70 individuals on 6 February 1981 (HKBWS 1980-89). In the recent decade, the number has declined. In 1990-1997, the average winter population was about 10-20, there were some years with exceptional high counts: 23 individuals in 1996, 18 in 1997 (HKBWS 1990-97), 24 in 1998 (HKBWS 1998) and 23 in 1999 (HKBWS 1999).</p> <p>As estimated by Rose and Scott (1997) the east Asian wintering population is less than 500 birds; however, it is now considered to number 100 individuals or fewer (A. Braünlich <i>in litt.</i> To G.J. Carey). Deep Bay, thus, supports a minimum of 20% of the regional, East Asian population (Carey and Young 1999).</p>
<i>Egretta eulophotes</i>	P	D	A 1 A 4 i	<p>Previously, a breeding bird at Ardeid colonies at Starling Inlet and at Au Tau, Deep Bay, but there have been no breeding records or summer sightings since the early 1980s.</p> <p>Since 1985 this species has been a passage migrant in spring and occasionally in autumn, with an average of 1-3 records per year during the 1990s, and the highest count was 5 birds (HKBWS 1985-97). In spring 1998, 25 individuals were recorded in Deep Bay, equivalent to a minimum of 1% of the world population (Carey and Young 1999) which is estimated at between 1800-2500 (Rose and Scott 1997).</p>
<i>Ciconia boyciana</i>	W	E	A 1	<p>Uncommon and irregular winter visitor. Hong Kong lies the south of the normal wintering range of this species and it is usually an irregular (less than annual) winter visitor in very small numbers (one or two birds).</p> <p>During 1960s to 1980s, Oriental Storks was an uncommon and irregular winter visitor with records of 1-2 birds. During winter 1990/91 a flock of 121 birds occurred, constituting about 4% of an estimated world population of 3000 (Carey and Young 1999). The reason for this unprecedented record is unknown (suggestion of a loss of wintering habitat in mainland China have not been substantiated), but it resulted in a few individuals returning to Deep Bay in the next eight winters - unfortunately in progressively declining numbers (maximum count of 11 individuals in 1991/92, 16 individuals in 1992/93, 7 individuals in 1993/94, 5 individuals in 1994/95, 1 in 1995/96, while there is no records in 1997 and 98. There is a recent record of one individual in 1999/2000, this is a first year bird, properly not related to the original influx.</p>
<i>Platalea minor</i>	W	B	A 1 A 4 i	<p>A non-breeding visitor to Deep Bay that has steadily increased in numbers.</p> <p>In 1980s the winter population was about 20-50 (HKBWS 1981-89). In 1991 - 95 the number increased to about 60 - 100 birds (HKBWS 1991 - 95). There were high counts of 124 individuals on 29 November 1996 (HKBWS 1996), 138 individuals on 21 November 1997 (HKBWS 1997), 152 on 22 December 1998 (HKBWS 1998) and 178 on 29 December 1999 (Y. T. Yu <i>per. obs.</i>).</p> <p>For the recent high count of 178 (on 29 December 1999) in which 138 were observed at Mai Po and 48 at Futian Nature Reserve in Shenzhen SEZ (Young and Yu <i>per. obs.</i>). The maximum count may be composed of some passage migrants.</p> <p>The known world population in 1998 was estimated at 613 individuals (Dahmer and Felley 1998) meaning Deep Bay supports a constant world population in the range of 20-25% (Carey and Young 1999), although it would appear population has increased since then.</p>

(continue next page)

BirdLife International IBA DATA FORM



3/21

1 Compiler:

Ms. Carrie K. W. Ma

2 Date:

March 2000

4 Temporary IBA Code:

5 Final IBA Code:

(continue)

<i>Aquila clanga</i>	W	C	A 1	Regular winter visitor to Shenzhen River catchment and Deep Bay area. Groups of up to 5 birds were observed in recent years (HKBWS 1958-1999).
<i>Aquila heliaca</i>	W	C	A 1	Regular winter visitor to Shenzhen River catchment and Deep Bay area, with roughly 10 individuals every year; high count of 21 on 27 February 1993. (HKBWS 1958-1997). Numbers have been smaller in recent years, with 6 wintering individuals in January and November 1998 (HKBWS 1998-99).
<i>Eurynorhynchus pygmeus</i>	P	D	A4i	A non-breeding migrant in the Shenzhen River catchment and Deep Bay area. It was considered as an occasional visitor (HKBWS 1961) in 1961, while there were regular record of 1 to 5 individuals in the Deep Bay area and San Tin from 1965 to 1997 (HKBWS 1959-1997). The high count is 5 birds in May 1980 and 1984, April 1990 and 1993. Records mostly from March to late May. In 1967-70, 72, 73, 74, 78 and 85, there were no records.
<i>Limnodromus semipalmatus</i>	P	B	A 1 A 4 i	A regular passage migrant to Shenzhen River catchment and Deep Bay area. About 1-40 individuals in spring from 1973-83; and about 1-5 individuals in autumn from 1970s-83 (HKBWS 1970-1983). The number has increased since 1984, with high count of 339 individuals on 29 April 1984; 304 individuals on 26 April 1990; 241 individuals on 22 April 1991 (HKBWS 1984, 1990, 1991) and 202 individuals in April 1999 (HKBWS 1999). From 1985-1997 the number of individuals, in general ranged between 50-120 during spring, while the number ranged between 1-20 during Autumn (HKBWS 1985-1997). As stated by Rose and Scott (1997), the global population is estimated to be 15,000 to 20,000, Deep Bay in some years has supported 1% or more of the global population (Carey and Young 1999).
<i>Tringa guttifer</i>	P	D	A 1 A 4 i	Passage migrant. More common in spring than autumn, with isolated winter records. Numbers increased from 12 in 14 April 1985 to a maximum flock of 38 between 30 March to 8 Jun in 1993. Decline in recent springs with a peak counts of 11 individuals in 1994, 20 in 1995, 21 in 1996, 5 in 1997 (HKBWS 1994-1997), 10 in 1998 and 27 in 1999 (HKBWS 1998-99). There are only three autumn records: one on 22 September 1983 and two on 22 October 1988 as well as a sole winter record on 4 December 1993 (HKBWS 1983, 1988, 1993). Carey and Young (1999) estimated the Deep Bay area regularly supports 3.8% of the world population which is estimated to be 1000 (Rose and Scott 1997).
<i>Larus saundersi</i>	W	B	A 1 A 4 i	Close to 100 every January and February (HKBWS 1958-1999). There were highest count is 172 on 10 February 1994 Carey and Young (1999) calculated the average peak count in Deep Bay for 1990s to be 128 birds which is about 1.8% of a world population which estimated to be 7,000.
<i>Locustella pleski</i>	W	E	A1	Scarce winter visitor to the inner Deep Bay mangroves and reedbed areas. Most records came from the extensive ringing programme at Mai Po. Leader (1996) stated that there were only 35 records from 1984-1996. About 1-7 individuals in winter were recorded (HKBWS 1987-1996), most are trapped or field records at Mai Po, with two records away from here in reeds at Ma Tso Lung and Mui Wo at Lantau Island.
<i>Emberiza sulphurata</i>	P	D	A 1	An uncommon and irregular passage migrant to Deep Bay and Shenzhen River catchment area. Japanese Yellow Bunting is uncommon and irregular passage migrant, with 1-6 individuals recorded in most years during 1984-1997 (HKBWS 1984-1997). The highest count concern 15 individuals on 11 April 1993, and 14 individuals on 14 April 1996 (HKBWS 1993, 1996).

(continue next page)

BirdLife International IBA DATA FORM



4/21

1 Compiler:

Ms. Carrie K. W. Ma

2 Date:

March 2000

4 Temporary IBA Code:

5 Final IBA Code:

Regional important species				
<i>Phalacrocorax carbo</i>	W	A	A 4 i	With a five-year mean of peak counts of 6,310 during winters of 1993-94 to 1997-98, Deep Bay regularly supports at least 6.3% of the regional east/southeast Asian wintering population which is estimated at 10-100,000 by Rose and Scott (1997) and 0.9% of the northern hemisphere population (Carey and Young 1999).
<i>Egretta alba</i>	W	A	A 4 i	During the 1990s, there was an average peak winter count of 529 in the Deep Bay area which holds 0.5% - 5.3% of the regional population, estimated by Rose and Scott (1997) to lie in the range 10-100,000 (Carey and Young 1999).
<i>Ardea cinerea</i>	W*	A	A 4 i	The average peak count in Deep Bay during the 1990s is 1300. Thus, Deep Bay holds up to 5.3% of the regional east/southern Asian wintering population which is estimated by Rose and Scott (1997) to lie between 25,000 and one million (Carey and Young 1999).
<i>Tadorna tadorna</i>	W	A	A 4 i	Since 1986 Deep Bay has supported an average of 1.4% and a maximum 3.2% of the flyway population (the Eastern Asia population), estimated by Miyabayashi and Mundkur (1999) to be 100,000-150,000.
<i>Anas clypeata</i>	W	A	A 4 i	The five-year mean of peak winter counts in Deep Bay during the period 1993-94 to 1997-98 is 7386 (Carey and Young 1999), which is possibly 1% of the Eastern / South Asia wintering population, estimated by Miyabayashi and Mundkur (1999) to be 500,000 to 1,000,000.
<i>Himantopus himantopus</i>	P	A	A4i	The five-year mean of peak counts during the period 1992-93 to 1996-97 is 336 (Carey and Young 1999). Deep Bay supports at least 0.3-3.3% of the regional southeast Asian wintering population, which is estimated by Rose and Scott (1997) to lie in the range 10-100,000.
<i>Recurvirostra avosetta</i>	W	A	A4i	The five-year mean of peak counts in Deep Bay areas during the period 1992-93 to 1996-97 is 1069 (Carey and Young 1999). This suggests the area supports 4.3% to 10.7% of the regional east Asian wintering population population, estimated by Rose and Scott (1997) to lie in the range 10-25,000.
<i>Charadrius alexandrinus</i>	W	A	A4i	The five-year mean of peak winter counts in the Deep Bay area during the years 1992-93 to 1996-97 was 2600 birds, and the peak count was 4000. This suggests the area supports 1% of the regional and subspecies (<i>dealbatus</i>) population in at least some years. Rose and Scott (1997) estimated that the east/southeast Asian wintering (subspecies) population lies between 25,000 and 1,000,000 (Carey and Young 1999).
<i>Charadrius leschenaultii</i>	P	A	A4i	With a the spring passage peak of around 1000 in most years, Deep Bay supports 1% of the flyway population. Rose and Scott (1997) estimated the Asian and Australian wintering population to be 99,000 (Carey and Young 1999).
<i>Pluvialis squatarola</i>	W	A	A4i	The five-year mean peak winter count in the Deep Bay area during the period 1993-94 to 1997-98 is 616 (Carey and Young 1999). The area supports about 0.6% to 2.25% of the east/southeast Asian and Australian flyway population, estimated by Rose and Scott (1997) to lie in the range 25,000-100,000.
<i>Calidris alpina</i>	W	A	A4i	The average peak winter count in the 1990s was 3336 (Carey and Young 1999), which suggests Deep Bay may support 1% of the flyway population, estimated by Rose and Scott (1997) to lie in the range 25,000 to 1,000,000.

(continue next page)

BirdLife International IBA DATA FORM



1 Compiler:

Ms. Carrie K. W. Ma

2 Date:

March 2000

4 Temporary IBA Code:

5 Final IBA Code:

(continue)

<i>Limosa limosa</i>	P	A	A4i	With a five-year mean peak spring count of 1809 during 1993-97 (Carey and Young 1999), Deep Bay regularly supports a minimum of 1% of the east/southeast Asian and Australian flyway population of 162,000 as stated by Rose and Scott (1997).
<i>Tringa stagnatilis</i>	W	A	A4i	Not taking into account likely turnover during the spring and autumn passage for the years 1992-97, the peak spring and autumn count ranges between 1670 and 2350. As Rose and Scott (1997) estimated that the east/southeast Asian and Australasian wintering population is 90,000, this suggests that Deep Bay may support at least 2% to 3% of the flyway population (Carey and Young 1999).
<i>Tringa nebularia</i>	W	A	A4i	Assuming overlap between winter visitor and spring passage, the mean peak number produced 3127 birds. This suggests that Deep Bay regularly supports at least 3% to as high as 10% of the world population, as estimated by Rose and Scott (1997) that the east/southeast Asian and Australasian wintering population is 40,000 (Carey and Young 1999).
<i>Xenus cinereus</i>	W	A	A4i	During 1988-1997, the mean minimum number of birds utilising Deep Bay was 443. Thus, it is possible that in some years Deep Bay supports 1% of the flyway population, estimated by Rose and Scott (1997) to lie between 25,000 and one million (Carey and Young 1999).
<i>Laurs ridibundus</i>	W	A	A4i	With a five-year mean peak winter count of 17,999 during the period 1992-93 to 1996-97 (Carey and Young 1999), Deep Bay regularly supports 1.8% to 18% of the east/southeast Asian wintering population, estimated by Rose and Scott (1997) to lie between 100,000 to one million.

BirdLife International IBA DATA FORM



1 Compiler:

2 Date:

4 Temporary IBA Code:

5 Final IBA Code:

HABITATS AND % COVER

Type	33 Presence	34 % Cover
Forest and woodland		
Lowland evergreen rain forest (tropical)		
Semi-evergreen rain forest (tropical)		
Peat swamp forest (tropical)		
Heath forest (tropical)		
Moist deciduous forest (tropical)		
Dry deciduous forest (tropical)		
Dry evergreen forest (tropical)		
Thorn forest (tropical)		
Mangrove forest (tropical)	X	6.3%
Lower montane rain forest (tropical)		
Upper montane rain forest (tropical)		
Hill evergreen forest (subtropical)		
Pine forest (subtropical)		
Montane broadleaf evergreen forest (mont. temp. zone)		
Montane broadleaf deciduous forest (mont. temp. zone)		
Montane mixed broadleaf-coniferous forest (m. t. z.)		
Montane coniferous forest (temp./subalp. zone)		
Broadleaf deciduous forest (temperate/boreal)		
Mixed broadleaf-coniferous forest (temperate/boreal)		
Coniferous forest (temperate/boreal)		
Riverine forest (temperate/boreal)		
Forest steppe (temperate/boreal)		
Forrest tundra (boreal/arctic)		
Scrub		
Temperate heath and scrub		
Semi-desert scrub		
Subalpine and alpine scrub		
Secondary scrub		
Wooded grassland		
Wooded grassland		
Grassland		
Tundra		
Steppe		
Edaphic grassland		
Alpine and subalpine grassland		
Secondary grassland		
Marine areas		
Shallow marine waters, coral reefs and keys		
Sea inlets		
Open sea		

First level to be used at global level for all IBAs. Second level to be determined regionally. The second level given here applies to Asia only.

BirdLife International IBA DATA FORM



7/21

1 Compiler:

Ms. Carrie K. W. Ma

2 Date:

March 2000

4 Temporary IBA Code:

5 Final IBA Code:

HABITATS AND % COVER

Type	33 Presence	34 % Cover
Wetlands		
Estuarine waters	X	24.4%
Intertidal mud, sand or salt flats	X	15.8%
Coastal lagoons		
Sand dunes and beaches		
Shingle and stony beaches		
Inland deltas		
River and streams	X	About 5%
Riverine floodplains		
Freshwater lakes and pools		
Artificial wetlands	X	48.6%
Ephemeral wetlands		
Saline lakes		
Salt pans		
Salt marshes		
Permanent swamps		
Raised and blanket bogs		
Desert		
Desert dunes		
Gravel and sand plains		
Stone desert		
Oases		
Polar desert		
Rocky areas		
Sea cliffs and rocky shores		
Rock stacks and islands		
Inland cliffs and rocky slopes		
Scree and boulders		
Caves		
Artificial landscapes		
Arable land	X	9.5%
Rice paddies		
Improves pasture land		
Perennial crops, orchards and groves		
Forestry and agro-industrial plantations		
Small settlements, rural gardens	X	About 10%
Urban areas		
Abandoned farmland, disturbed ground	X	About 1%
Introduced (exotic) vegetation	X	About 5%
Unknown		

First level to be used at global level for all IBAs. Second level to be determined regionally. The second level given here applies to Asia only.

BirdLife International IBA DATA FORM



8/21

1 Compiler:

Ms. Carrie K. W. Ma

2 Date:

March 2000

4 Temporary IBA Code:

5 Final IBA Code:

LANDUSE AND % COVER

Type	35 Presence	36 % Cover
Permanent agriculture		
Shifting agriculture		
Fisheries / aquaculture	X	39%
Forestry		
Military / penal colony		
Nature conservation	X	47.6%
Tourism / recreation	X	About 10%
Urban / industrial		
Small settlements	X	About 10%
Watershed management	X	About 50%
Other ¹		
Not Utilized		
Unknown		

1. Specify in notes field.

THREATS

Type	37 Presence	38 Importance
Abandonment / reduction of land management ¹	X	C
Afforestation		
Agricultural intensification ²		
Aquaculture / fisheries		
Competition from introduced animal species		
Construction of dykes / dams		
Deforestation (commercial)		
Disturbance to birds	X	A
Drainage		
Dredging and canalization	X	B
Extraction industry (mining)		
Filling in of wetlands	X	A
Firewood collection		
Forest grazing		
Groundwater abstraction		
Industrial / urban development	X	A
Infrastructure development	X	A
Intensified forest management		
Introduction of exotic plant species	X	C
Natural events ³		
Recreation, tourism	X	C
Selective logging / cutting		
Undergrazing		
Unsustainable exploitation ⁴		
Others ⁵		
<i>Pollution</i>	X	A
<i>Aquaculture intensification</i>	X	U
Unknown		

1. Including undergrazing.
 2. Including irrigation, high fertilizer input, excessive use of chemicals, changes in crop species or cultivation, loss of habitats and overgrazing.
 3. Encompassing drought, erosion, storms etc.
 4. Including hunting, egg collection etc.
 5. Specify in notes field.

BirdLife International IBA DATA FORM



1 Compiler: Ms. Carrie K. W. Ma

2 Date: March 2000

4 Temporary IBA Code:

5 Final IBA Code:

PROTECTED AREAS

39 Code:

41 Political units: Hong Kong Special Administrative Region

42 Full name of site: 1. Mai Po Marshes Wildlife Education Centre and Nature Reserve (米埔沼澤自然保護區)

43 Year: 1984

44 Designation: 1. as a part of the Mai Po and Inner Deep Ramsar Site since 4 September 1995 2. Site of Special Scientific Interest (SSSI) since 15 September 1976

45 IUCN Category:

46 Area (ha): 380

47 Central Coordinates (Lat/Lon): 22 29 N 114 02 E

48 Relationship to IBA: C

49 Overlap (ha): 380

50 Notes: Mai Po Marshes is part of the largest estuarine wetland and the only remaining significant piece of such habitats in Hong Kong. About 70% of the area of the marshes consist of tidal shrimp ponds (gei wai), each on average being 10 hectares in area. The other 30% of the area is mangrove. Since 15 September 1976, Mai Po Marshes was designated a Site of Special Scientific Interest (SSSI), under the Wild Animals Protection Ordinance. Listing of an area as a SSSI did not confer any legal protection but its values would be considered in Government planning. The Mai Po Marshes (Register of SSSI, Planning Department, HKSAR Government 1993) are the only area in Hong Kong where large numbers of duck, shore and marsh birds can regularly been seen, and as such have a very considerable scientific and educational potential. The marshes contain the largest and most important area of dwarf mangrove in Hong Kong. This highly productive community and the related artificial Gei wais provide a rich food source for both resident and migratory birds, as well as nesting habitats for a number of species. Since 1981, the Wild Animals Protection Ordinance Cap. 170, was amended so that all hunting of wild birds became totally prohibited in Hong Kong. World Wide Fund for Nature Hong Kong (WWFHK) initiated its Mai Po Marshes project in 1983. In 1984, WWFHK began active management of Mai Po Marshes Nature Reserve for education and conservation of wildlife. In 1995, the wetland around Mai Po Marshes and Inner Deep Bay (1,500 ha) was formally designated as a Ramsar Site, under the Convention of Wetlands of International Importance. Inner Deep Bay was declared a restricted area in February 1996.

41 Political units: Hong Kong Special Administrative Region

42 Full name of site: 2. Mai Po Village (米埔村)

43 Year: 1979

44 Designation: Site of Special Scientific Interest (SSSI) since 16 February 1976

45 IUCN Category:

46 Area (ha): 3

47 Central Coordinates (Lat/Lon): 22 29 N 114 03 E

48 Relationship to IBA: A

49 Overlap (ha): 0

BirdLife International IBA DATA FORM



1 Compiler: 2 Date:

4 Temporary IBA Code: 5 Final IBA Code:

50 Notes:

41 Political units:

42 Full name of site:

43 Year

44 Designation:

45 IUCN Category:

46 Area (ha):

47 Central Coordinates (Lat/Lon):

48 Relationship to IBA:

49 Overlap (ha):

50 Notes:

41 Political units:

42 Full name of site:

43 Year

44 Designation:

45 IUCN Category:

46 Area (ha):

47 Central Coordinates (Lat/Lon):

48 Relationship to IBA:

49 Overlap (ha):

50 Notes:

BirdLife International IBA DATA FORM



1 Compiler: 2 Date:

4 Temporary IBA Code: 5 Final IBA Code:

41 Political units:

42 Full name of site:

43 Year

44 Designation:

45 IUCN Category:

46 Area (ha):

47 Central Coordinates (Lat/Lon):

48 Relationship to IBA:

49 Overlap (ha):

50 Notes:

41 Political units:

42 Full name of site:

43 Year

44 Designation:

45 IUCN Category:

46 Area (ha):

47 Central Coordinates (Lat/Lon):

48 Relationship to IBA:

49 Overlap (ha):

50 Notes:

[Ed - Note: The Town Planning Ordinance of the Hong Kong Administrative Region provides designation of Site of Special Scientific Interest (SSSI). The purpose of their designation is to ensure that government departments are aware of the scientific importance of such sites, and that due consideration is given to conservation when developments in or near these sites are proposed. Unless covered by statutory zoning plans, the SSSIs are created as an administrative device, without statutory backing.]

BirdLife International IBA DATA FORM



1 Compiler:

2 Date:

4 Temporary IBA Code:

5 Final IBA Code:

51 Person / organization (running campaign):

52 Type of action:

53 Details of campaign:

54 Person / organization (being lobbied):

55 Date action started:

56 Date of last information:

57 Correspondence file:

58 Results of lobbying or campaign:

59 Notes:

1 Compiler:

Ms. Carrie K. W. Ma

2 Date:

March 2000

4 Temporary IBA Code:

5 Final IBA Code:

ADDITIONAL INFORMATION

60 Additional information on birds:

A. Other globally threaten species in Inner Deep Bay area:**Baikal Teal *Anas formosa***

Stable winter visitor, with 1-2 records every year. The high count is 3 birds in 1986 and 1993 (HKBWS 1961-1996).

Bear's Pochard *Aythya baeri*

Usually less than 10 were recorded before the early 1990s, with a high count of 30 birds on 10 January 1987. However, the number has declined in recent years, with only one or two every year (HKBWS 1972-1997). The recent were high count is of 2 individuals in January 1999 (HKBWS 1999).

Relict Gull *Larus relictus*

Vagrant with two records involving 3 birds. 31 December 1987 and 1 January 1988 (HKBWS 1988); and 21 November 1992 to 8 March 1993 (HKBWS 1993).

B. Other regionally important species in Inner Deep Bay area**Chinese Pond Heron *Ardeola bacchus***

During the 1990s, the average peak winter period count was 327. This suggests that Deep Bay might hold 1% of the regional east/southeast Asian wintering population, which is estimated to be 25,000 to one million by Rose and Scott (1997) (Carey and Young 1999).

Little Egret *Egretta garzetta*

During the 1990s, there was an average peak winter count of 1478 in the Deep Bay area. Deep Bay may hold 1% of the regional east/southeast Asian wintering population which is estimated by Rose and Scott (1997) to be 100,000 to one million (Carey and Young 1999).

Eurasian Wigeon *Anas penelope*

With a five-year mean of peak winter counts of 2420 birds in Deep Bay during the period 1993-94 to 1997-98 (Carey and Young 1999), Deep Bay may hold 0.32% of the regional population, estimated by Miyabayashi and Mundkur (1999) to lie in the range 500,000 to 1,000,000.

Northern Pintail *Anas acuta*

The five-year mean of peak winter counts in Deep Bay during the period 1993-94 to 1997-98 is 6562 (Carey and Young 1999). This is possibly 1% of the Eastern / Southeastern Asia wintering population, estimated by Miyabayashi and Mundkur (1999) to lie between 500,000 to 1,000,000.

Common Teal *Anas crecca*

With a five-year mean of peak winter counts of 4005 birds in Deep Bay during the period 1993-94 to 1997-98 (Carey and Young 1999), Deep Bay may holds 0.4% to 0.8% of the Eastern / Southeastern Asia population, estimated by Miyabayashi and Mundkur (1999) to lie in the range 600,000 to 1,000,000.

Eurasian Coot *Fulica atra*

At a mean peak count for the 1990s of 1620 birds, Deep Bay may hold 1% or more of the regional east/southeast Asian wintering population, estimated by Rose and Scott (1997) to lie between 100,000 and over one million (Carey and Young 1999).

Eurasian Curlew *Numenius arquata*

With five-year mean peak winter count of 800 in the Deep Bay area during the period 1992-93 to 1996-97, the area regularly supports a minimum of 0.8% - 8% of the flyway population, estimated by Rose and Scott (1997) to lie in the range 10-100,000. (Carey and Young 1999).

Spotted Redshank *Tringa erythropus*

A conservative estimate of birds utilising the Deep Bay area during a typical year is 3500 birds (Carey and Young 1999). Rose and Scott (1997) estimate that the east/southeast Asian wintering population range is 10-25,000, however, this appears too low and even if the figure is increased by one class to 25-100,000, the area still supports a minimum of 3.5% of the flyway population (Carey and Young 1999).

(continue next page)

1 Compiler:

Ms. Carrie K. W. Ma

2 Date:

March 2000

4 Temporary IBA Code:

5 Final IBA Code:

(continue)

C. Globally threatened species recorded at Sheung Pak Nai

Sheung Pak Lai is part of the Deep Bay areas lying in the outer part of the bay, and is composed mainly of oyster farms, mudflats and mangrove areas. This is an important feeding area for waterbirds, including the globally threatened Black-faced Spoonbill *Platalea minor* and the regionally important Great Cormorant *Phalacrocorax carbo*.

63 individuals were recorded in 29 November 1999 feeding on the mudflat behind oyster farm (Y. T. Yu *pers. obs.*). This is a regular feeding ground of Black-faced Spoonbill and Great Cormorants, over 2000 Great Cormorant were recorded feeding regularly in January 1999 (Y. T. Yu *pers. comm.*).

Other globally threaten species that have been recorded include Imperial Eagle *Aquila heliaca*, Red-billed Starling *Sturnus sinensis* and Black Vulture *Aegypius monachus*.

D. Species recorded in Shenzhen River catchment area:

Long Valley is an agricultural area located at the eastern side of the proposed IBA. More than 210 bird species have recorded there since 1993, nearly half the Hong Kong list. Three of the species are "Vulnerable" and eight are "Near-threatened" as listed in Collar *et.al* (1994). Of the rest, four are regionally important, three have very restricted range in Hong Kong (such as Painted Snipe), three are rapidly declining, and eight have locally significant populations at Long Valley (including several Snipe species).

- (1) Globally threatened species: Vulnerable: Greater Spotted Eagle *Aquila clanga* (see also 23-32)
 Imperial Eagle *Aquila heliaca* (see also 23-32)
 Japanese Yellow Bunting *Emberiza sulphurata* (see also 23-32)
- Near-threatened: Schrenck's Bittern *Ixobrychus eurhythmus*
 Black Vulture *Aegypius monachus*
 Grey-headed Lapwing *Vanellus cinereus*
 Asiatic Dowitcher *Limnodromus semipalmatus*
 Japanese Waxwing *Bombycilla japonica*
 Red-billed Starling *Sturnus sericeus*
 Chestnut-cheeked Starling *Sturnus philippensis*

- (2) Regionally important species with reference to Rose and Scott (1997): Chinese Pond Heron *Ardeola bacchus*
 Little Egret *Egretta garzetta*
 Common Teal *Anas crecca*
 Black-winged Stilt *Himantopus himantopus* (see also 23-32)

E. Other information outside the proposed IBA

Tidal mudflats adjacent to Taipa-Coloane Causeway in Macau: In January 1999 12 Black-faced Spoonbill (*Platalea minor*) and 1 European Spoonbill were at the tidal marsh area adjacent to the Taipa-Coloane Causeway in Macau (Aston 1999 *in litt.* To M. Felley). In addition up to 22 Black-faced Spoonbills were present in Macau during the 1996/97 winter period (Christern Bohmer and Paul Aston *pers. comm.*). It is possible that these involve local movement by Deep Bay birds feeding widely over the Pearl River estuary in response to food availability (Leader 1998).

However, a site visit to the area was made on 12 September 1999. It has been totally encircled, with active reclamation undergoing. It is believed that there will be further construction in the area and the site will eventually be destroyed (C. Ma *pers. obs.*).

1 Compiler:

Ms. Carrie K. W. Ma

2 Date:

March 2000

4 Temporary IBA Code:

5 Final IBA Code:

61 Other important Fauna / Flora:

1. Fishponds

Flora: - Dominant grasses and herbs commonly found on bunds include *Alternanthera sessilis*, *A. philoxeroides*, *Commelina communis* and *Ipomoea aquatica*. Common grasses such as *P. maximum* and common weedy species such as *Lantana camara*, *Mikania mirantha* and *Bidens rubra* are commonly occurred.

Fauna: - **Mammals:**

Ades (1995) listed 13 mammal species that have been recorded from the fishponds, their banks and bunds at the Mai Po Marshes Nature Reserve. The Javan Mongoose *Herpestes javanicus* and Leopard Cat *Felis bengalensis chinensis* have been observed with young, on bunds adjacent to fishponds (Young 1992b). Chinese Otters *Lutra lutra chinensis* have been seen acrossing tracks between fishponds (Fazey 1993). Seven-banded Civet *Viverricula indica* scats are also seen regularly on fishpond bunds (Ades unpublished data) and Ryukyu Mouse *Mus caroli* was first discovered in Hong Kong in 1992 on fishpond bunds adjacent to Mai Po (Chandrasekar-Rao 1995).

- **Amphibians:**

Lau (1995) showed that 7 amphibian species have been recorded from the Deep Bay fishponds within the Ramsar site, which is one-third of the amphibian fauna.

- **Reptiles:**

Lau (1995) indicated 16 reptile species have been recorded in and around fishponds of the Deep Bay area, which is about 20% of the known reptile fauna native to Hong Kong; this includes the SAR important Chinese Soft-shelled Turtle *Pelodiscus sinensis*.

- **Invertebrates:**

A total of 30 Odonata species out of the 103 known from the SAR have been recorded in fishponds (Townland 1993), and 60% of the identified species belong to the superfamily Libelluloidea (K. Wilson *pers. comm.*). Among the invertebrate fauna, Diptera and Hemiptera are also important components of the invertebrate fauna, their population densities reaching a the peak in spring and autumn. Dominant benthic invertebrates include Ostracoda and Nematoda. (Aspinwall & Company 1996b)

2. Gei Wais (tidal shrimp ponds) and reedbeds

Flora: - Local rarities include *Ruppia maritima* which has been recorded in the *gei wai* (ERL 1988) and the marine angiosperm *Halophylla beccarii* is found on the mudflat.
- The stands of reed *Phragmites communis* in Mai Po Nature Reserve are the largest in Hong Kong (46 ha), and one of the largest remaining in Guangdong Province, China (Gao, Y.R. *pers. comm.*).
- Mangrove species including *Kandelia candel*, together with *Avicennia marina*, *Acanthus ilicifolius* and *Aegiceras corniculatum* are well-established in several *gei wai*.

Fauna: - **Mammals:**

In May 1995, a dead Chinese Otter was discovered next to a *gei wai* at Mai Po Nature Reserve (Cha 1995). Chinese Otter spraints have been found near sluice gates of the *gei wai*, and the mammal has been seen swimming in the *gei wai* (Young 1994). Other mammals include Javan Mongoose, Leopard Cat, Seven-banded Civet, Bandicoot Rat *Bandicota indica*, Japanese Pipistrelle Bat *Pipistrellus abramus* and Brown Musk Shrew *Suncus murinus*.

- **Amphibians:**

Lau (unpublished data) recorded 5 species of amphibians at the bunds or water edges of *gei wais* in Deep Bay, including the Chinese Edible Frog *Rana rugulosa* which is protected in China (*Rana tigrina rugulosa*) (Romer 1979a; Karsen *et. al.* 1986)

- **Reptiles:**

Lau (unpublished data) also recorded 13 reptile species in and around *gei wai* in the Deep Bay area, including the Mangrove Water Snake *Enhydryis bennetti*, Oriental Rat Snake *Ptyas mucosus*, Chinese Cobra *Naja naja*, King Corba *Ophiophagus hannah* and Burmese Python *Python molurus*. Also, there are occasional records of Chinese Soft-shelled Turtle (Lau, unpublished data).

- **Fish:**

Lee (1992) recorded a total of 38 fish species from the *gei wais* in Deep Bay during 1985 to 1989. Dominant fish species include the Tilapias *Oreochromis nilotica* and *O. mossambicus* which have the highest density and comprise 90% of the fish community in terms of numbers.

- **Invertebrates:**

The endangered Odonate (damselfly), *Mortonagrion Hirosei*, has been recorded in the Mai Po reedbeds. This is a species specific to reedbeds that at present is otherwise known only from Japan (Reels 1994).

Nearly 400 species of terrestrial invertebrates are found in the Mai Po reedbeds, with at least 4 species probably being previously undescribed (Reels 1994).

- **Butterflies and Moths:**

Mai Po is the type and only known locality for two moth species, *Schrunkia bilineata* (Galsworthy 1997) and *Thalassodes maipoensis* (Galsworthy 1997).

Mai Po also holds a number of moth species which are characteristic of mangrove and reedbed habitats including *Chasmina candida*, which in Hong Kong has only been recorded at the reserve so far (R. Kendrick, *pers. comm.* 1999).

(continue next page)

1 Compiler:

Ms. Carrie K. W. Ma

2 Date:

March 2000

4 Temporary IBA Code:

5 Final IBA Code:

(continue)

3. Mangrove

Flora: - The wetlands around Inner Deep Bay holds some 400 ha of inter-tidal mangroves which is the sixth largest protected area of mangroves in China (Fan 1994). The main species are *Kandelia candel*, *Avicennia marina*, *Aegiceras corniculatum*, *Bruguiera conjugata*, *Excoecaria agallocha* and *Acanthus ilicifolus*

Fauna: - Reptile:

The Mangrove Water Snake *Enhydryis bennetti* is specially adapted to live in the mangrove. This species has a restricted global distribution and is found only along the coast of southern China between Hainan and Fujian Province (Zhao and Adler 1993). Deep Bay is the stronghold for this species within the territory (Romer 1979b, Lau and Melville 1992), and possibly in the region.

The Burmese Python has also been found in mangroves in Deep Bay (A.J.Brandt *pers comm.*); this indicate this species may uses mangrove as a foraging ground or as a resting place.

- Invertebrates:

A literature survey of the marine invertebrate community (excluding insects) at Mai Po was made by Lee (1993). A total of 81 species were recorded, while 13 of which are previously undescribed, including the crustacean species *Parasesarma Maiponensis*.

Dominant gastropod snail species include *Irvadia bombayana* (Peking University 1994). Crustacean species (crab) at the Mai Po Nature Reserve include *Uca vocans*, *U. arcuata* and *U. acuta*.

4. Intertidal Mudflat

Flora: Hodgkiss and Morton (1978) indicated the only higher plant on the open mudflat is the sea-grass *Halophila baccarii* which occurs on the seaward edge of the mangroves.

Fauna: - Birds:

The area regularly support large number of waterfowl in winter (over 68,000 recorded in mid-January 1997) and on migration (up to 20,000 – 30,000 shorebirds).

- Mammals:

The only known mammals to use the mudflats are Chinese Otter and Crab-eating Mongoose whose scats have been found in the habitat (Young *pers. comm.*).

- Reptile:

The only known reptile to inhabit the mudflat within the Ramsar Site is Mangrove Water Snake.

- Fish:

Mudskippers include *Boleophthalmus pectinirostris* and *Scartelaos viridis* dominant on the open mudflat, and the *Periophthalmus cantonensis* limited to areas near to the mangroves.

- Invertebrates:

The Shenzhen River Regulation Project EIA carried out by Peking University in 1994 recorded a total of 77 morphospecies, with the most dominant Nereid polychaete worms and bivalves. The polychaete worms biomass recorded is high when compared to other similar studies on mudflats elsewhere in the world. Peking University (1994) showed that their dominance is closely related to organic pollution. These polychaetes and also bivalves provide an important food source for birds.

In the past, there were extensive oyster beds on the intertidal mudflat (e.g. at Pak Lai) of the Deep Bay area. Two species of oyster were cultured, namely *Crassostrea gigas* and *C. rivularis* (Young and Melville 1993).

6. Freshwater Marshes

Flora: Dominant species include *Phragmites australis*, *Paspalum distichum* and *Eleocharis equisetina*. There are also records of common sedges such as *Cyperus malaccensis* var. *brevifolius*, *C. radiata*, *C. alternifolius* and *C. polystachyos*.

Fauna: - Mammals:

Local rarities include Chinese Otter which have been recorded only at Mai Po and in the Deep Bay area.

- Amphibians:

Freshwater marshes are the most important breeding habitat for amphibians such as the local rarity Chinese Edible Frog.

1 Compiler:

Ms. Carrie K. W. Ma

2 Date:

March 2000

4 Temporary IBA Code:

5 Final IBA Code:

62 Research / Conservation Projects (past, on-going, planned or proposed):

Recent projects at Mai Po and Deep Bay area:

1. Research on wintering Black-faced Spoonbill carried out by World Wide Fund for Nature Hong Kong (WWFHK) under funding from Agriculture, Fisheries and Conservation Department (AFCD) from October 1998 to June 1999 and from October 1999 – June 2000.
2. Bird ringing using the site of Mai Po Nature Reserve at different times.
3. Since December 1997, “Ramsar Wetland Conservation Programme” has been carried out by The Conservancy Association in collaboration with the Hong Kong Bird Watching Society, under the subvention of Agriculture, Fisheries and Conservation Department (AFCD), HKSAR Government. This programme of monitoring of wetland dependant species involves monthly censusing of waterfowl, regular counts of shorebirds on migration and surveys of egret colonies during the breeding season.
4. Environmental monitoring programme named “Regulation of Shenzhen River, Stage II, Phase I work, Monitoring Off-site Compensation Works – Mai Po” carried out by WWFHK, under Drainage Services Department, HKSAR Government, from August 1997 – July 1999.
5. Hyder Consulting Ltd. & CES (Asia) Ltd. (1998) [Deep Bay Water Quality Regional Control Strategy Study. Agreement No. CE17-95] Hong Kong: Hyder Consulting.
6. Aspinwall Clouston & Wetlands International – Asia Pacific. (1997) [Study on the Ecological Value of Fish Ponds in Deep Bay area. Agreement No. CE 72/94] Hong Kong: Aspinwall Clouston.

Initial list of research project by university students carried out around Mai Po and Inner Deep Bay Ramsar Site from 1957 to 1999:**1999**

Cheung Y. M. (1999) The socio-economics of fish pond farming and implications for future land use in and around the Mai Po and Inner Deep Bay Ramsar Site. Hong Kong: University of Hong Kong. (M.Sc. thesis).

Lui, T.H. (1999) Macrobenthic faunal assemblages of a traditional tidal shrimp pond at Mai Po Marshes Nature Reserve, Hong Kong. Hong Kong. University of Hong Kong (M.Phil. thesis)

1998

Li, H. (1998) Spatial and temporal variations in the succession patterns of periphytic diatom communities in tidal shrimp ponds (*gei wai*) at the Mai Po Marshes Nature Reserve. Hong Kong. City University of Hong Kong. (M.Phil. thesis)

Yu, Y. T. (1998) Migration and stopover ecology of Oriental Reed Warbler *Acrocephalus orientalis* at Mai Po Marshes Nature Reserve, Hong Kong. Hong Kong. University of Hong Kong. (Final year B.Sc. project)

1997

Lam, V.S.K. (1997) Survey on the effectiveness of guided visit program of Mai Po Marshes. Hong Kong. City University of Hong Kong. (Final year B.Sc. project)

Lau, S.S.S. (1997) Pollution status and assimilative potential of wetlands at the Mai Po Marshes Nature Reserve, Hong Kong. Hong Kong. City University of Hong Kong. (M.Phil. thesis)

Lee, W. H. (1997) Ecological value of reedbeds (*Phragmites australis*) at Mai Po Marshes Nature Reserve. Hong Kong: City University of Hong Kong (M.Phil. thesis).

Leung, Y.H. (1997) Water quality of Mai Po Marshes. Hong Kong. University of Hong Kong. (Final year B.Sc. project)

Li, P.S. (1997) Water quality of Mai Po Marshes. Hong Kong. University of Hong Kong. (Final year B.Sc. project.)

McChesney, S. (1997) The benthic invertebrate community of the intertidal mudflat at the Mai Po Marshes Nature Reserve, with special reference to resource for migrant shorebirds. Hong Kong: The University of Hong Kong (M.Phil. thesis).

Ma, K.W. 1997. Foraging behaviour, patch use and use of drain down *gei wai* by Little Egret *Egretta garzetta* at Mai Po, Hong Kong. Hong Kong. University of Hong Kong. (Final year B.Sc. project.)

1996

Chan, C.W., Chan, K.F., Lee, W.L., Wong, S.W. and Wong, Y.K. (1996) The benthic community in Mai Po marshes (*gei wai* 20-24). Hong Kong. Hong Kong Technical College (Chai Wan). (Final year project.)

Chan, V. and Dawes, V. (1996) Survey on the guided visit program of Mai Po Marshes – July to August 1996. Hong Kong. WWF Hong Kong. {Unpublished report}

Cheung, W.L., Lee, K.C., Sia, S.F. and Tong, S.T. (1996) Determination of the heavy metal concentration in *Metapenaeus ensis*, *Eriocheir chinensis* and sediment from four Mai Po *gei wai* (8, 11, 16/17, 19). Hong Kong. Hong Kong Technical College (Chai Wan). (Final year project.)

Fung, C.N. (1996) Sediment characteristics on the Mai Po mudflats. Hong Kong. City University of Hong Kong. (Final year B.Sc. project)

Leung, H.W. (1996) The water quality and soil characteristic of four fish ponds in Mai Po. Hong Kong. City University of Hong Kong. (Final year B.Sc. project)

Lui, T.H. (1996) Effects of nitrogen enrichment on the mangrove *Kandelia candel* (L.) Druce. Hong Kong. University of Hong Kong. (Final year B.Sc. project)

Sadaba, R.B. (1996) An ecological study of fungi associated with the mangrove associate *Acanthus ilicifolius* L. in Mai Po, Hong Kong. Hong Kong. University of Hong Kong. (Ph.D. thesis)

Wong, W.L. (1996) The physical and chemical characteristics of the sediment and water in Mai Po *gei wai*. Hong Kong. City University of Hong Kong. (Final year B.Sc. project)

(continue next page)

1 Compiler:

Ms. Carrie K. W. Ma

2 Date:

March 2000

4 Temporary IBA Code:

5 Final IBA Code:

(continue)

1995

Kwok, P.W. (1995) The ecology of two sesarmino carbs, *Perisesarma bidens* (de Haan) and *Parasesarma plicata* (Latreille) at the Mai Po Marshes Nature Reserve. Hong Kong. Hong Kong. University of Hong Kong. (Ph.D. thesis)

Lee W.H. (1995) Distribution and structure of reedbeds community in *gei wai* 4, 6, 8 and 10 in Mai Po. Hong Kong. City University of Hong Kong. (Final year B.Sc. project)

Lok, Y.L. (1995) The effect of herbicide on *Phragmites australis* and the associated fauna in a *gei wai* of Mai po Nature Reserve. Hong Kong. City Polytechnic of Hong Kong. (Final year B.Sc. project.)

Picton, E.L. (1995) The stratigraphic record of heavy metals preserved in the Mai Po Marshes, Hong Kong. United Kingdom. University of Leeds. (B.Sc. thesis)

Tsang, C.L. (1995) The distribution and structure of *Phragmites communis* in *gei wai* 4, 6, 8 and 10 in Mai Po. Hong Kong. City University of Hong Kong. (Final year B.Sc. project)

1994

Anderson, C. (1994) The production ecology of the mangrove at the Mai Po Marshes Nature Reserve. Hong Kong. University of Hong Kong. (Ph.D. thesis)

Chan, C.K. (1994) Effect of nutrient enrichment on macroinvertebrates in a Mai Po *gei wai*. Hong Kong. City Polytechnic of Hong Kong. (Final year B.Sc. project)

Hui, S.H. (1994) Species composition and abundance of benthic macroinvertebrates in Mai Po *gei wai*. Hong Kong. City Polytechnic of Hong Kong. (Final year B.Sc. project)

Hui, S.H. (1994) The distribution of the invertebrates in three different regions of *gei wai* 3 in different seasons and the factors affecting their abundance. Hong Kong. City Polytechnic of Hong Kong. (Final year B.Sc. project)

Kwok, Y.W. (1994) Study of benthic invertebrates in Mai Po *gei wai*. Hong Kong. City Polytechnic of Hong Kong. (Final year B.Sc. project)

Leung, C.Y. (1994) Spatial and temporal variations in species composition and abundance of zooplankton in Mai Po *gei wai*. Hong Kong. City Polytechnic of Hong Kong. (Final year B.Sc. project)

Reels, G.T. (1994) Management strategies for the reed *Phragmites australis* (Cav.) Steud. At Mai Po Marshes Nature Reserve, Hong Kong, with observation on the associated insect fauna. Hong Kong: The University of Hong Kong (M.Phil. thesis).

Sun, W.N. (1994) Study of benthic invertebrates in Mai Po *gei wai*. Hong Kong. City Polytechnic of Hong Kong. (Final year B.Sc. project)

Wong, K.W. (1994) Species composition and abundance of benthic macroinvertebrates in Mai Po *gei wai*. Hong Kong. City Polytechnic of Hong Kong. (Final year B.Sc. project)

Yung, H.T. (1994) Study of benthic invertebrates in a Mai Po *gei wai*. Hong Kong. City Polytechnic of Hong Kong. (Final year B.Sc. project)

1993

Keung, M.K. (1993) A study on the behaviours of Cormorants in Mai Po. Hong Kong. City Polytechnic of Hong Kong. (Final year B.Sc. project)

Kwok, K. (1993) Effect of water level fluctuation of *gei wai* on distribution of waders in the Mai Po Marshes. Hong Kong. City Polytechnic of Hong Kong. (Final year B.Sc. project)

Ma, K.K. (1993) A study on the behaviours of Cormorants in Mai Po. Hong Kong. City Polytechnic of Hong Kong. (Final year B.Sc. project)

Pearson, S. (1993) A comparison of the use of habitats for feeding by Chinese pond herons and Little egrets in 1989, 1990 and 1993, with special emphasis on commercial fishponds in Hong Kong. Extended essay – Environmental Systems. Hong Kong. Li Po Chuen College.

Tsang, S.C. (1993) To monitor the heavy metal content in the polychaeta *Dendronereis pinnaticirrus* in Mai Po mudflat. Hong Kong. City Polytechnic of Hong Kong. (Final year B.Sc. project)

Wong, Y.M. (1993) Comparison of mudflat invertebrate densities in different parts of the Deep Bay mudflats. Hong Kong. City Polytechnic of Hong Kong. (Final year B.Sc. project)

Young, L. (1993) The ecology of Hong Kong Ardeidae (Aves) with special reference to the Chinese Pond Heron at the Mai Po Marshes Nature Reserve. Hong Kong. Hong Kong. University of Hong Kong. (Ph.D. thesis)

1992

Chan F.M. (1992) Heavy metals in the tissues of *Oreochromis mossambicus* and *Coutierella tonkinensis* at Mai po. Hong Kong. Baptist College. (Final year B.Sc. project)

Chiu Kin-tung. (1992) An assessment of the water pollution status of the Mai Po Marshes Nature Reserve, Hong Kong. Hong Kong. University of Hong Kong. (Ph.D. thesis)

1991

Britton, A.R.C. (1991) Feeding behaviour in the Little Egret. United Kingdom. University of Leeds. (Final year B.Sc. project)

Choi, K.C. (1991) The ecology of Fiddler crabs (Crustacea: Ocypodidae) at the Mai Po Marshes Nature Reserve, Hong Kong. Hong Kong. University of Hong Kong. (M.Phil. thesis)

Leung, S.F. (1991) The population dynamic of *Metapenaeus ensis* (Penaeidae) and *Exopalaemon styliferus* (Palaemonidae) in a traditional tidal shrimp pond at the Mai Po Marshes Nature Reserve, Hong Kong. Hong Kong. University of Hong Kong. (Ph.D. thesis)

1990

Wong, F.K.O. (1990) Habitat utilization by Little Egret. Hong Kong. Chinese University of Hong Kong. (final year B.Sc. project)

1989

Anderson, C. (1989) The effects of sexual selection of feeding ecology of *Uca arcuata* (Decapoda, Brachyura, Ocypodidae), a fiddler crab of Hong Kong mangrove system. United Kingdom. University of Southampton. (Final year B.Sc. project)

Chan, K. Y. (1989) The ecology of mudskippers (Pices: Periophthalmidae) at the Mai Po Marshes Nature Reserve, Hong Kong. Hong Kong: The University of Hong Kong (unpublished thesis).

(continue next page)

1 Compiler:

Ms. Carrie K. W. Ma

2 Date:

March 2000

4 Temporary IBA Code:

5 Final IBA Code:

(continue)

1988

Lee, S.Y. (1988) The ecology of a traditional tidal shrimp pong in Hong Kong, the production and fate of macrodetritus and implications for management. Hong Kong. University of Hong Kong, (Ph.D. thesis)

1986

Leung, K.W. (1986) Landuse and landuse changes in the Deep Bay area. Hong Kong. University of Hong Kong. (B.A. thesis)

Pong, M.W. (1986) The marketing of oysters and *gei wai* shrimps in Deep Bay. Hong Kong. University of Hong Kong. (B.A. thesis)

Wong, C.M. (1986) Shrimp farming in Deep Bay – The evolution and present situation of a traditional industry. Hong Kong. University of Hong Kong. (B.A. thesis)

1970

Chan, S.Y. (1970) The changing landuse pattern in Tin Shui Wai – and example of reclamation of swamps and marshes for agricultural purpose in the New Territories. Hong Kong. University of Hong Kong. (B.A. thesis)

1957

Poon, S.C. (1957) Land utilization of the marshes north of Tung Tau Tsuen. Hong Kong. University of Hong Kong. (B.A. thesis)

(Ed - It should be noted, however, that information on the ecology and biodiversity of the potential IBA is far from complete: in particular, research have been carried out by academic institutions, the majority of these studies are carried out within in the area of Mai Po Nature Reserve and are not inter-related at a broader scale. Other areas outside the reserve and Ramsar site are not documented enough in terms of ecological characteristic and functions. – See 61)

63 Habitats / Land Use / Threats:

1. Developmental pressure and habitat destruction (urbanization of the surrounding agriculture and fish culture sites) around inner Deep Bay Area are important threats.
2. The filling of fishponds for residential and other developments continued between 1985 and 1994, when the coverage dropped from over 2000 ha to 1500 ha, a 25% increase over 10 years (Aspinwall Clouston & Wetlands International – Asia Pacific 1997).
3. Flood control and drainage channel construction project may alter drainage patterns, e.g. drainage channel construction at San Tin may cause the loss of wetland habitats and disturbance to birds.
4. Water pollution by effluent discharges such as human sewage, heavy metals, agricultural and industrial pollutants are also an important threat, especially in the Deep Bay area where there is severe eutrophication caused by various pollutants from both Hong Kong and mainland China.
5. Disturbance caused by activities of illegal cross-border muskipper collectors on the mudflat of Inner Deep Bay. In addition, illegal netting, trapping and shooting of birds during spring and autumn migration and throughout the winter, mainly by people from Mainland China occurs. Sporadic hunting led to the shooting of a single White Spoonbill in 1996, which, if unchecked may result in Black-faced Spoonbill casualties.
6. Various developments have caused a decline in the existing agricultural area and have influenced species dependent on the diversity of microhabitats. In plans published by the Hong Kong SAR Government in connection with the Planning and Development Study on North East New Territories, it is planned to construct a highway and railway through Long Valley which will fragmented this last remaining sizable piece of intact freshwater wetland in the Shenzhen River catchment.

64 Lobbying or campaigning for legislation:

Hong Kong Bird Watching Society - since 1974
World Wide Fund for Nature Hong Kong - since 1981

1 Compiler:

Ms. Carrie K. W. Ma

2 Date:

March 2000

4 Temporary IBA Code:

5 Final IBA Code:

65 KEY REFERENCES

Selected bibliography for the wetlands in and around the Mai Po and Inner Deep Bay Ramsar Site

(Note: see also 62.)

- Ades, G. (1995). [Porcupine!] No. 13. Newsletter of the Department of Ecology & Biodiversity. Hong Kong: University of Hong Kong.
- Aspinwall & Company (1996b). [Study on the Ecological Value of Fish Ponds in the Deep Bay Area – Technical Paper No. 2]. Hong Kong: Aspinwall & Company (Unpublished report to Planning Department of Hong Kong SAR Government)
- Aspinwall Clouston & Wetlands International – Asia Pacific. (1997) [Development of a comprehensive conservation strategy and a management plan in relation to the listing of Mai Po and Inner Deep Bay as a Wetland of International Importance under the Ramsar Convention. Final Report: Part A Summary of Study. Agreement No. CE 47/95.]. Hong Kong: Aspinwall Clouston.
- Aspinwall Clouston & Wetlands International – Asia Pacific. (1997) [Development of a comprehensive conservation strategy and a management plan in relation to the listing of Mai Po and Inner Deep Bay as a Wetland of International Importance under the Ramsar Convention. Final Report: Part B Management Plan. Agreement No. CE 47/95.]. Hong Kong: Aspinwall Clouston.
- Aspinwall Clouston & Wetlands International – Asia Pacific. (1997) [Study on the Ecological Value of Fish Ponds in Deep Bay area. Agreement No. CE 72/94.]. Hong Kong: Aspinwall Clouston.
- Carey, G.J. and L. Young. (1999) [The importance to waterfowl of the Mai Po Marshes and Inner Deep Bay Ramsar Site]. *Hong Kong Bird Report 1997*. 141-149. Hong Kong: Hong Kong Bird Watching Society.
- Cha, D. (1995) [Porcupine!] No. 13. Newsletter of the Department of Ecology & Biodiversity. Hong Kong: University of Hong Kong.
- Cha, M. W., L. Young, and Wong K. M. (1997) [The fate of traditional extensive (*gei wai*) shrimp farming at the Mai Po Marshes Nature Reserve, Hong Kong]. *Hydrobiologica*. 352: 295-303.
- Cha, M. W. and L. Young. (1990) [Food of the Spoon-billed Sandpiper in Hong Kong]. *Hong Kong Bird Report 1996*. Hong Kong: Hong Kong Bird Watching Society.
- Chan X. (1995) [Scientific status and value of mangrove forest in Futian, Shenzhen]. *China's Biosphere Reserves 1995*. 1:16-18.
- Chandrasekar-Rao, A. (1995). Distribution and ecology of Hong Kong small mammals, with special reference to seasonality. Hong Kong: University of Hong Kong. (M.Phil. thesis).
- Chu, W.H. (1994). [An evaluation of the ecological importance of fish ponds in the inner Deep Bay wetland system]. Hong Kong: World Wildlife Fund for Nature.
- Collar, N.J., Crosby, M.J. and Stattersfield, A.J. (1994) [Birds to Watch 2: The World List of Threatened birds]. United Kingdom: BirdLife International.
- Dahmer, T. and Felley, M. (1998) [Black-faced Spoonbill (*Platalea minor*) census, January 1998] (Unpublished. MS.)
- ERL (Asia) Ltd. (1988) [Deep Bay Integrated Environmental Management. Volume 1 & 2]. Hong Kong: Hong Kong: ERL (Asia) Hong Kong.
- Fazey, I. (1983). [Porcupine!] No. 5. Newsletter of the Department of Ecology & Biodiversity. Hong Kong: University of Hong Kong.
- Galsworthy, A.C. (1997). [New and revised species of macrolepidoptera from Hong Kong]. *Memoirs of the Hong Kong Natural History Society*. 21:127-150.
- HKBWS. (1958-1997). *Hong Kong Bird Report*. 1958-1997. Hong Kong: Hong Kong Bird Watching Society.
- HKBWS. (1998). [Waterfowl Monitoring in the Mai Po and Inner Deep Bay Ramsar Site. Winter Waterfowl Count Report 1997-1998]. Hong Kong: Hong Kong Bird Watching Society.
- HKBWS. (1999). [Waterfowl Monitoring in the Mai Po and Inner Deep Bay Ramsar Site. Winter Waterfowl Count Report 1998-1999]. Hong Kong: Hong Kong Bird Watching Society.
- HKBWS. (1999) [Bulletin: summer 1999]. Hong Kong: Hong Kong Bird Watching Society.
- Hyder Consulting Ltd. and CES (Asia) Ltd. (1998). [Deep Bay Water Quality Regional Control Strategy Study. Agreement No. CE17-95.]. Hong Kong: Hyder Consulting.
- Irving, R. T. A. (1992) Landuse and landuse change in the reclaimed coastal areas of Deep Bay. In: Sinn, E., ed. [Between east and west]. Hong Kong: The University of Hong Kong.
- Irving, R. and Morton, B. (1988) [A Geography of the Mai Po Marshes]. Hong Kong: World Wide Fund for Nature Hong Kong.
- Karsen, S.J., Lau, M.W. and Bogadek, A., (1986). [Hong Kong Amphibians & Reptiles]. pp. 136. Hong Kong: Urban Council.
- Lau and Melville (1992). [Notes on the feeding of *Enhydryis bennetti* (Gray) (Reptilia, Squamata, Colubridae) in Hong Kong]. *Memoirs of the Hong Kong Natural History Society* 19:117-118. Hong Kong
- Leader, P. J. (1998) [The winter status and conservation of Styan's Grasshopper Warbler]. *Hong Kong Bird Report 1996*. pp. 158 – 161. Hong Kong: Hong Kong Bird Watching Society.
- Leader, P. J. (1998) [Preliminary observations on the winter ecology of Black-faced Spoonbill in Hong Kong]. *Hong Kong Bird Report 1996*. pp.143 – 157. Hong Kong: Hong Kong Bird Watching Society.
- Lee, S. Y. (1992) [The management of traditional ponds for aquaculture and wildlife conservation in southeast Asia: problems and prospects]. *Biological Conservation*. 163: 113-118.
- Lee, S. Y. (1993) Invertebrate species new to science recorded from the Mai Po Marshes, Hong Kong. pp. 199-210. in: Morton, B.S., ed. [The Marine Biology of the South China Sea] Vol. 1. Hong Kong: Hong Kong University Press.
- Lee, S.Y., ed. (1999). [The mangrove ecosystem of Deep Bay and the Mai Po Marshes, Hong Kong]. Hong Kong: Hong Kong University Press.
- Melville, D. S. (1989a). Wintering waterfowl in Deep Bay, Hong Kong pp 180-187. In [Proceedings of a Conference on Wetlands and Waterfowl Conservation in Asia. Malacca, Malaysia, 23-28. February 1987] Asian Wetland Bureau/IWRB, Kuala Lumpur.
- Melville, D. S. (1989c). Hong Kong. pp. 283-294. In: Scott, D. A., ed. [A Directory of Asian wetlands]. IUCN, Gland.

(continue on next page)

BirdLife International IBA DATA FORM



21 / 21

1 Compiler:

Ms. Carrie K. W. Ma

2 Date:

March 2000

4 Temporary IBA Code:

5 Final IBA Code:

(continue)

- Melville, D.S. (1991b). Potential impacts of development on waterfowl using the Internationally important Inner Deep Bay wetland, Hong Kong. pp. 869-833. In: Boxall, J., ed. [Polmet' 91: Pollution in the metropolitan and urban environment]. Hong Kong: Hong Kong Institution of Engineers.
- Melville, D. S. & Morton, B. (1983) [Mai Po Marshes] Hong Kong: World Wildlife Fund Hong Kong.
- Melville, D. S., Lee, S. Y. and Cheng, W. W. (1989). Some aspects of the management of the Mai Po Marshes, Deep Bay, Hong Kong. in [Proceedings of a Conference on Wetlands and Waterfowl Conservation in Asia. Malacca, Malaysia, 23-28. February 1987] Asian Wetland Bureau/IWRB, Kuala Lumpur.
- Melville, D. S., McChesney, S., Anderson, C. and Leader, P. J.. (1997). Predicted impacts of the Shenzhen River regulation project on waterfowl in Deep Bay, Hong Kong. pp. 86-92. in Goss-Custard, J. D., Rufino, R., and Luis, A., eds. [Effects of habitat loss and change on waterbirds. Institute of Ecology] London, U. K.: The Stationery Office.
- Miyabayashi Y. and Mundkur T. (1999). [Atlas of Key Sites for Anatidae in the East Asian Flyway]. Tokyo and Kuala Lumpur: Wetlands International.
- Peking University. (1994) [Environmental impact assessment study on Shenzhen River Regulation Project. Stage One EIA]. Peking, China: Peking University.
- Romer, J.D. (1979a). [Annotated checklist with keys to the amphibians of Hong Kong]. *Memoirs of the Hong Kong Natural History Society*. 15: 1-14.
- Rose, P. M. and Scott, D. A. (1997) [Waterfowl Population Estimates] Second edition. Wetlands International Publication 44. Wageningen.
- Townland (1993). [Supplementary Planning Statement: Pak Hok Chau, NWNT]. Hong Kong: Townland Consultants Ltd.
- Waring, P., Thomas, R. C. and Li, K. H. K. (1997). [Lepidoptera in Hong Kong, April 1993]. *British Journal of Entomology and Natural History*. 10: 77-100.
- WWFHK. (1999). [Conservation Management of the Critically Endangered Black-faced Spoonbill *Platalea minor* in the Mai Po and Inner Deep Bay Ramsar Site. Field Studies Winter 1998-99]. Hong Kong: Agriculture, Fisheries and Conservation Department, HKSAR Government.
- Young, L. and Melville, D. S. (1993) Conservation of the Deep Bay environment. pp. 211-231. In: Morton, B.S., ed. [The Marine Biology of the South China Sea] Volume 1. Hong Kong: Hong Kong University Press
- Young, L. (1998). [The importance to ardeids of the Deep Bay fish ponds, Hong Kong] *Biological Conservation*. 84: 293-300.
- Young, L. (1992b). [Porcupine!] No. 2. Newsletter of the Department of Ecology & Biodiversity. Hong Kong: University of Hong Kong.
- Young, L. (1992b). [Porcupine!] No. 2. Newsletter of the Department of Ecology & Biodiversity. Hong Kong: University of Hong Kong.
- Young, L. (1994). [Porcupine!] No. 11. Newsletter of the Department of Ecology & Biodiversity. Hong Kong: University of Hong Kong.
- Young, L. (1994). Conservation activities at the Mai Po Marshes Wildlife Education Centre and Nature Reserve, Hong Kong. pp. 166-175. in: Higuchi, H. and Minton, J., eds. [The future of Cranes and Wetlands]. Tokyo, Japan: Wild Bird Society of Japan.
- Young, L. (1999). [Mai Po Management Plan, 1999-2003]. Hong Kong: World Wide Fund for Nature Hong Kong.
- Zhao, E.M. and Adler, K. (1993) [Herpetology of China]. *Soc. Study Amphib. Reptiles*. Oxford (Ohio).