

Factsheet 5

Mangrove and Mudflat Habitats

Introduction

The core zone of the Mai Po Inner Deep Bay Ramsar Site contains Hong Kong's largest mangrove strand and intertidal mudflats. The purpose of the Core Zone is to provide an undisturbed, largely natural habitat to support a diversity of living organisms especially migratory waterbirds. Maintenance of natural processes has the highest priority and access is generally limited to essential management, monitoring and research.

What is a mangrove?

Mangroves are essentially a tropical plant, which commonly occurs in the muddy coastal and swampy areas throughout the tropical and subtropical regions of the world. They are among the world's most productive of ecosystems. There are more than fifty species of mangrove worldwide but only eight can be found in Hong Kong as its climate is not wholly favourable to the growth of mangroves (Hong Kong lies at the northern limit of where mangroves normally grow). Deep Bay is one of the best places for mangroves to grow in Hong Kong since it is located at the southeast mouth of the Pearl River. The sheltered bay receives a large amount of silt from the several rivers that drain into the bay. Of the eight mangrove species that have been reported locally, **six of them** can be found in the Bay.

There are 44 mangrove strands in Hong Kong¹, in which Deep Bay's is the largest, and is the sixth largest stand of mangroves in Southern China. Unlike terrestrial plants, mangroves grow in the muddy intertidal zones along the coast. Therefore, they have developed **adaptations** morphologically, behaviourally and physiologically, so as to live in an area with an unstable substratum, anaerobic soil, and high salinity.



Mangrove forest in Tsim Bei Tsui.

Matthew Chong/WWF Hong Kong

Role of mangroves in the ecosystem

Mangroves are a rich and diverse resource that supports wetland biodiversity and they are also valuable in the protection of coastal environments².

1. **Support wildlife by providing food and shelter**

Mangroves, as crucial producers, are important suppliers of numerous nutrients and oxygen into the ecosystem, so they form a robust foundation for the whole food web making them vital for other plants and animals.

Mangrove forests provide valuable resources for certain bird species, especially **waterbirds** such as herons and egrets, as they feed on the aquatic animals such as fish, shrimps and crabs, which feed on of mangrove leaves.

The tree trunk, leaves and root surface of mangroves provide safe and secure habitats for many organisms. For example, **mud snails** like to attach onto the surface of a mangrove tree trunk. Sessile organisms, including **oysters and barnacles**, prefer to live on mangrove tree trunks and roots.

2. *Maintain a natural ecological balance*

Mangroves serve as a link between marine and terrestrial ecosystems. These communities are clearly important to the stability and maintenance of various adjoining ecosystems. Each hectare of mangrove forest can support 12 tonnes of biomass per year, including **animals** such as insects, reptiles, amphibians, birds, invertebrates and other microorganisms. The mangrove community in the Deep Bay area is an important fish nursery and spawning area for Hong Kong.

There is growing evidence that if the mangrove communities in the Ramsar site are disturbed, or destroyed, then there would be much less habitat or food to support the organisms in and around Deep Bay.

Mangroves also help to stabilise shorelines in coastal streams and estuaries, especially during storms or typhoons by protecting them against tidal wave action. In addition, mangroves can act as a natural water treatment plant by using their roots to take up inorganic substances.

The economic importance of mangroves

Since mangroves provide a nursery ground for many aquacultural products such as shrimp, fish and crabs, they have been an invaluable resource for **local fishing communities** for many years.

Intertidal mudflats

Every year, Deep Bay receives many tonnes of sediment from the Pearl River and from other surrounding rivers. This sediment settles down and has helped create the large intertidal mudflats in Inner Deep Bay. This provides a stable 'platform' for mangroves to grow on. The word 'intertidal' means 'between the high and low tides'; this simply indicates that the mudflat is periodically submerged under seawater during a high tide and is exposed to air during a low tide. The wide open mudflats and rich benthic food source is an important habitat for many migratory shorebirds.



Mudflat in Tsim Bei Tsui

Matthew Chang/WWF Hong Kong

Important feeding grounds

The intertidal mudflats together with other Inner Deep Bay wetlands are probably the most important feeding and roosting site that support up to 65,000 migratory waterbirds in winter³ and another 20,000 to 30,000 migratory shorebirds during the spring and autumn passages⁴.

The majority of **waterbirds** are waterfowl species like egrets, cormorants and gulls. Among them, are endangered species like the Dalmatian Pelican, Saunders' Gull, Spotted Greenshank and Spoon-billed Sandpiper³.

Due to the organic matter derived from Deep Bay water as well as the mangrove forest adjacent to the mudflat, the nutrient (includes carbon, phosphorus and nitrogen) content of the mudflats is very high. In addition to birds, the mudflats also support a diverse group of organisms such



as **crabs, mudskippers, shrimps, snails, worms** and **bivalves**. It is reported that over 80 species of benthic invertebrates have been recorded on the mudflats⁴. These organisms are an important source of food for most birds.

Threats to the mangroves and mudflats in the Mai Po and Inner Deep Bay Ramsar Site

Although the intertidal mudflats and mangroves are of high ecological value, they face serious long-term threats from development pressures and pollution in and around **Deep Bay**.

1. *Agriculture, Fisheries and Conservation Department websites on Conservation* (Access in May 2002): http://www.afcd.gov.hk/con_new/homepage.htm
2. *Mai Po Secondary Teachers' Pack* (1997) World Wide Fund For Nature Hong Kong, Hong Kong
3. Carey G.J. et al. (2001) Winter Waterbird Counts in Hong Kong. *The Avifauna of Hong Kong*. Hong Kong Bird Watching Society, Hong Kong. pp. 90- 100
4. Young, L (In print.) Chapter 7 Threats to the Deep Bay Wetlands. *HSBC Wetland Management Training Manual*, World Wide Fund For Nature Hong Kong, Hong Kong.
5. Fung, C. N (1996) *The Sediment Characteristics in Mai Po mudflats*. BSc Thesis, City University of Hong Kong, Hong Kong.