

# 基于自然的 解决方案

## 深圳湾红树林湿地 修复案例

### A Case of Nature-based Solutions Shenzhen Bay Mangrove Wetlands Restoration



#### 修复成效 Restoration Results



生态环境退化与生物多样性丧失  
Environmental degradation and biodiversity loss



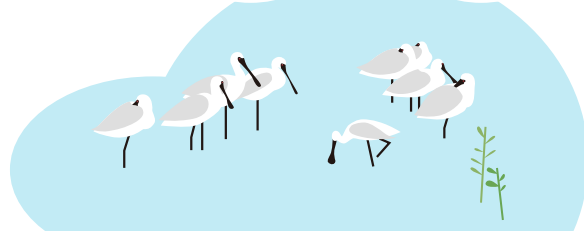
气候变化减缓和适应  
Climate change mitigation and adaptation



防灾减灾  
Disaster risk reduction

#### 关键经验 Key points

- 生态系统整体考虑  
Ecosystem integrity
- 适应性管理  
Adaptive management
- 多方合作  
Multi-cooperation



#### 加强深港合作 Strengthening cooperation between Shenzhen and Hong Kong

深港两地在深圳湾滨海红树林湿地保护修复方面开展了一系列工作。广东内伶仃福田国家级自然保护区管理局、红树林基金会、深圳观鸟协会与香港渔农署、香港米埔保护区、香港观鸟会之间建立了长期稳定的合作关系。

Shenzhen and Hong Kong have carried out a series of work in the conservation and restoration of coastal mangrove wetlands in Shenzhen Bay. Long-term and stable cooperative relations have been established between Guangdong Neilingding Futian National Nature Reserve Administration Bureau, MCF, Shenzhen Bird Watching Association, Hong Kong Agriculture, Fisheries and Conservation Department, Hong Kong Mai Po Nature Reserve, and Hong Kong Bird Watching Association.



通过合作交流，学习、借鉴香港在鱼塘管理、湿地教育等方面先进经验，进一步开拓了思路和视野。每年联合举行深港滨海湿地保育论坛，两地政府还联合启动了治理深圳河工程，先后完成了河道清淤、堤防巩固、排污口整治、水面保洁等一系列工程。

Through cooperation and exchanges, the Shenzhen side learned from Hong Kong's advanced experience in fishpond management and CEPA, which expanded their visions and horizons. The Shenzhen-Hong Kong Coastal Wetland Conservation Forum is jointly held every year. Shenzhen and Hong Kong governments also jointly launched the Shenzhen River conservation project and completed a series of restorations such as river dredging, embankment reinforcement, sewage outlet repairment, and water surface cleaning.

#### 开展湿地教育 Carrying out CEPA Programme

红树林基金会 (MCF) 在深圳湾场域开展的湿地教育活动，将环境保护知识和保护区、公园场域相结合，推动滨海湿地保护的意识提高，发展滨海湿地保护的支持者群。

The MCF CEPA Programme base the conservation knowledge in the protected areas and parks in the Shenzhen Bay area. They aim to promote awareness for coastal wetland conservation and to gather a group of supporters.



已举办湿地教育活动  
1000+ 场次  
Number of CEPA Programme activities conducted: 1000+

直接服务  
中小學生等公众  
20万+ 人次  
Number of participants in activities: 200,000+

#### 防治病虫害和外来入侵物种 Managing pests and invasive species

在红树林群落与基围鱼塘之间的过渡地带，恢复适宜红树林害虫天敌栖息的稀疏灌木丛和低矮草本植物，恢复天敌昆虫种类和种群数量。

In the transition zone between the mangrove and the fish pond, sparse bushes and low herbaceous plants were restored. They serve as suitable habitats that support the population of mangrove pests' natural enemies.



斑点广翅蜡蝉  
*Ricania guttata* (Walker)



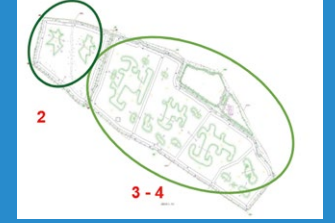
定期清除外来入侵物种  
Managing invasive species regularly

#### 修复鱼塘生境，营造鸟类高潮位栖息地 Redesigning fish ponds for bird use, creating high-tide habitats for waterbird



2号鱼塘堆建两个小岛，形成5公顷鸕鹚类水鸟高潮位栖息地。

Two islands were built in the No.2 fish pond, forming 5 hectares of high-tide habitats for plover waterbirds.



3-4号鱼塘连在一起，形成17公顷高潮位水鸟栖息地。

No. 3-4 fish ponds were connected together, forming 17 hectares of high-tide habitats for waterbird.



湿地面积增加24%。  
The wetland area increased by 24%.

修复后鸟类种类和数量显著上升  
The species diversity and quantity of birds has increased noticeably after restoration



#### 河道治理 River reconstruction

为了使凤塘河口恢复生态平衡，深圳市福田区启动了“福田凤塘河口红树林修复示范工程”。

To restore the ecological balance in Fengtang estuary, the municipal government of Futian district, Shenzhen city started the ecological restoration project of mangrove in Fengtang estuary, Futian district of Shenzhen city.

改变河道的形态和结构，修复土壤环境，修复河岸植被，建立完整的“红树一半红树一岸基植物”生态系统使得凤塘河恢复红树林湿地河口生态系统的主要功能。

Changing the shape and structure of the river, repairing the soil environment, rehabilitating the riparian vegetation and constructing an integrated "mangrove - semi-mangrove - riparian vegetation" ecosystem, to rehabilitate the main functions of the mangrove and estuarine ecosystem of Fengtang River.



凤塘河主河道修复前  
Before Fengtang River reconstruction

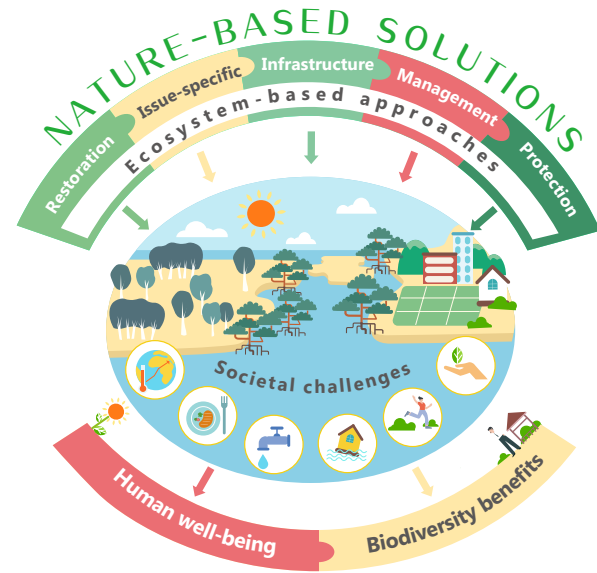
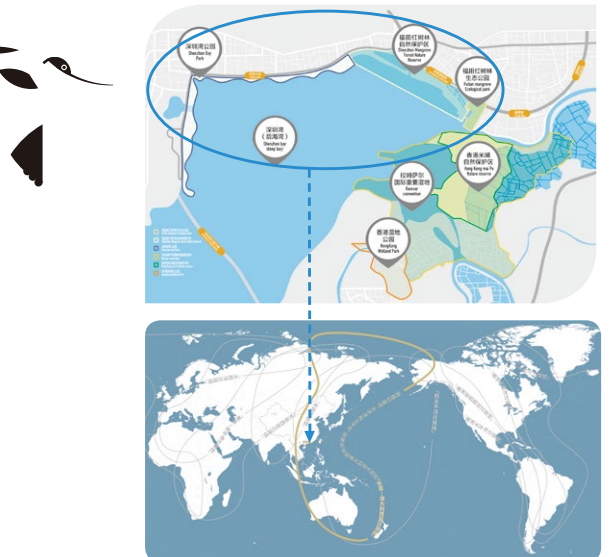


凤塘河主河道修复后  
After Fengtang River reconstruction

深圳湾位于东亚 - 澳大利西亚候鸟迁飞区的中点，每年有逾 10 万只候鸟经过，是重要的中转站和越冬地。  
Shenzhen Bay is located at the midpoint of the East Asia-Australasian Flyway. More than 100,000 migratory birds pass by it every year. It is an important transfer station and wintering ground for migratory birds.

为有效保护这片处于特大城市腹地的红树林湿地系统，深圳市政府在深圳湾滨海区启动了一系列滨海红树林湿地修复行动。  
To effectively protect this coastal mangrove ecosystem in the heartland of the megacity, the Shenzhen Municipal Government has executed a series of wetland restoration programs in the Shenzhen Bay area.

红树林基金会 (MCF) 作为行动参与方，主要参与了生态鱼塘修复工程、种植红树林及滩涂营造工作，及组织开展湿地教育活动。  
As a participant in these programs, the MCF has mainly spearheaded activities like restoring fishponds and tidal flats, planting mangroves, and conducting CEPA Programme.



### 深圳湾红树林湿地修复——NbS 典型案例 Shenzhen Bay Mangrove Wetlands Restoration — a typical case of NbS

目标：恢复红树林湿地功能，服务鸟类栖息地和城市可持续发展  
Goal: restore the ecosystem functions of mangrove wetlands to serve as healthy bird habitats and support sustainable urban development

- 种植红树林及营造滩涂  
Planting mangroves and maintaining mudflats
- 河道治理  
River reconstruction
- 鱼塘生境修复  
Redesign of fish ponds for bird use
- 防治病虫害和外来入侵物种  
Managing pests and invasive species
- 开展湿地教育  
Carrying out CEPA Programme
- 加强深港合作  
Strengthening cooperation between Shenzhen and Hong Kong



### 种植红树林及营造滩涂 Planting mangroves and maintaining mudflats



无瓣海桑  
*Sonneratia apetala*  
Buchanan-Hamilton  
原产地孟加拉，1990s 引种到深圳  
Indigenous to Bangladesh, introduced to Shenzhen in 1990s  
先锋树种，生长迅速、适应性强、扩散快  
Pioneer species, fast-growing, highly-adaptive, fast-spreading



截止 2022 年，完成治理无瓣海桑约 18 公顷和复种乡土红树约 5 公顷。  
As of 2022, about 18 hectares of *Sonneratia apetala* have been removed and about 5 hectares of native mangroves have been replanted.



- 对 15 公顷的无瓣海桑进行清理；  
Removing 15 hectares of *Sonneratia apetala*
- 通过建设人工潮沟修复区域内水文连通性；  
Restoring the hydrological connectivity by constructing artificial tidal trenches
- 通过设置自然恢复及不同程度人工修复样方及监测，对比不同方式的红树林修复成效；  
Comparing the effectiveness of natural restoration and artificial restoration with different levels of interference
- 清理并维持关键区域的光滩，为水鸟提供觅食及停歇地  
Clearing and maintaining mudflats in key areas to provide foraging and resting habitats for waterbirds



2020 年无瓣海桑生长旺盛  
*Sonneratia apetala* growing lavishly in 2020



2021 年，无瓣海桑清理后  
*Sonneratia apetala* removed in 2021



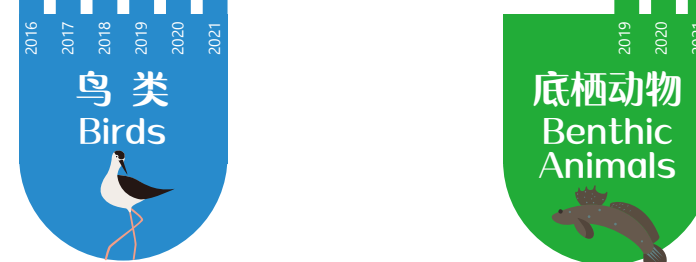
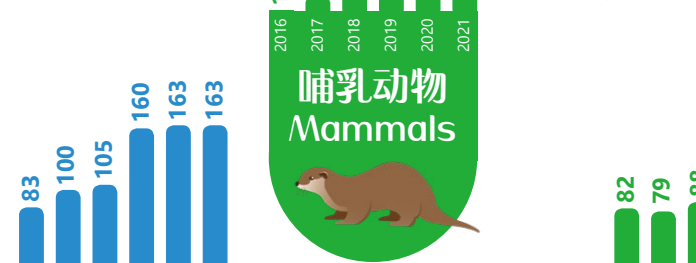
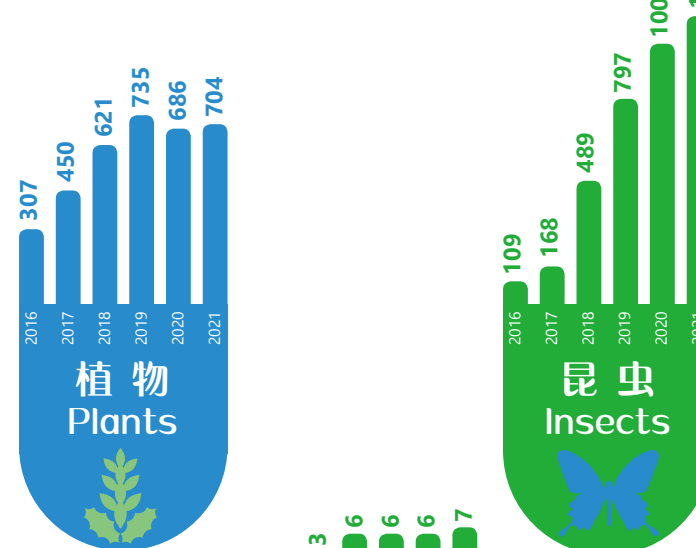
2000-2020 年期间，海桑属植物在深圳河入海口入扩散情况  
From 2000 to 2020, the spread of *Sonneratia* in the Shenzhen River estuary

湿地修复后稳定记录：  
国家一级保护动物小灵猫 *Viverricula indicac*，国家二级保护动物欧亚水獭 *Lutra lutra* 和豹猫 *Leopard Cat*  
Stable records after wetland restoration:  
*Viverricula indicac*, *Lutra lutra*, *Leopard Cat*



小灵猫 Small Indian Civet, 豹猫 Leopard Cat, 欧亚水獭 Common Otter

2016-2021 年生态公园记录物种种类变化  
Number of species recorded in the Futian Mangrove Ecological Park from 2016 to 2021



鸟类 Birds, 哺乳动物 Mammals, 底栖动物 Benthic Animals

### 红树林基金会 (MCF) Shenzhen Mangrove Wetlands Conservation Foundation

红树林基金会 (MCF) 是中国首家由民间发起的环保公募基金会，致力于保护湿地及其生物多样性，践行社会化参与的自然保育模式。目前已启动「守护深圳湾」、「拯救勺嘴鹬」、「重建海上森林」三大战略品牌项目。  
Mangrove Foundation (MCF) is the first environmental conservation foundation with public-fundraising certificate launched by civil society in China. It dedicates itself to protecting wetlands and their biodiversity, as well as conserving nature through public engagement. Currently, MCF is working on its three strategic projects: The Guardian of Shenzhen Bay, Saving Spoon-billed Sandpipers, and Mangrove Conservation and Restoration Program.

2012 年 7 月，基金会由阿拉善 SEE 生态协会、热衷公益的企业家以及深圳的相关部门提倡发起。王石、马蔚华担任创始会长（创始理事长），章必功、艾路明、孙莉莉、陈劲松担任荣誉理事长，雷光春担任理事长，刘明达担任执行理事长。

In July 2012, MCF was jointly founded by SEE (Society of Entrepreneurs and Ecology Conservation), entrepreneurs with philanthropic spirit and relevant departments of Shenzhen municipal government. Wang Shi and Ma Weihua served as presidents (founding chairman); Zhang Bigong, Ai Luming, Sun Lili and Chen Jinsong served as honorary chairman of the board; Lei Guangchun, served as chairman; and Liu Mingda served as executive board chairman.

### 人与湿地，生生不息 Living wetlands, sustainable future!

