



# Ramsar Information Sheet

Published on 11 April 2023

## China

### Fujian Minjiang River Estuary Wetlands



Designation date	28 October 2022
Site number	2506
Coordinates	26°02'16"N 119°39'09"E
Area	2 100,00 ha

## Color codes

Fields back-shaded in light blue relate to data and information required only for RIS updates.

Note that some fields concerning aspects of Part 3, the Ecological Character Description of the RIS (tinted in purple), are not expected to be completed as part of a standard RIS, but are included for completeness so as to provide the requested consistency between the RIS and the format of a 'full' Ecological Character Description, as adopted in Resolution X.15 (2008). If a Contracting Party does have information available that is relevant to these fields (for example from a national format Ecological Character Description) it may, if it wishes to, include information in these additional fields.

## 1 - Summary

### Summary

Fujian Minjiang River Estuary Wetlands is in the Changle district of Fuzhou City in the Fujian Province, People's Republic of China. The Site is located at the Meihua Waterway south-west to Minjiang Estuary and shares the boundary with Fujian Minjiang River Estuary Wetland National Nature Reserve. It has a typical coastal wetland ecosystem in South-East China composed of eel beach, surrounding intertidal zone and estuarine waters. The main ecological components for conservation are the rare and endangered animal species, the waterfowl, and the estuary wetland ecosystem. A total of 4 Criteria are met by the Site to be enlisted as a Wetland of International Importance.

There are 147 species of vascular plants and 458 species of wild vertebrates, including 7 critically endangered (CR) species, 7 endangered species and 14 vulnerable species in the IUCN Red List. As an important part of the East Asia-Australia migration zone, the Minjiang River Estuary Wetlands provide habitat for many migratory birds. A total of 219 species of birds and more than 50000 perennial and overwintering waterfowl have been recorded at the Site. The populations of 7 species of waterfowls, including the Chinese Crested Tern (*Thalasseus bernsteini*) and Black Faced Spoonbill (*Platalea minor*), exceed the 1% population threshold for Criterion 6. A large amount of nutrients are carried into the sea by the Minjiang River which provide superior growing environment and rich food resources for fishes. The Site is a migration channel for anadromous fish such as Chinese sturgeon (*Acipenser sinensis*) and for descending fish such as eel. In recent years, the Site's administration has improved and management measures such as long-term control of Smooth cordgrass (*Spartina alterniflora*) and cleaning of floating garbage in the estuary have been implemented.

## 2 - Data & location

### 2.1 - Formal data

#### 2.1.1 - Name and address of the compiler of this RIS

##### Responsible compiler

Institution/agency

Postal address

##### National Ramsar Administrative Authority

Institution/agency

Postal address

#### 2.1.2 - Period of collection of data and information used to compile the RIS

From year

To year

#### 2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish)

## 2.2 - Site location

### 2.2.1 - Defining the Site boundaries

#### b) Digital map/image

<1 file(s) uploaded>

Former maps

#### Boundaries description

Minjiang River Estuary Wetlands has its eastern border connected to Minjiang Estuary, which is adjacent to the Changle Mussel Resources Proliferation Reserve. To the west, there is Mashan Old Fort that faces Langqi Bridge. The south part of the site abuts the Mashan Old Fort, Wumenzha Dam connection line, Wumenzha Dam, and Sanmenzha Dam, and the eel mudflats outside the fishing ponds of Wenling Town, adjacent to Changle Minjiang River Estuary National Wetland Park and to the Lower Eel Shoals mudflats and the Meihua mudflats in Meihua Town. The north is connected to the waters of Mawei Langqi Estuary

Geographical coordinates: N 26°01'7.8"~26°03'39.3", E 119°36'27.8"~119°41'15.1"

### 2.2.2 - General location

a) In which large administrative region does the site lie?

b) What is the nearest town or population centre?

### 2.2.3 - For wetlands on national boundaries only

a) Does the wetland extend onto the territory of one or more other countries? Yes  No

b) Is the site adjacent to another designated Ramsar Site on the territory of another Contracting Party? Yes  No

### 2.2.4 - Area of the Site

Official area, in hectares (ha):

Area, in hectares (ha) as calculated from GIS boundaries

### 2.2.5 - Biogeography

Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
Udvardy's Biogeographical Provinces	Palearctic
Bailey's Ecoregions	400 Humid Tropical Domain 420 Rainforest Division
Freshwater Ecoregions of the World (FEOW)	Southern Asia
Other scheme (provide name below)	767 Coastal Fujian-Zhejiang
WWF Terrestrial Ecoregions	Indomalayan Tropical and subtropical moist broadleaf forests South China Sea Islands
Marine Ecoregions of the World (MEOW)	Temperate Northern Pacific 9. Warm Temperate Northwest Pacific 52. East China Sea

[Other biogeographic regionalisation scheme](#)

In terms of phytogeography, the nature reserve is in the transitional zone between Pan-Arctic flora and Paleotropical flora and is in South China region of China-Japan forest flora subregion.

In terms of the zoogeography, the nature reserve is in the South China region of Oriental Realm, which is in the coastal sub-zone of Fujian-Guangzhou coastal subregion and Fujian's coastal region.

### 3 - Why is the Site important?

#### 3.1 - Ramsar Criteria and their justification

- Criterion 1: Representative, rare or unique natural or near-natural wetland types

Minjiang River Estuary Wetlands is at the intersection between the coastal mountainous broad-leaved forest eco-geographical area of Fujian-Zhejiang and the eco-geographical area of East China Sea, both of which have been included in the National Representative Ecosystem List. The Site is composed of offshore and coastal wetlands and a sand island which were gradually formed in the Meihua Waterway after years of alluvial depositions from Minjiang River. It is a natural estuary wetland in Fujian Province, which is representative in South China regions of Oriental Realm. Minjiang is the largest river in Fujian and the major river in the Changle district. Minjiang River enters the sea through Meihua Waterway and Changmen Waterway, with 35 km of its length falling inside Changle district.

Hydrological services provided

The Site helps to replenish the underground aquifer. The outflowing freshwater can restrain the influences of in-welling and safeguard the freshwater supply for people residing and working in Fuzhou. The Site falls in a typhoon prone area in China and has around five typhoon onslaughts yearly. Minjiang River Estuary Wetlands plays an essential role in stabilizing shorelines, protecting surrounding landscape from being weathered by typhoon, and in maintaining the water quality. In recent years, the water quality in Minjiang River has been constantly ranked as excellent.

Furthermore, areas with high tidal movements and intersectional zones where salt water and freshwater combine, provide ideal growing conditions for Mangrove Forests, mainly comprising of *kandelia candel*.

1) Supply services: The Site provides various aquatic resources and fresh water for surrounding communities in Changle District. Kuroshio warm current and Taiwan Warm Current provide important resources that support wintering fishes. These fishes are used for commercial purposes in East Asian countries.

2) Regulation services: The fresh water in the Wetlands helps to limit seawater intrusion and ensure safe drinking water to the surrounding communities. The wetland vegetation traps sediments and prevent soil erosion. Mangroves also play a role in reducing the impact of typhoon-caused storms on coastal banks. Rich vegetation and microorganisms help to absorb, sediment, and decompose domestic sewage and surrounding farmland residues flowing into wetlands, thus playing a role maintaining the water quality of the Site.

Other ecosystem services provided

3) Support services: The Site supports abundant wildlife resources. It is an important migration stopover for 120 species of waterfowl, an important breeding ground for terns, and supports key stages of life cycle of many rare and endangered species. Vast sandy shores shelter benthic animals such as clam worms and mollusks, which are food of migratory birds.

4) Cultural services: The Site is regularly visited by national and international researchers for scientific studies. There are also museums built at the Site. The Site is also a touristic destination in South China.

Other reasons

The vegetations along the coastal areas of Fujian-Zhejiang, consist of *Cyperus malaccensis*, *Scirpus mariqueter*, reeds, and tall shrubs like *kandelia candel* and *Casuarina equisetifolia* that are characteristic features of the wetland.

- Criterion 2 : Rare species and threatened ecological communities

On Minjiang River Estuary Wetlands:

There are 7 species ranked as critically endangered (CR) by the IUCN Red List, including 5 species of birds : Baer's Pochard (*Aythya baeri*) 、 Siberian Crane (*Leucogeranus leucogeranus*) 、 Spoon-billed Sandpiper (*Calidris pygmaea*) 、 Chinese Crested Tern (*Thalasseus bernsteini*) 、 Yellow-breasted Bunting (*Emberiza aureola*) ; 1 reptile : Hawksbill Turtle (*Eretmochelys imbricata*) ; 1 fish : Chinese Sturgeon (*Acipenser sinensis*) .

7 species are listed as endangered (EN), including 5 species of birds : Eastern Curlew (*Numenius madagascariensis*) 、 Nordmann's Greenshank (*Tringa guttifer*) 、 Great Knot (*Calidris tenuirostris*) 、 Oriental Stork (*Ciconia boyciana*) 、 Black-faced Spoonbill (*Platalea minor*) ; 1 types of reptiles : Green Turtle (*Chelonia mydas*) 1 fish : Japanese Eel (*Anguilla japonica*) .

14 species are listed as vulnerable (VU) by the IUCN Red List, including 8 species of birds : Swan Goose (*Anser cygnoides*) 、 Lesser White-fronted Goose (*Anser erythropu*) 、 Common Pochard (*Aythya ferina*) 、 Hooded Crane (*Grus monacha*) 、 Black-legged Kittiwake (*Rissa tridactyla*) 、 Saunders's Gull (*Chroicocephalus saundersi*) 、 Relict Gull (*Ichthyaeetus relictus*) 、 Chinese Egret (*Egretta eulophotes*) ; 2 mammal : Indo-Pacific humpback dolphin (*Sousa chinensis*) 、 Indo-Pacific Finless Porpoise (*Neophocaena phocaenoides*) ; 3 reptiles : Olive Ridley (*Lepidochelys olivacea*) 、 Leatherback Turtle (*Dermochelys coriaca*) \Loggerhead Turtle (*Caretta caretta*).1 fish : Three -spot Seahorse (*Hippocampus trimaculatus*) .

The hydrothermal conditions and geo-hydro-morphological features of the Site provide rich food and ideal habitat conditions for the above species. Chinese Crested Tern (CR) has been living here for nearly 20 years.

Optional text box to provide further information

Criterion 6 : >1% waterbird population

According to the survey conducted from 2017 to 2021, there are 7 species whose population exceed the 1% standard – Terek Sandpiper, *Crocethia alba*, Black-faced Spoonbill, Greater Sand Plover, Chinese Crested Tern, Northern Pintail, and Kentish Plover. The 1% threshold data was taken from Wetlands International.

Distribution Period and Radius for Key Species:

The Chinese Crested Terns arrive in early April, whose population gradually stabilize from May to July. They settle between the Eel shoals and Matsu from June to August and leave in September. In June, they can be sighted mating and breeding on the Eel shoals among thousands of Greater Crested Terns. They like plain mudflats, where they wander around in shallow areas, and mainly feed on fishes, sometimes crustaceans, mollusks, and other marine invertebrates.

Black-faced Spoonbill usually winter in the Site from November to January, and migrate north in February. Their offspring stop over mainly from March to May but some stay in the Site for a considerable period. They usually mingle and mix with waders such as Great Egret (*Ardea alba*), Little Egret (*Egretta garzetta*), Grey Heron (*Ardea cinerea*), and Eurasian Spoonbill (*Platalea leucorodia*). They are found in intertidal zones and mangrove forests beside eel shoals and fishery ponds, feeding mainly on shrimps, crabs, fishes, insects, larvae, mollusks, and crustaceans.

Northern Pintail winter residents, migrate to Minjiang River Estuary Wetland in late October and leave in the following February. Terek Sandpiper, Greater Sand Plover, and Sanderling (*Calidris alba*) are winter residents and are distributed in both the Reserve and the National Wetland Park. Most Kentish Plovers are winter residents and nest at the beaches on Eel Shoals.

Optional text box to provide further information

Criterion 8 : Fish spawning grounds, etc.

Justification

The Minjiang River Estuary Wetland is on the migratory corridor that connects the sea and the river. It allows anadromous fish such as Chinese Sturgeon and catadromous fish such as Japanese Eel to choose ideal locations between the sea and the river for breeding and developing. The Site is also located at the junction of salt water and freshwater which provide abundant food resources for these fishes.

### 3.2 - Plant species whose presence relates to the international importance of the site

<no data available>

### 3.3 - Animal species whose presence relates to the international importance of the site

Phylum	Scientific name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
		2	4	6	9	3	5	7	8								
<b>Others</b>																	
CHORDATA/ REPTILIA	<i>Caretta caretta</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	National First-Class Key Protected Wildlife	National Key Protected Wildlife, IUCN VU
CHORDATA/ REPTILIA	<i>Chelonia mydas</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				EN	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	National First-Class Key Protected Wildlife	National Key Protected Wildlife, IUCN EN
CHORDATA/ REPTILIA	<i>Dermochelys coriacea</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input type="checkbox"/>	<input type="checkbox"/>	National First-Class Key Protected Wildlife	National Key Protected Wildlife, IUCN VU
CHORDATA/ REPTILIA	<i>Eretmochelys imbricata</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				CR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	National First-Class Key Protected Wildlife	IUCN CR National Key Protected Wildlife
CHORDATA/ REPTILIA	<i>Lepidochelys olivacea</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	National First-Class Key Protected Wildlife	National Key Protected Wildlife, IUCN VU
CHORDATA/ MAMMALIA	<i>Neophocaena phocaenoides</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input checked="" type="checkbox"/>	<input type="checkbox"/>	National Second-Class Key Protected Wildlife	IUCN VU National Key Protected Wildlife
CHORDATA/ MAMMALIA	<i>Sousa chinensis</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input checked="" type="checkbox"/>	<input type="checkbox"/>	National First-Class Key Protected Wildlife	National Key Protected Wildlife, IUCN VU
<b>Fish, Mollusc and Crustacea</b>																	
CHORDATA/ ACTINOPTERYGII	<i>Acipenser sinensis</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				CR	<input type="checkbox"/>	<input type="checkbox"/>	National First-Class Key Protected Wildlife	IUCN CR, National Key Protected Wildlife, The migration channe of Chinese sturgeon
CHORDATA/ ACTINOPTERYGII	<i>Anguilla japonica</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				EN	<input type="checkbox"/>	<input type="checkbox"/>		IUCN EN, The migration channe of Japanese Eel
CHORDATA/ ACTINOPTERYGII	<i>Hippocampus trimaculatus</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input type="checkbox"/>	<input type="checkbox"/>	National Second-Class Key Protected Wildlife	National Key Protected Wildlife
<b>Birds</b>																	
CHORDATA/ AVES	<i>Anas acuta</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3622	2020	1.5	LC	<input type="checkbox"/>	<input type="checkbox"/>		1% Standard
CHORDATA/ AVES	<i>Anser cygnoides</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input type="checkbox"/>	<input type="checkbox"/>	National Second-Class Key Protected Wildlife	IUCN VU, National Key Protected Wildlife,
CHORDATA/ AVES	<i>Anser erythropus</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input type="checkbox"/>	<input checked="" type="checkbox"/>	National Second-Class Key Protected Wildlife	National Key Protected Wildlife
CHORDATA/ AVES	<i>Aythya baeri</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				CR	<input type="checkbox"/>	<input checked="" type="checkbox"/>	National First-Class Key Protected Wildlife	IUCN CR, National Key Protected Wildlife
CHORDATA/ AVES	<i>Aythya ferina</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input type="checkbox"/>	<input type="checkbox"/>		IUCN VU

Phylum	Scientific name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
		2	4	6	9	3	5	7	8								
CHORDATA/AVES	<i>Calidris alba</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2000	2020	9.09	LC	<input type="checkbox"/>	<input type="checkbox"/>		1% Standard
CHORDATA/AVES	<i>Calidris pygmaea</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				CR	<input type="checkbox"/>	<input checked="" type="checkbox"/>	National First-Class Key Protected Wildlife	IUCN CR
CHORDATA/AVES	<i>Calidris tenuirostris</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				EN	<input type="checkbox"/>	<input checked="" type="checkbox"/>	National Second-Class Key Protected Wildlife	IUCN EN, National Key Protected Wildlife
CHORDATA/AVES	<i>Charadrius alexandrinus</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2026	2021	2.85	LC	<input type="checkbox"/>	<input type="checkbox"/>		1% Standard
CHORDATA/AVES	<i>Charadrius leschenaultii</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3200	2019	4.05	LC	<input type="checkbox"/>	<input type="checkbox"/>		1% Standard
CHORDATA/AVES	<i>Chroicocephalus saundersi</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input type="checkbox"/>	<input checked="" type="checkbox"/>	National First-Class Key Protected Wildlife	IUCN VU, National Key Protected Wildlife
CHORDATA/AVES	<i>Ciconia boyciana</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				EN	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	National First-Class Key Protected Wildlife	IUCN EN, National Key Protected Wildlife, CITES I
CHORDATA/AVES	<i>Egretta eulophotes</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input type="checkbox"/>	<input checked="" type="checkbox"/>	National First-Class Key Protected Wildlife	IUCN VU, National Key Protected Wildlife
CHORDATA/AVES	<i>Emberiza aureola</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				CR	<input type="checkbox"/>	<input checked="" type="checkbox"/>	National First-Class Key Protected Wildlife	IUCN CR
CHORDATA/AVES	<i>Grus leucogeranus</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				CR	<input type="checkbox"/>	<input checked="" type="checkbox"/>	National First-Class Key Protected Wildlife	IUCN CR, National Key Protected Wildlife, CITES I
CHORDATA/AVES	<i>Grus monacha</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	National First-Class Key Protected Wildlife	National Key Protected Wildlife, CITES I
CHORDATA/AVES	<i>Ichthyaelus relictus</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input type="checkbox"/>	<input type="checkbox"/>	National First-Class Key Protected Wildlife	IUCN VU, National Key Protected Wildlife, CITES I
CHORDATA/AVES	<i>Numerius madagascariensis</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				EN	<input type="checkbox"/>	<input checked="" type="checkbox"/>	National Second-Class Key Protected Wildlife	IUCN EN
CHORDATA/AVES	<i>Platalea minor</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	134	2021	6.7	EN	<input type="checkbox"/>	<input checked="" type="checkbox"/>	National First-Class Key Protected Wildlife	IUCN EN, National Key Protected Wildlife
CHORDATA/AVES	<i>Rissa tridactyla</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input type="checkbox"/>	<input type="checkbox"/>		IUCN VU
CHORDATA/AVES	<i>Thalasseus bernsteini</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14	2020	14	CR	<input type="checkbox"/>	<input checked="" type="checkbox"/>	National First-Class Key Protected Wildlife	IUCN CR. The species is a synonym of <i>Sterna bernsteini</i>
CHORDATA/AVES	<i>Tringa guttifer</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				EN	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	National First-Class Key Protected Wildlife	IUCN EN, National Key Protected Wildlife, CITES I
CHORDATA/AVES	<i>Xenus cinereus</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1337	2021	2.7	LC	<input type="checkbox"/>	<input type="checkbox"/>		1% Standard

1) Percentage of the total biogeographic population at the site

Since the discovery of Chinese Crested Terns in Minjiang Estuary Wetland in 2004, it has been recorded all the year round, with the highest recorded number of 16 (observed in 2010), accounting for 32% of the global population of that year (11 observed in 2019 and 14 observed in 2020). Minjiang Estuary Wetland has become one of the important activity areas and migration stopovers of Chinese crested terns during breeding season. In 2012, China Wildlife Conservation Association awarded Changde District the title of "Home of Chinese Crested Terns".

### 3.4 - Ecological communities whose presence relates to the international importance of the site

<no data available>



## 4 - What is the Site like? (Ecological character description)

### 4.1 - Ecological character

#### Ecosystem Components

**Geomorphology:** Minjiang Estuary is characterized mainly by its estuarine shallow shoals, consisting of ancient alluviums, recent river alluvial sediments, marine deposits, and eolian deposits.

**Soil:** Under the influence of shore currents, the sediments gradually become sandy and muddy tidal flats. The parent material of soil formation is Quaternary marine sediments and soil sediments, with deep soil layer, which is thick and fertile.

**Climate:** The average annual temperature of wetland is 19.3 °C. The average annual sunshine hours are 4400 hours. The annual average precipitation is 1382.3 mm and the number of typhoons are about 5 times/year.

**Hydrology:** The main water supply of wetlands includes tides, Minjiang River and other inland rivers. Wetland tides are generally the regular semi-diurnal tides. The average high tide level in eel beach zone is 6.03 m and the highest water level near Meihua Waterway is 7.00 m.

**Wetland types:** There are marine or coastal wetlands occupying areas of 1945.26 ha, inland wetlands of 6.82 ha, and constructed wetlands of 144.27 ha, making a total of 2096.35 ha wetlands.

**Wildlife resources:** There are 59 families, 124 genera and 147 species of vascular plants in wetland, and 43 orders, 133 families, 294 genera and 458 species of wild vertebrates. Among them, 8 CR species inhabit here. Black-faced spoonbill, spoon-billed snipe and Chinese Crested Tern are three major bird species found in the Site.

#### Ecological Processes

**Biogeochemical process:** Wetland vegetation and microorganisms help in degradation of pollutants. The roots of vegetation such as *Phragmites australis* can collect and absorb heavy metals, reducing heavy metal pollution. Wetlands have strong carbon storage function which plays an important role in controlling regional greenhouse gas cycle and climate warming.

**Animal breeding:** Minjiang Estuary is an important breeding ground for various Anatidae, shorebirds, and Laridae, including Spot-billed Duck, Kentish Plover, Black-winged Stilt, Little Tern, Greater Crested Tern, and Chinese Crested Terns, and a spawning ground for a variety of fish such as Chinese Sturgeon.

**Animal migration process:** The Site is located at an important migration path for migratory birds in (EAAF). It is an important stopover, breeding and wintering ground for migratory birds. The Site's vegetation and other aquatic and benthic organisms provide habitat and food for migratory birds.

#### Ecosystem Services

**Supply services:** The Site provides important aquatic resources in Changle District, providing abundant aquatic product resources and certain fresh water supply for surrounding communities.

**Regulation service:** The fresh water availability can limit seawater intrusion and ensure people's safety in Fuzhou area. The mangroves also play a role in reducing the impact of typhoon-caused storms on coastal banks. Rich vegetation and microorganisms help to absorb, sediment, and decompose domestic sewage and surrounding farmland residues flowing into wetlands, thus playing a role maintaining water quality of the Site.

**Support services:** The Site supports abundant wildlife resources. It is an important migration stopover for 120 species of waterfowl, an important breeding ground for terns, and supports key stages of life cycle of many rare and endangered species. Vast sandy shores shelter benthic animals such as clam worms and mollusks, which are food of migratory birds.

**Cultural services:** The Site is regularly visited by national and international researchers for scientific studies. There are also museums built at the Site. The Site is also a touristic destination in South China.

### 4.2 - What wetland type(s) are in the site?

#### Marine or coastal wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
A: Permanent shallow marine waters	Sea	2	364.99	Representative
G: Intertidal mud, sand or salt flats	Coastal Mudflats	1	1572.98	Representative
H: Intertidal marshes	Mangrove	4	7.29	Representative

#### Inland wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
Fresh water > Flowing water >> M: Permanent rivers/ streams/ creeks	River	0	6.82	Representative

#### Human-made wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type
1: Aquaculture ponds	Aquaculture ponds	3	144.27

#### Other non-wetland habitat

Other non-wetland habitats within the site	Area (ha) if known
Non-wetland habitats such as roads and woodlands	3.65

### 4.3 - Biological components

#### 4.3.1 - Plant species

##### Other noteworthy plant species

Phylum	Scientific name	Position in range / endemism / other
TRACHEOPHYTALILIOPSISIDA	<i>Bolboschoenoplectus mariqueter</i>	Regional Common Vegetation
TRACHEOPHYTAMAGNOLIOPSISIDA	<i>Casuarina equisetifolia</i>	Regional Common Vegetation
TRACHEOPHYTALILIOPSISIDA	<i>Cyperus malaccensis</i>	Regional Common Vegetation
TRACHEOPHYTAMAGNOLIOPSISIDA	<i>Ipomoea pes-caprae pes-caprae</i>	Regional Common Vegetation
TRACHEOPHYTAMAGNOLIOPSISIDA	<i>Kandelia obovata</i>	Regional Common Vegetation
TRACHEOPHYTALILIOPSISIDA	<i>Phragmites australis</i>	Regional Dominant Vegetation

Invasive alien plant species

Phylum	Scientific name	Impacts
TRACHEOPHYTALILIOPSISIDA	<i>Sporobolus alterniflorus</i>	Potential

4.3.2 - Animal species

<no data available>

4.4 - Physical components

4.4.1 - Climate

Climatic region	Subregion
C: Moist Mid-Latitude climate with mild winters	Cfa: Humid subtropical (Mild with no dry season, hot summer)

4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres)

a) Maximum elevation above sea level (in metres)

- Entire river basin
- Upper part of river basin
- Middle part of river basin
- Lower part of river basin
- More than one river basin
- Not in river basin
- Coastal

4.4.3 - Soil

- Mineral
- Organic
- No available information

Are soil types subject to change as a result of changing hydrological conditions (e.g., increased salinity or acidification)? Yes  No

Please provide further information on the soil (optional)

The estuarine shoal is formed by the deposition of sediment transported from the upper reaches of the Minjiang River in the Meihua Waterway. The parent material of the zone is Quaternary residual material and sedimentary material, which is formed by ancient alluvium, modern river alluvium, marine deposit and aeolian deposit. According to data records, more than 100 years ago, Eel Shoal was an estuarine shoal that was completely submerged under the water surface (generally at high tide). Since then, due to the continuous accumulation of sediment in the Minjiang River, on the one hand, the scope of the shoal has gradually expanded, on the other hand, the terrain of the shoal has continuously silted up, and some of the shoal has been exposed to the water for a long time to become a sand island. Under the complex hydro-dynamic action of the estuary, a sand island with a northwest-southeast trend was formed. It is mainly distributed in tidal soil and aeolian sand soil.

4.4.4 - Water regime

Water permanence

Presence?	
Usually permanent water present	No change

Source of water that maintains character of the site

Presence?	Predominant water source	
Water inputs from precipitation	<input type="checkbox"/>	No change
Water inputs from surface water	<input checked="" type="checkbox"/>	No change
Marine water	<input checked="" type="checkbox"/>	No change

Water destination

Presence?	
Marine	No change

Stability of water regime

Presence?	
Water levels fluctuating (including tidal)	No change

Please add any comments on the water regime and its determinants (if relevant). Use this box to explain sites with complex hydrology:

The main water sources of wetlands include tides, Minjiang River and inland rivers. Tidal inflow and runoff of Meihua waterway account for more than 99% of wetland inflow, while inland river outlet water is less than 1% of wetland inflow in nature reserve. The average tidal range is 4.37 m, the average high tide level is 6.03 m, and the highest water level is 7.00 m in the vicinity of Meihua. The water quality is relatively stable and generally excellent.

The annual average runoff of Minjiang River is 1980 m3/s, the wet season is from March to September, and the dry season is from October to February, with an average annual rainfall of (1363 ± 251) mm. The groundwater runoff in the estuary of Minjiang River in the dry season is about 12.8% of the dry season runoff of Minjiang River.

(ECD) Connectivity of surface waters and of groundwater	The surface water of Minjiang Estuary Wetland consists of Minjiang River runoff, surrounding stream runoff and tide, and there is no groundwater inflow.
(ECD) Stratification and mixing regime	Minjiang Estuary Wetland is located in the estuary area, which has the phenomenon of mixing salt and fresh water. In dry season, it is a mixed type of salty, light and strong.

4.4.5 - Sediment regime

- Significant erosion of sediments occurs on the site
- Significant accretion or deposition of sediments occurs on the site
- Significant transportation of sediments occurs on or through the site
- Sediment regime is highly variable, either seasonally or inter-annually
- Sediment regime unknown

Please provide further information on sediment (optional):

Eel Shoals wetland is the most important part of Minjiang Estuary Reserve, and is also the largest natural wetland in Minjiang Estuary. The research group of Professor Chen Luzhen from School of Environment and Ecology of Xiamen University used the surface elevation-artificial marker observation system (RSET-MH) to monitor the surface elevation change rate and vertical siltation rate in this area. The monitoring includes the siltation of *Spartina alterniflora*, *Phragmites australis* and *Smilax brevifolia*. The monitoring results in 2020 are as follows: *Spartina alterniflora* is 56 mm yr<sup>-1</sup>; 18 mm yr<sup>-1</sup> for *Phragmites australis*; *Smilax glabra* is 23 mm yr<sup>-1</sup>.

4.4.6 - Water pH

- Acid (pH<5.5)
- Circumneutral (pH: 5.5-7.4)
- Alkaline (pH>7.4)
- Unknown

Please provide further information on pH (optional):

According to the monitoring results, the pH of the water at the monitoring station in December 2018 ranged from 7.27 to 7.96; In September 2019, the range of pH is 7.22-7.65, and in October, the range of pH is 6.89-7.70. In September 2020, the range of pH is 7.04-7.26, and in November, the range of pH at monitoring points is 7.00-7.58.

4.4.7 - Water salinity

- Fresh (<0.5 g/l)
- Mixohaline (brackish)/Mixosaline (0.5-30 g/l)
- Euhaline/Eusaline (30-40 g/l)
- Hyperhaline/Hypersaline (>40 g/l)
- Unknown

Please provide further information on salinity (optional):

From September to December 2020, the salinity of water at monitoring station gradually decreased. Among them, during the observation in September, the variation range of water salinity at 8 monitoring points was 0-1.61 ppt; In November, the salinity of water body at monitoring station varied from 0 to 1.47 ppt; In December, the salinity of water body at monitoring points varied from 0 to 0.97 ppt.

(ECD) Dissolved gases in water

From September to December in 2020, dissolved oxygen in water gradually increased. Among them, during the observation period in September, the variation range of dissolved oxygen in water bodies of 8 monitoring points was 0.34-6.34 mg/L; In November, the variation range of dissolved oxygen in water body of monitoring points was 6.77-10.49 mg/L; In December, the variation range of dissolved oxygen in water body of monitoring points was 4.40-18.14 mg/L.

4.4.8 - Dissolved or suspended nutrients in water

- Eutrophic
- Mesotrophic
- Oligotrophic
- Dystrophic
- Unknown

(ECD) Dissolved organic carbon	33.84 mg/L
(ECD) Redox potential of water and sediments	180.21 mv
(ECD) Water conductivity	3.40 mS/cm

4.4.9 - Features of the surrounding area which may affect the Site

Please describe whether, and if so how, the landscape and ecological characteristics in the area surrounding the Ramsar Site differ from the site itself:   
 i) broadly similar  ii) significantly different

- Surrounding area has greater urbanisation or development
- Surrounding area has higher human population density
- Surrounding area has more intensive agricultural use
- Surrounding area has significantly different land cover or habitat types

Please describe other ways in which the surrounding area is different:

Minjiang estuary wetland is a native estuary wetland, and there are no residential areas and no agricultural activities in the area. The surrounding area of wetland includes Meihua Town, Tantou Town and Wenling Town, with a population of about 100,000. Farmland is densely distributed, which is significantly different from wetland landscape.

4.5 - Ecosystem services

4.5.1 - Ecosystem services/benefits

Provisioning Services

Ecosystem service	Examples	Importance/Extent/Significance
Food for humans	Sustenance for humans (e.g., fish, molluscs, grains)	High
Wetland non-food products	Reeds and fibre	High

Regulating Services

Ecosystem service	Examples	Importance/Extent/Significance
Maintenance of hydrological regimes	Groundwater recharge and discharge	High
Erosion protection	Soil, sediment and nutrient retention	High
Pollution control and detoxification	Water purification/waste treatment or dilution	Medium
Climate regulation	Local climate regulation/buffering of change	High
Climate regulation	Regulation of greenhouse gases, temperature, precipitation and other climactic processes	High
Hazard reduction	Flood control, flood storage	High
Hazard reduction	Coastal shoreline and river bank stabilization and storm protection	High

Cultural Services

Ecosystem service	Examples	Importance/Extent/Significance
Recreation and tourism	Nature observation and nature-based tourism	High
Spiritual and inspirational	Inspiration	High
Spiritual and inspirational	Cultural heritage (historical and archaeological)	Medium
Spiritual and inspirational	Contemporary cultural significance, including for arts and creative inspiration, and including existence values	High
Spiritual and inspirational	Aesthetic and sense of place values	High
Scientific and educational	Educational activities and opportunities	High
Scientific and educational	Important knowledge systems, importance for research (scientific reference area or site)	High
Scientific and educational	Type location for a taxon	High
Scientific and educational	Major scientific study site	High
Scientific and educational	Long-term monitoring site	High

Supporting Services

Ecosystem service	Examples	Importance/Extent/Significance
Biodiversity	Supports a variety of all life forms including plants, animals and microorganisms, the genes they contain, and the ecosystems of which they form a part	High
Soil formation	Sediment retention	High
Soil formation	Accumulation of organic matter	High
Nutrient cycling	Storage, recycling, processing and acquisition of nutrients	High
Nutrient cycling	Carbon storage/sequestration	High
Pollination	Support for pollinators	High

Within the site:

Outside the site:

Have studies or assessments been made of the economic valuation of ecosystem services provided by this Ramsar Site? Yes  No  Unknown

Where economic studies or assessments of economic valuation have been undertaken at the site, it would be helpful to provide information on where the results of such studies may be located (e.g. website links, citation of published literature):

Hu Xisheng, Hong Wei, Wu Chengzhen. Willingness to pay for wetland ecosystem services in Minjiang Estuary [C]. Doctoral Academic Annual Meeting. 2011.

Hu Xisheng, Hong Wei, Wu Chengzhen. Evaluation of non-use value of wetland ecosystem in Minjiang Estuary based on CVM [J]. Science of Soil and Water Conservation of China, 2012, 10 (6): 64-70.

Fu Jiayan. Evaluation of ecosystem service value in Minjiang Estuary Wetland Nature Reserve [J]. Wetland Science and Management, 2012, 8 (4): 17-19.

Lin Wenbo. Evaluation of ecological service function of Minjiang estuary wetland [J]. Shelterbelt Science and Technology, 2016 (7): 69-71.

4.5.2 - Social and cultural values

i) the site provides a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland

Description if applicable

In order to control *Spartina alterniflora* for a long time, the management office of the reserve, along with the surrounding villagers, treated *Spartina alterniflora* by digging ponds and flooding, and took the treated plot as a bird habitat regulation area at high tide level and a seasonal aquaculture farm (cultivated from April to September). First, it greatly reduced the management funds needed for controlling *Spartina alterniflora*; The second is to curb the spread of *Spartina alterniflora*; The third is to expand the habitat and foraging ground of waterfowl at high tide level; Fourth, traditional farmers, who were relocated from the original core area and buffer zone of the reserve, were resettled, and the production and life of farmers were guaranteed. The monitoring results showed that during the winter cessation period, many Ardeidae, Charadra and Anatidae were attracted to forage and stop in the bird habitat regulation area at high tide level, and the waterfowl habitat regulation area achieved remarkable results. In 2018, according to the requirements of environmental supervision, the management office of the reserve carried out the returning of aquaculture ponds in the reserve, and transformed them into high-tide waterfowl habitats, with a retirement area of 2,397 mu.

ii) the site has exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland

iii) the ecological character of the wetland depends on its interaction with local communities or indigenous peoples

iv) relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland

#### 4.6 - Ecological processes

<no data available>

## 5 - How is the Site managed? (Conservation and management)

### 5.1 - Land tenure and responsibilities (Managers)

#### 5.1.1 - Land tenure/ownership

##### Public ownership

Category	Within the Ramsar Site	In the surrounding area
National/Federal government	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

#### 5.1.2 - Management authority

Provide the name and/or title of the person or people with responsibility for the wetland:

Postal address:

E-mail address:

## 5.2 - Ecological character threats and responses (Management)

### 5.2.1 - Factors (actual or likely) adversely affecting the Site's ecological character

#### Human settlements (non agricultural)

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Tourism and recreation areas	Low impact	Low impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### Water regulation

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Water abstraction	Low impact	Low impact	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Dredging	Low impact	Low impact	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### Agriculture and aquaculture

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Marine and freshwater aquaculture	Medium impact	Medium impact	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### Human intrusions and disturbance

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Recreational and tourism activities	Low impact	High impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### Natural system modifications

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Fire and fire suppression		Low impact	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Vegetation clearance/ land conversion	Low impact	Low impact	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### Invasive and other problematic species and genes

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Invasive non-native/ alien species	Medium impact	Low impact	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### Geological events

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Earthquakes/tsunamis	Low impact	Low impact	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### Climate change and severe weather

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Habitat shifting and alteration	Low impact	Low impact	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Droughts	Low impact	Low impact	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Temperature extremes	Low impact	Low impact	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Storms and flooding	Low impact	Low impact	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### 5.2.2 - Legal conservation status

#### National legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
National Nature Reserve	Fujian Minjiang River Estuary Wetland National Nature Reserve	<a href="http://www.gov.cn/zw/gk/2013-06/05/content_2420031.htm">http://www.gov.cn/zw/gk/2013-06/05/content_2420031.htm</a>	whole
National Wetland of Importance	Fujian Minjiang River Estuary Ramsar Site, Changle District, FuZhou City	State Forestry Administration (2020) No.53 Issue	whole

#### Non-statutory designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Important Bird Area	Min Jiang Estuary	<a href="http://datazone.birdlife.org/site/factsheet/min-jiang-estuary-iba-china-(mainland)">http://datazone.birdlife.org/site/factsheet/min-jiang-estuary-iba-china-(mainland)</a>	whole

### 5.2.3 - IUCN protected areas categories (2008)

- Ia Strict Nature Reserve
- Ib Wilderness Area: protected area managed mainly for wilderness protection
- II National Park: protected area managed mainly for ecosystem protection and recreation
- III Natural Monument: protected area managed mainly for conservation of specific natural features
- IV Habitat/Species Management Area: protected area managed mainly for conservation through management intervention
- V Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation
- VI Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems

### 5.2.4 - Key conservation measures

#### Legal protection

Measures	Status
Legal protection	Implemented

#### Habitat

Measures	Status
Catchment management initiatives/controls	Implemented
Improvement of water quality	Partially implemented
Habitat manipulation/enhancement	Implemented
Hydrology management/restoration	Partially implemented
Re-vegetation	Implemented
Soil management	Partially implemented
Land conversion controls	Partially implemented
Faunal corridors/passage	Partially implemented

#### Species

Measures	Status
Threatened/rare species management programmes	Implemented
Reintroductions	Partially implemented
Control of invasive alien plants	Implemented

#### Human Activities



Measures	Status
Management of water abstraction/takes	Implemented
Regulation/management of wastes	Implemented
Fisheries management/regulation	Implemented
Harvest controls/poaching enforcement	Implemented
Regulation/management of recreational activities	Implemented
Communication, education, and participation and awareness activities	Implemented
Research	Implemented

Other:

The wetland was promoted to a national nature reserve in June 2013 and became the first batch of national important wetlands in 2020.

1. Emphasize construction of professional teams and improve the working mechanism :  
Setting up a management office as a deputy-level unit, and cooperated with Fuzhou Municipal Government to formulate the Administrative Measures of Fuzhou Minjiang Estuary Wetland Nature Reserve
2. Strengthen the "two top-level designs" and build a guiding system: "Master Plan of Fujian Minjiang Estuary Wetland National Nature Reserve" and "Implementation Plan of Ecological Protection and Restoration of Forest, Lake and Grass in Fujian Minjiang River Basin", are to be vigorously and carefully practiced
3. Promote the co-construction and sharing of wetlands and enhance regional benefits:  
the management office provides 113 jobs of wetland management and maintenance, for residents living and producing around wetlands.
4. Carry out joint law enforcement and strengthen the regular patrol: Fuzhou takes the lead in formulating the Implementation Plan for Joint Protection of Ecological Environment of Minjiang Estuary Wetland and the Implementation Plan for Joint Law Enforcement Action of Raising Solid Solids in Minjiang Estuary Wetland Tidal Flat, Establishes a joint law enforcement team for wetland ecological environment protection in Minjiang Estuary, and establishes "Minjiang Estuary Wetland Ecological Judicial Protection Base" and "Minjiang Estuary Wetland Reserve Procuratorial Liaison Office", setting up 15 full-time patrol teams.
5. Expand the popular science education matrix and strengthen the awareness of protection:  
Wetland Management Office attaches great importance to the construction of wetland public education platform and built Minjiang Estuary Wetland Museum. In addition, they publish various popular science books and brochures, shoot and produce ecological promotional videos, and cooperate with the media to strengthen the publicity effect.
6. Actively build a platform for scientific research monitoring and academic exchange: The Management Office actively promoted the scientific research and monitoring work in the protected areas, and successively carried out a series of protection and monitoring projects relying on academicians workstations; it also cooperates with Fujian Normal University to carry out daily monitoring work; it actively cooperates with WWF-HK and other scientific research institutions to carry out research on the management of *Spartina alterniflora* and monitor key indicators of wetlands.

5.2.5 - Management planning

Is there a site-specific management plan for the site? In preparation

Has a management effectiveness assessment been undertaken for the site? Yes  No

If the site is a formal transboundary site as indicated in section Data and location > Site location, are there shared management planning processes with another Contracting Party? Yes  No

5.2.6 - Planning for restoration

Is there a site-specific restoration plan? No, but a plan is being prepared

5.2.7 - Monitoring implemented or proposed

Monitoring	Status
Water regime monitoring	Implemented
Water quality	Implemented
Soil quality	Implemented
Plant community	Implemented
Plant species	Implemented
Animal community	Implemented
Animal species (please specify)	Implemented
Birds	Implemented

(1) Continue to carry out regular monitoring of waterfowl, water quality, hydrology, meteorology and vegetation, and promote a new round of comprehensive scientific investigation of Minjiang Estuary wetlands. In 2021, the bird investigation task has been completed.

(2) Establish a video monitoring system platform for rare and endangered species and set up wetland waterfowl monitoring points to achieve full monitoring coverage in the core area.

(3) In addition, carry out epidemic disease monitoring and alien species monitoring.

## 6 - Additional material

### 6.1 - Additional reports and documents

#### 6.1.1 - Bibliographical references

Spalding M D, Fox H E, Allen G R, et al. Marine ecoregions of the world: a bioregionalization of coastal and shelf areas[J]. *BioScience*, 2007, 57(7): 573-583.

Abell R, Thieme M L, Revenga C, et al. Freshwater ecoregions of the world: a new map of biogeographic units for freshwater biodiversity conservation[J]. *BioScience*, 2008, 58(5): 403-414.

Kottek M, Grieser J, Beck C, et al. World map of the Köppen-Geiger climate classification updated[J]. *Meteorologische Zeitschrift*, 2006, 15(3): 259-263.

Bailey R G. Ecoregions: The Ecosystem Geography of the Oceans and Continents[M]. New York: Springer, 1998.174-175

List of terrestrial ecoregions (WWF)

Comprehensive Scientific Investigation Report of Fujian Minjiang Estuary Wetland National Nature Reserve (2011)

Master Plan of Fujian Minjiang Estuary Wetland National Nature Reserve (2011 ~ 2020)

Master Plan of Fujian Minjiang Estuary Wetland National Nature Reserve (2017 ~ 2026)

Biodiversity Conservation and Management Plan of Fujian Minjiang Estuary Wetland National Nature Reserve (2014 ~ 2018)

Preliminary Evaluation Report on the Proliferation and Release Effect of Aquatic Organisms in Fuzhou (Minjiang Estuary) (2018)

Cao Qiong, Huang Jiafang, Luo Min, Tan Ji, Tong Chuan. Transformation of coastal swamp wetland into aquaculture pond on coastal wetland Impact of carbon stocks [J/OL]. *China Environmental Science*.<https://doi.org/10.19674/j.cnki.issn1000-6923.20210924.007>

Li Jiabing, Chen Qingliao, Zhang Liyan, Tong Chuan. Effects of *Spartina alterniflora* invasion on soil nitrogen mineralization in *Smilax glabra* wetland at Minjiang estuary [J]. *Acta Soil and Water Conservation*, 2016, 30 (4): 242-248

Tan Lishan, Yang Ping, Xu Kang, Chen Kunlong, Huang Jiafang, Tong Chuan. Comparison of N<sub>2</sub>O fluxes between *Smilax glabra* wetland and reclaimed shrimp pond in Minjiang estuary [J]. *Environmental Sciences of China*, 2017, 37 (10): 3929 ~ 3939.

#### 6.1.2 - Additional reports and documents

i. taxonomic lists of plant and animal species occurring in the site (see section 4.3)

<1 file(s) uploaded>

ii. a detailed Ecological Character Description (ECD) (in a national format)

<no file available>

iii. a description of the site in a national or regional wetland inventory

<no file available>

iv. relevant Article 3.2 reports

<no file available>

v. site management plan

<no file available>

vi. other published literature

<no file available>

#### 6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:



Idyllic Habitat ( Wang Jianping, 23-12-2017 )



Flying Birds ( Zheng Hang, 11-09-2020 )



Mountain Niu overlooking Minjiang River Estuary Wetland ( Chen Yuli, 25-06-2021 )



Chinese Crested Terns ( Zhang Wen , 17-04-2021 )



Spoon-billed Sandpiper ( Chen Yongchang, 06-02-2021 )



Black-faced Spoonbill ( Lin Qingxian, 12-07-2020 )



Flying toward a better tomorrow ( Ding Hongan, 17-04-2016 )



The sound of estuary ( Chen Changyan, 12-03-2015 )



A glimpse of Minjiang River Estuary Wetland ( Zhou Qilong, 23-10-2013 )

#### 6.1.4 - Designation letter and related data

Designation letter

<1 file(s) uploaded>

Date of Designation