Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7 of the Conference of the Contracting Parties.

1. Date this sheet was completed/updated:
08/10/2001

2. Country:
the People's Republic of China

FOR OFFICE USE ONLY.
DD MM YY
Designation date | Site Reference Number

3. Name of wetland:
Zhanjiang Mangrove National Nature Reserve

4. Geographical coordinates: 20□14′-21□35′N, 109·40′-110·35′E

5. Elevation: (average and/or max. & min.)
0-3m

6. Area: 20,278.8ha

7. Overview: (general summary, in two or three sentences, of the wetland's principal characteristics)
This wetland, located in the southernmost tip of the mainland China, is the largest coastal mangrove forest wetland. According to primary investigations there are 24 species of mangrove plants, 82 species of birds and abundant shallow sea bio-resources living the wetland. When tide recedes, large areas of bare mudflats emerge out of water and provide waterfowls with an excellent place to feed and roost.

8. Wetland Type (please circle the applicable codes for wetland types; in the present document, the Ramsar Classification System for Wetland Type" is found on page 9)

marine-coastal: **A • B • C • D • E • F • G • H • [I] • J • K • Zk(a)**

inland: **L • M • N • O • P • Q • R • Sp • Ss • Tp Ts • U • Va • Vt • W • Xf • Xp • Y • Zg • Zk(b)**

human-made: **1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • Zk(c)**

Please now rank these wetland types by listing them from the most to the least dominant:
I

9. Ramsar Criteria: (please circle the applicable Criteria; the *Criteria for Identifying Wetlands of International Importance* are reprinted beginning on page 11 of this document.)

[1] • [2] • [3] • 4 • 5 • 6 • 7 • 8

Please specify the most significant criterion applicable to the site: 3

10. Map of site included? Please tick *yes* √
(Please refer to the *Explanatory Note and Guidelines* document for information regarding desirable map traits).

11. Name and address of the compiler of this form:
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***Please provide additional information on each of the following categories by attaching extra pages* (please limit extra pages to no more than 10):**

12. Justification of the criteria selected under point 9, on previous page. (Please refer to the *Criteria for Identifying Wetlands of International Importance* appended to this document)

Criterion 1: The Zhanjiang mangrove forest, a largest mangrove forest wetland reserve in China, is a typical representative of the northernmost tropical coastal mangrove forests seen in China and an important component of the mangrove forest ecosystem in the Northern Bay, covering an area of 20,000ha (including an area of 12,375ha of mangrove forest and an area of 7,625 ha of mudflat suitable for mangrove forest to grow).

The stand composition of the Zhanjiang mangrove forest belongs to the oriental form of the world mangrove forests.

The Zhanjiang mangrove forest is one of the best examples of the natural mangrove forest marsh wetlands found in the southwestern coast in Guangdong, China. It is an important wetland for researches of mangrove forest distribution mechanism and spreading. In the world, mangrove forests are generally distributed in eastern coasts. However, the Zhanjiang mangrove forest is not only distributed in the east coast of the Leizhou Peninsula but also luxuriates particularly in the west coast as a typical representative form.

Criterion 2: The Zhanjiang mangrove forest harbors 24 species of 15 families of mangrove plants and semi-mangrove plants, and 82 species of birds. Among these birds there are 38 species of resident birds and 44 species of visitor birds, with 4 species ranked as endangered birds, 12 ranked as vulnerable birds, 32 listed as agricultural and forestry beneficial birds and 5 listed as pets. The fact that most of the winter visitors stopping and feeding in here are international protection species makes the Zhanjiang mangrove forest one of the important migrating grounds and one of the international important bird areas.

Criterion 3 : In the Zhanjiang mangrove forest wetland, the rich litter can be decomposited and become food of many sea microorganism and animals, hence supports abundant fish resources. According to uncompleted investigation and statistics, the reserve harbors 11 species of fish with high economic values (such as eel and octopus), 48 species of snails and shellfish, 44 species of shell as well as a large number of unidentified low animals and plants. The mangrove forest provides offshore fish with a good place for sheltering, feeding, egg-laying and young fostering, as well as a food base on its migrating route.

According to Cheng Shupei, Liang Zhxian, Deng Wen, The mangrove forests in the east of Guangdong, Journal of plant ecology and geo-botany, 1985, 9(1) 59□62.

13. General location: (include the nearest large town and its administrative region)

Located in the coastal mudflat belts surrounding the Leizhou peninsula, the southernmost tip of the Mainland China, from east, south and west, the mangrove forest reserve, spanning 30 townships of 2 cities, 2 counties and 3 districts (i.e. Leizhou city, Lianjiang City, Xuwen county, Suixi County, Potou District, Mazhang District and Donghai District), is within the administration border of the Zhanjiang municipal city.

14. Physical features: (e.g., geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; catchment area; downstream area; climate)

Geology and geomorphology: The Leizhou peninsula has a flat landform and winding and complicated coastlines. In its offshore waters there are numerous islands. Except that the southern tip coast is very rugged, the coasts in the east and west and offshore island are all flat

sea beaches with a small grandniece.

Soil: Mostly salt marsh soil, which, under the effect of the mangrove forest, developed gradually from shallow sea sediment and accumulation transported by tides and rivers.

Origin: The Zhanjiang mangrove forest originated from natural coastal marsh wetland.

Hydrology and water quality: The rivers which run into this sea water area include the Ganjiang, Jiujiang and Nanduhe, each of which brings in large quantity of fresh water, nutrient material and silt from land annually to form a gradient variation in water quality and salinity in the area where fresh water and tidal salt water meet. The gradient variation ranges between 10% and 30%, which is affected by periodical change in tide and seasonal change in rainfall. In the estuary, the mudflats with different salinities provide various mangrove plants of different salinity endurance with a suitable place to grow.

Tidal variations: The tide in the east of the Leizhou peninsula is an irregular half-day tide, while in the west, an irregular day tide.

Climate: Located in the transition area from northern tropic to southern sub-tropic, the southern part of the peninsula belongs to the northern tropical monsoon climate area while the northern part of the peninsula belongs to the southern sub-tropical monsoon climate area. Both parts are largely effected by monsoon and marine climates, with an annual mean temperature of 23□, extremely high temperature of 38.8□, extremely low temperature of _1.4□ and annual mean precipitation of 1534.6mm. The dry and wet seasons are clear-cut. Precipitation is concentrated in April-September, the typhoon and storm season. In this season, typhoon brings about storm and sea wave, which hit the coast with great destructive force.

15. Hydrological values: (groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.)

In the Zhanjiang mangrove forest wetland, the estuary mangrove forests are under the most flourishing growth. Their complicate root systems (consisting of shoot-like air roots, arc-shaped strut root) can help plants and forested land recent, absorb and fix the floating silt and many types of material carried by rivers and tides, hence play a role of purifying sea water. The accumulation of sediment in forested land can make land rise up and thereby offset the rise of sea level caused by the global green house effect and prevent coasts from being inundated by seawater or defer the process. In addition, the block and attrition from the mangrove forest can lower the energies of wind; sea wave and tide quickly, hence reduce the eroding of wave and tide against the coast, and protect the coastal belts.

16. Ecological features: (main habitats and vegetation types)

The dominant plant communities of the Zhanjiang mangrove forest include those of *Rhizophora stylosa, Bruguiera gymnorrhiza* and *Kandelia candel*. In the recent years, the introduced *Sonneratia caseolaris* have grown up into shrubs, which, together with the local shrub trees, rapidly constitute mangrove forests communities with two-layer structure. The original vegetation around the wetland is tropical evergreen monsoon rain forest and tropical deciduous monsoon rain forest. Most of the harbor bay areas in the Leizhou peninsulas winding estuary are suitable places for mangrove plants and semi-mangrove plants to grow in large quantities to form northern-edge-tropical coastal mangrove forest marsh vegetation. Because of its long story of exploitation, the Leizhou peninsula now keeps only a tiny fraction of remnant original forest communities.

17. Noteworthy flora: (indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc.)

The Zhanjiang mangrove forest is playing an extremely important ecological function in the aspects of resisting violent tides caused by typhoons, alleviating tide speed, facilitating silting-up and land creation, protecting dams and beaches, absolving and transferring pollutants, and purifying sea water.

In this wetland area, *Rhizophora stylosa* is one of the important plant species. It is also dominant

specie in southern sub-tropical mangrove forests. In this area, there are 270 ha of well-protected *Rhizophora stylosa* communities, which grow about 6m high and are densely distributed in form of large patches. In the Zhanjiang mangrove forest there grow large patches of pure forests. They are pioneer plants commnities growing in the bare mudflat of high salinity. *Bruguiera gymnorrhiza, Kandelia candel,* and *Hibiscus tiliaceus* are all common communities seen in the Zhanjiang mangrove forest. Some of them are sololy dominant, while others intermix one another.

Lumnitzera racemosa, Ceriops tagal and *Heritiera littoralis* are endangered species of the Zhanjiang mangrove forest. The nature stands of the Zhanjiang mangrove forest are lack of species narrowly distributed in tropic, such as those in genera of *Lumnitzera* and *Sonneratia*. In the recent years, the success in experiments of ex situ protection of *Sonneratia caseolaris* and has added new mangrove plants to this wetland area.

According to Lin Peng, Fu Qing, Ecological Environment of China Mangrove Forests and Economic Utilization, Beijing: Higher Education Press, 1995, 11□39. Cheng Shupei, Liang Zhxian, Deng Wen, The mangrove forests in the east of Guangdong, Journal of plant ecology and geo-botany, 1985, 9(1) 59□62. And Zhang Hongda, Zhang Chaochang, Wang Boshun, The mangrove forest communities in the Leizhou pennisula, Journal of Zhongshan University, 1957, (1): 122-145.

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18. Noteworthy fauna: (indicating, e.g., which species are unique, rare, endangered, abundant or biogeographically important; include count data, etc.)

The animals inhabiting the Zhanjiang mangrove forest wetland mainly include birds and fish. Primarily, 82 species of birds are recorded, which include 38 species of resident birds, 44 species of migrating birds, 4 species of endangered birds, some vulnerable birds. Besides, there are 11 species of fish of high economic values, and other resources, such as 44 species of crustacean, 48 species of shellfish, 126 species of zooplankton, 256 species of alga and 133 species of insects. The fauna in this area belongs to Min-Guang coastal sub-division of South China division of oriental region. Therefore its bird and mammal compositions are conspicuously of oriental characters. From

(1)Lin Peng, Fu Qing, Ecological Environment of China Mangrove Forests and Economic Utilization, Beijing: Higher Education Press, 1995, 11□39.

(2) Cheng Shupei, Liang Zhxian, Deng Wen, The mangrove forests in the east of Guangdong, Journal of plant ecology and geo-botany, 1985, 9(1) 59□62.

(3) Zhang Hongda, Zhang Chaochang, Wang Boshun, The mangrove forest communities in the Leizhou pennisula, Journal of Zhongshan University, 1957, (1): 122-145.

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19. Social and cultural values: (e.g., fisheries production, forestry, religious importance, archaeological site, etc.)

Forestry: Mangrove forest is an important form of China's southeast coastal protection forest systems. It is a safeguard of coastal bank and an excellent lee shelter" for fish boats. In addition, mangrove trees can be used to process many other side products, medicine, food and fodder which has been widely exploited and used. With deep development of mangrove forest side products, the local people can get more and more bio-resources from the mangrove forest for their production and economy activities.

Culture values: Mangrove forests grow in the cross area between land and ocean. They adapt to coastal salty marsh habitats lack of oxygen. Mangrove forests, unlike other forest forms, have particular morphological and physiological features and rich biological diversity. In the period between autumn-winter and spring-summer, large numbers of migrating birds take a rest in the mangrove forest wetland. However, the up-rise in sea level caused by green house effect will inevitably produced great impacts on the distribution and growth of animals. The mangrove

forest is not only an ideal classroom" for biological and ecological education but also a comprehensive base for scientific research and culture education in the areas of ocean logy, biology, ecology, geology, geomorphology and meteorology. Therefore all sorts of physical and chemical changes can be studied

The mangrove forest, well known for its beautiful name of *sea fores*t, enjoys high values of aesthetics. When a tide comes and a mangrove forest is inundated, people can still get a beautiful view of the mangrove forest through the limpid water. The scenery, plus blue sky, thousands of flying birds and joyful fish swimming in the water, is very much like an attractive picture. Taking a site viewing in this scenery, people can get a large amount of scientific knowledge about relation between man and nature and therefore build up awareness of loving nature and protecting nature.

Fisheries: The Zhanjiang mangrove forest wetland is a major source place where local people get living material and economic income. Setting up floating cages in waters of forested areas or building fishing ponds on the land at the edge of mangrove forests for commercial fish with high economic values so as to gain high benefits is one of the ways for local people to become better off from poverty.

20. Land tenure/ownership of: (a) site (b) surrounding area

When the provincial reserve was established, the land ownership and land tenure were authorized to the State and the nature reserve respectively.

The Land tenure and land ownership in surrounding areas are in the hands of local collectives and individuals.

21. Current land use: (a) site (b) surroundings/catchments

Site: The whole wetland has been protected primarily since the national nature reserve was established. Through nature succession People in the surrounding area practice fishing and aquatic rising to increase income for livelihood. Some of shore land has been developed into aquatic ponds to raise sea fish of high economic values. This part of land has been used as production land for some people to become better off.

Surroundings/catchments: The surrounding land is authorized to local people. They use it to grow crops, fruits and vegetable. The catchments, located in coastal shallow areas, are public land, which is used by local people as fishing ground or waterways for transportation.

22. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land use and development projects: (a) at the site (b) around the site

Site: The biggest adverse factor is the changes of coastal mudflat in land use, such as filling sea to create farmlands, to build salt ponds, piers and roads, and to expand coastal cities. All these activities have destroyed much of mangrove forest wetland. In the recent years, the aquiculture at large scale on sea mudflats and fish pond building for artificial raising of fish, shrimp and crab have also damaged much of mangrove forest wetland and resulted in ecological deterioration. In the recent year, the ocean pollution caused by oil and heavy metal, uncontrolled collecting of aquatic products under mangrove forests have severely affected the growth of mangrove seedlings, and even led to death and modification in ecological features.

Surroundings: so far there are no cases happening in which features of mangrove forest are severely modified. However, there is one or two small sugar factories in the surrounding areas, which ever released waste water into the wetland and caused nearby offshore mudflats to become eutrophic. This situation further produced adverse impacts on growth of the mangrove forest. Now, these small sugar factories have been closed.

23. Conservation measures taken: (national category and legal status of protected areas - including any

boundary changes which have been made: management practices; whether an officially approved management plan exists and whether it has been implemented)

In 1991 the Zhanjiang provincial mangrove forest nature reserve was established with a protection area of 1533 ha. In December 1997, the reserve was approved of becoming a national reserve. Its protection area was enlarged up to 20000 ha. In 1999, the Master Plan of Zhanjiang National Mangrove Forest Nature Reserve was finished. So far the Zhanjiang municipal city has established a leading group responsible for implementation preparation of the master plan and initiative construction of the Zhanjiang National Mangrove Forest Nature Reserve. And several measures have been taken: the government of Zhanjiang municipal released regulations of Zhanjiang mangrove forest resources protection and management in March, 2001; a public awareness campaign was launched with wide participation of the Zhanjiang TV, Radio and local news papers, and pamphlets were spread; to coordinate the relation between the nature reserve and surrounding communities and units; and to organize patrolling guard force to protect the mangrove forest.

A Dutch-supported project started up officially in September 2001. The implementation of this project is concentrated within the Zhanjiang National Mangrove Forest Nature Reserve, aiming at comprehensive management of the mangrove forest in the Leizhou peninsula and protection of coastal forest belts.

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24. Conservation measures proposed but not yet implemented: (e.g., management plan in preparation; officially proposed as a protected area, etc.)

Although a Master Plan-Zhanjiang Mangrove Forest National Nature Reserve General Plan-is available, construction work has not start up

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25. Current scientific research and facilities: (e.g., details of current projects; existence of field station, etc.)

Domestic experts from the South China Institute of Botany, China Academy of Sciences, Hong Kong Chinese University, Xiamen University, Institute of Tropical Forestry of China Academy of Forestry Sciences, Guangzhou Normal University, Guangdong Academy of Forestry Sciences, and South China University of Agriculture, as well as some foreign experts, often come to conduct surveys and researches. They have achieved many results. The Institute of Tropical Forestry of China Academy of Forestry Sciences received a national second class scientific and technical progress award in 2000 for their research on afforestation and operation techniques of major mangrove forests-***an eighth five-year plan*** key research project. Their research project-reeding and management techniques of coastal mangrove forests" has been accepted as an achievement again. The successful introduction of *Sonneratia caseolaris* from Hainan province northward to the Laizhou peninsula has improved the growth and renewal of local mangrove forests and reached the goal to rehabilitate and develop mangrove forests. In addition, the demonstrations of afforestation of mangrove forests and improvement of degenerated secondary mangrove forests have play a role of technique extension among publics and visitors. The 1000 square meters' nature reserve management station built in Gaoqiao, Lianjiang, has become a scientific education base. Now the reserve is applying for even more research projects and going to have them carried on in the reserve.

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26. Current conservation education: (e.g., visitors center, hides, info booklet, facilities for school visits, etc.)

The current conservation education activities include:

·Public awareness extension through the municipal TV live video, broadcasting programs, radio, newspaper articles and sign boards erected at reserve borders. Their topics and content include importance of protecting mangrove forest wetland and leaders' speeches about mangrove forest protection.

·Educating grassroots leaders and local people in the surroundings and helping them to understand the importance of protecting mangrove forests. Through publishing pamphlets regarding mangrove plant species and their habitat features,

·Erecting signs and boards at reserve borders, bearing information of protecting mangrove forests, birds and their habitats.

·Guiding for students who come to visit the reserve and helping them understand protection of mangrove forests, and using their articles to appeal to publics' attention to protection of mangrove forest wetland.

·Continuing experimental rehabilitation of mangrove forests, accepting and guiding for visitors, raising public awareness of protecting and developing mangrove forests so as to enhance their confidence about rehabilitation of mangrove forests.

27. Current recreation and tourism: (state if wetland is used for recreation/tourism; indicate type and frequency/intensity)

There are holiday villages and facilities for holidays, recreation and tourism in the Donghai Island District. However the reserve hasn't yet initiated any entertainment and tourism activities because of lack of money.

28. Jurisdiction: (territorial, e.g. state/region, and functional, e.g. Dept of Agriculture/Dept. of Environment, etc.)

Jurisdiction: Forestry sector, specifically under the jurisdiction of Guangdong provincial forestry Bureau / Zhanjiang municipal government, Guangdong Province

29. Management authority: (name and address of local body directly responsible for managing the wetland)

Name: Forestry Department Of Guangdong Province
Address: No. 343 Zhongshan Qilu Guangzhuo, Guangdong China 510173
Tel: +86-759-333434

30. Bibliographical references: (scientific/technical only)

(1) Lin Peng, Fu Qing, Ecological Environment of China Mangrove Forests and Economic Utilization, Beijing: Higher Education Press, 1995, 11□39.

(2) Cheng Shupei, Liang Zhxian, Deng Wen, The mangrove forests in the east of Guangdong, Journal of plant ecology and geo-botany, 1985, 9(1) 59□62.

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(4) Huang Qinchang, Zeng Pei, Su Shunying, a primary study on mangrove forest communities in Futian nature reserve, Ecology Science, 1985, (1): 12-18.

(5) Gao Yunzhang, The mangrove forests in Guangdong Province, Tropical Geology, 1985, 5(1): 1-7.

(6) Zheng Dezhang, Liao Baowen, Lin Shuning, Investigation of the mangrove forest vegetation in Guangdong. A research on afforestation and operation techniques of major mangrove tree species, 1999: 319-327.

(7) Zheng Dezhang, Liao Baowen, Zheng Songfa, The importance of mangrove forest wetland in Guangdong province, Guangdong Forestry Science and technology, 1997, 13(1):8-14.

(8) Zheng Dezhang, Liao Baowen, Zheng Songfa, Research on afforestation and operational techniques of major mangrove tree species, 1999.

(9) Cheng Jian, He Bingyuan, Liang Shichu, The zooplankton species in the water in mangrove forest areas

in the Yingluo harbor, Guangx, Journal of Guangxi Sciences, 1993,9 (2): 43-44.

(10) Jiang Guofang, Hong Fang, a primary investigation of insects in the Shankuo mangrove nature reserve, Journal of Guangxi Science, 1993,9(2): 63-66.

(11) A comprehensive report on the Zhanjiang mangrove forest national nature reserve".

(12) A master plan of the Zhanjiang mangrove forest national nature reserve"

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