

# **Habitat loss for Yangtze finless porpoises partially due to climate change, direct intervention and relocation efforts**

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# Yangtze River Dolphin or Baiji *Lipotes vexillifer* (Extinct)

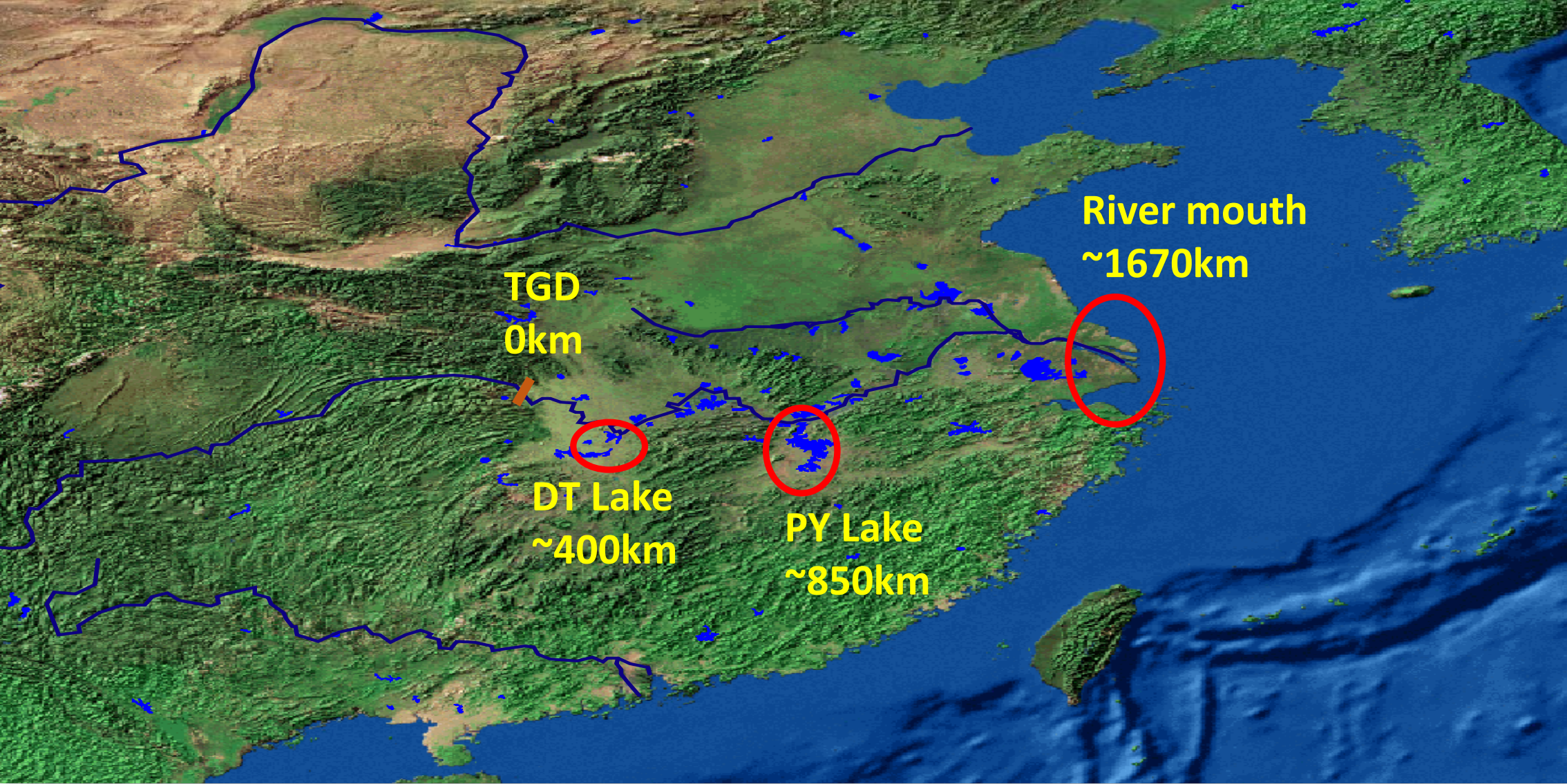




# Yangtze Finless Porpoise *Neophocaena asiaeorientalis* *asiaeorientalis*







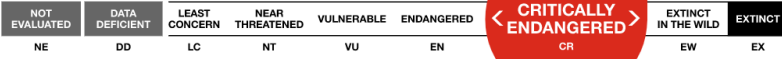
TGD  
0km

DT Lake  
~400km

PY Lake  
~850km

River mouth  
~1670km

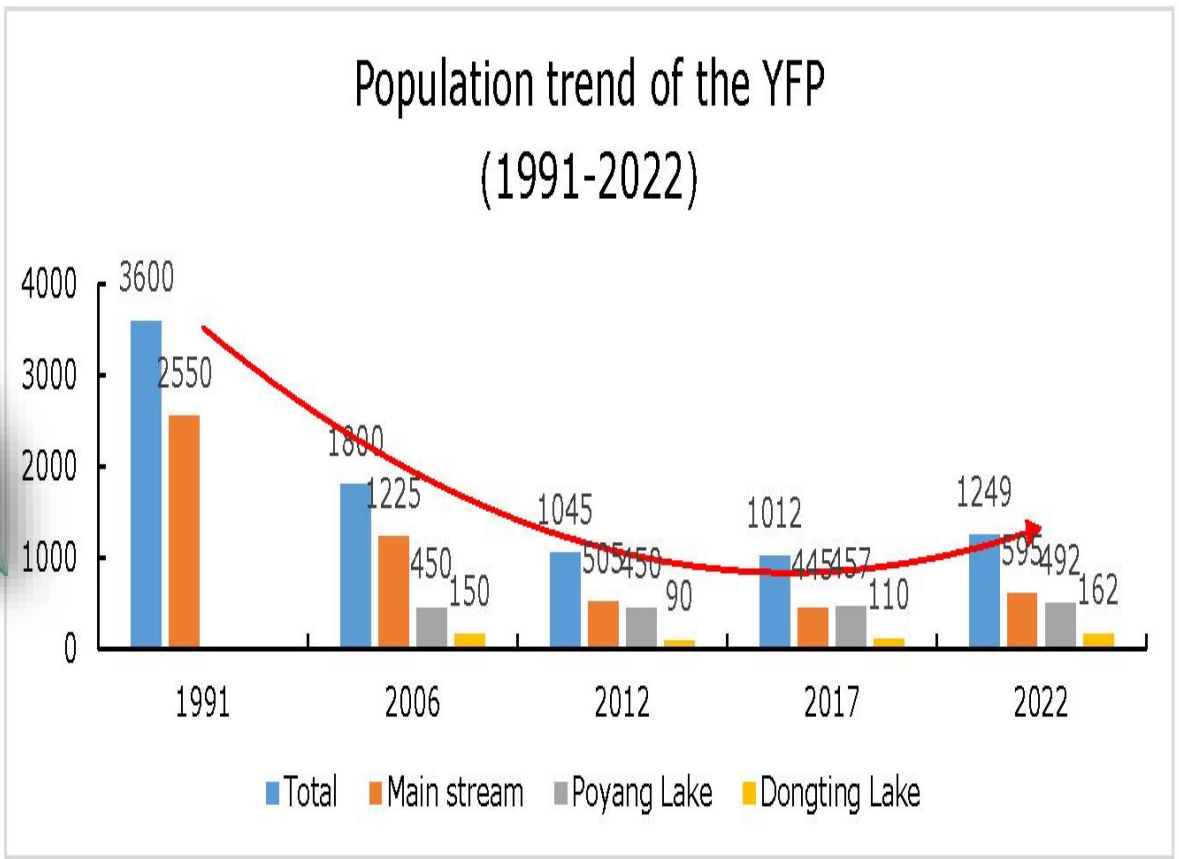
# Yangtze Finless Porpoise



- 1991-2012, The natural population of the YFP suffered drastic decline from ~2,700 to 1,800 in mid 2000s
- 2017. Approximately 1000 left, decline apparently stopped
- 2022. Population appears to be increasing



### Population trend of the YFP (1991-2022)





# Joint efforts by governments and public



## National strategy

- Greatly enhanced protection rather than fast development projects in the river system

Science-based

## Conservation policy

- Up-graded to first order protected animal in 2021
- **Full ban on fishing in Yangtze basin for 10 yr (since 2021)**
- Basin-wide Protection Law into effect in 2021

## National network

- Ministry of Agric established YFP conservation network in 2008
- 10 natural and semi-natural reserves
- Promotion of national YFP rescue plan since 2016

## Public

- Almost every county along the YR and around PY and DT lakes established an NGO for protecting YFP; more than 80 of them
- Fishermen joined the patrolling, funded first by NGO, then taken over by government

# Major threats and future challenges



**Sand dredging**



**Illegal and over fishing**



**Water pollution**



**Climate Change**



**Habitat degradation**



**Shipping**



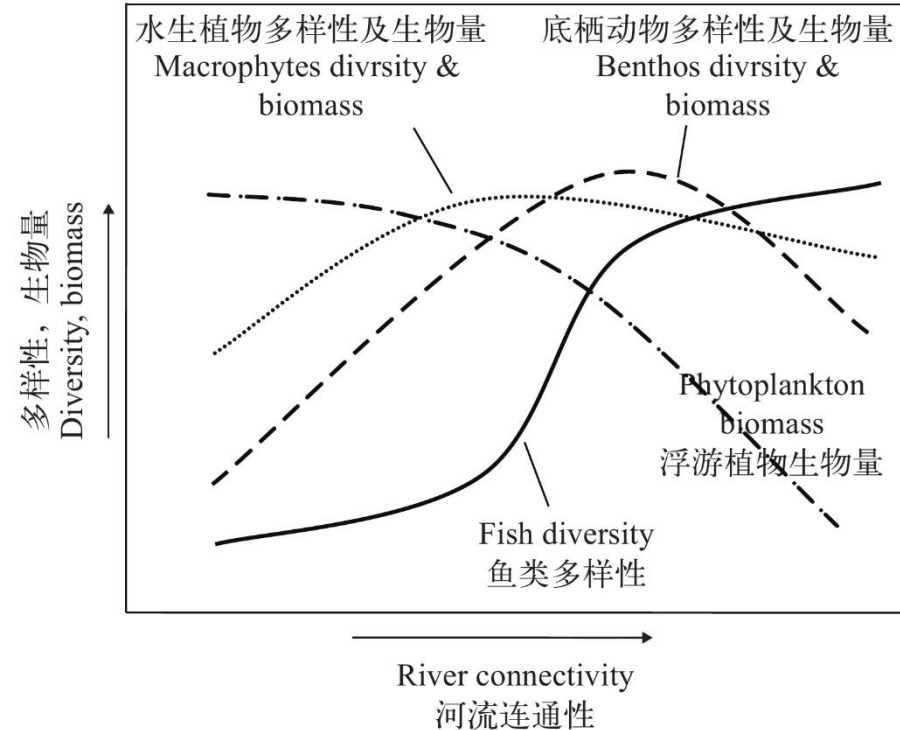
See: "The Yangtze River Floodplain: Threats and Rehabilitation" by Hongzhu Wang et al. in American Fisheries Society Symposium 84:263–291, 2016

# Climate change on catchment scale



## Habitat connectivity decline

- Water resource utilization pattern changed the hydrological connectivity between the YR and adjoining lakes



Relationships between hydrological connectivity and various ecological groups in the Yangtze floodplain (Wang et al. 2019)

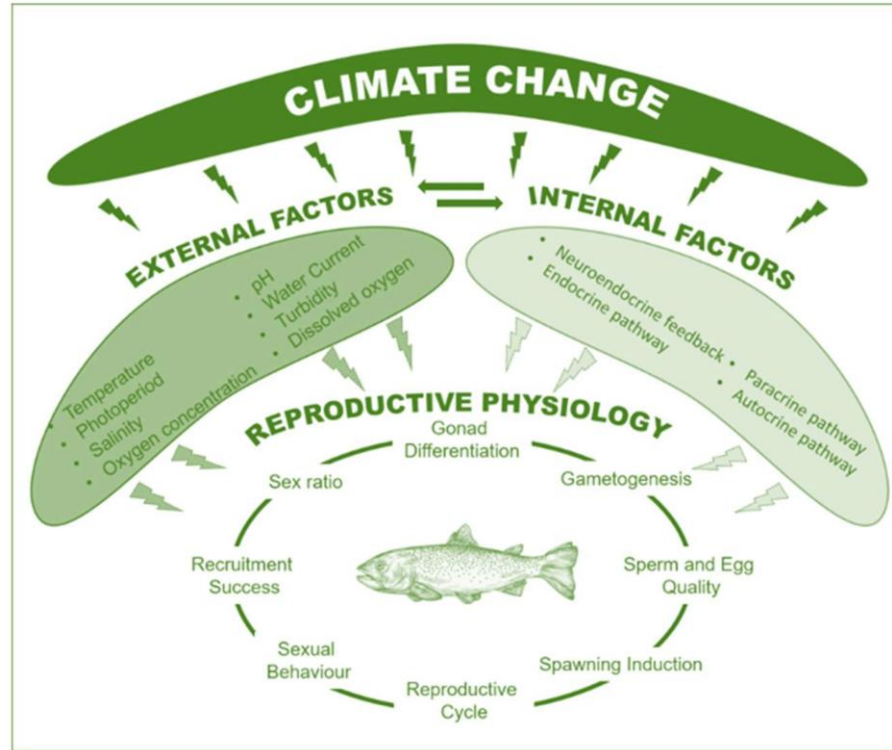


# Climate change on catchment scale

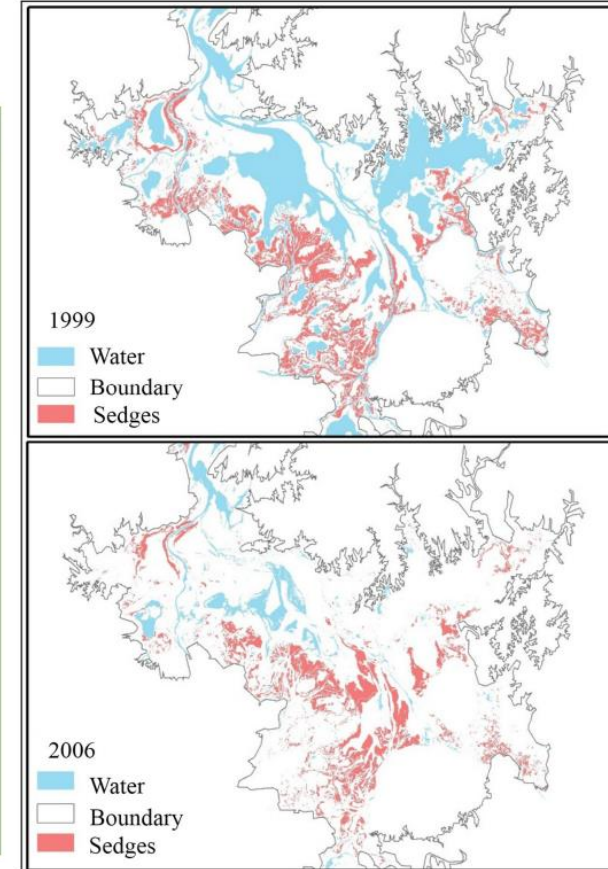


## Hydrological rhythm change

- Exacerbating phenological mismatches of plant germination, fish spawn, and YFP reproduction
- Dramatic decline of the seasonal floodplain in recent decades

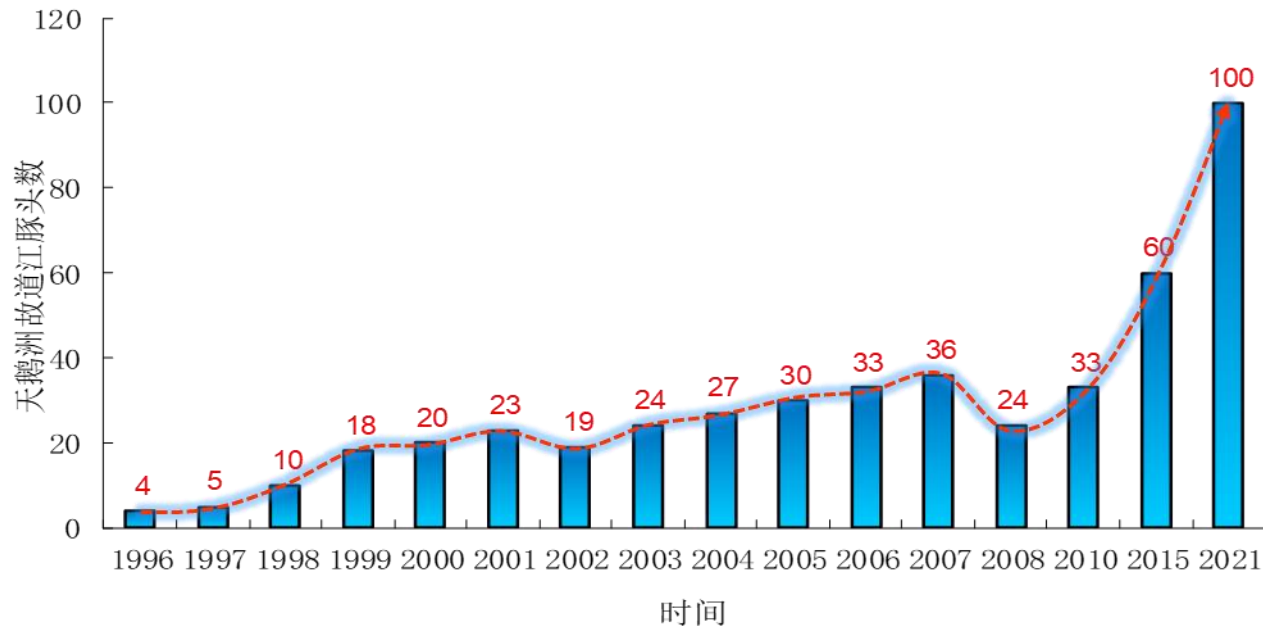


External and internal climate dependent factors affecting fish reproductive physiology (Anisa et al. 2023)

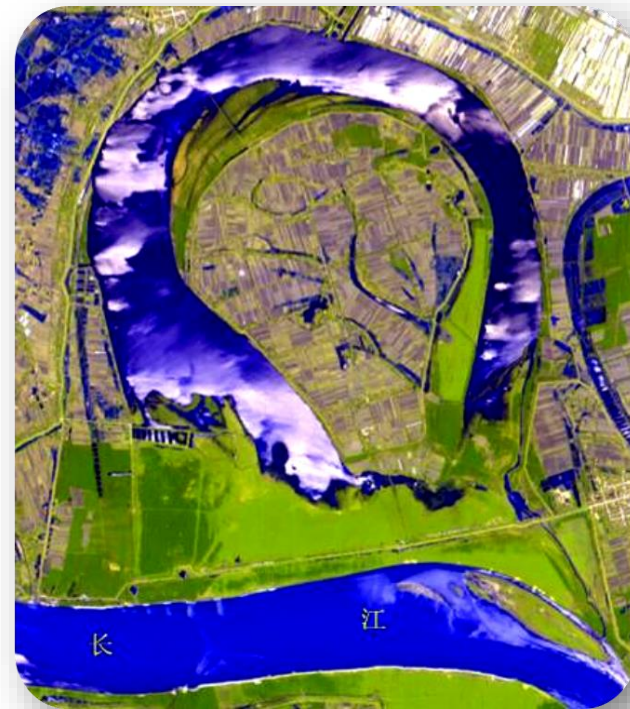


Maps showing distributions of sedge dominated communities (1999 and 2006) (Wang et al. 2019)

# Climate change on regional scale: TEZ Oxbow



**YFP population quickly increases in the ex situ reserve in Tian-e-Zhou Oxbow**



**Tian-e-Zhou Oxbow**



# Climate change on regional scale: TEZ Oxbow

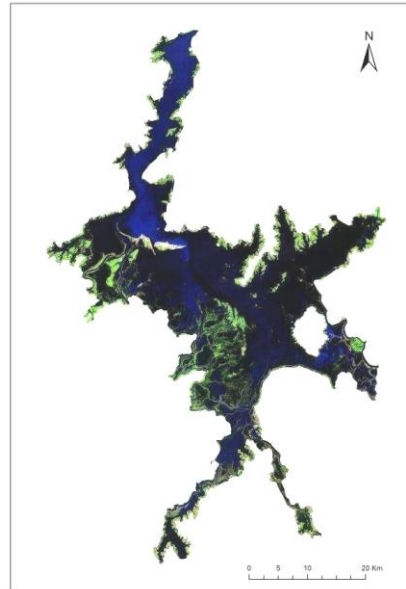


**Extremely cold weather in Spring of 2008, the Tian-e-Zhou Oxbow was frozen, six porpoises died and all others were badly injured**

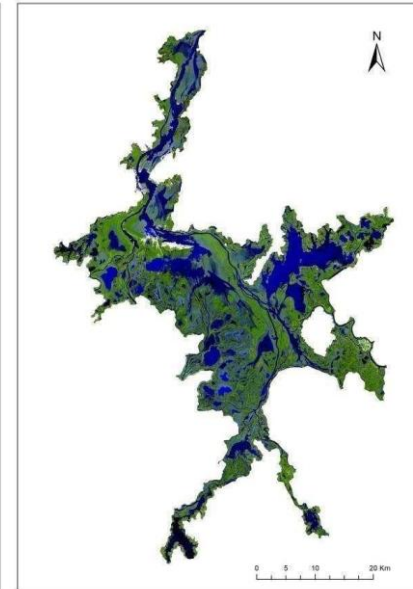


## Extremely low water level in Poyang

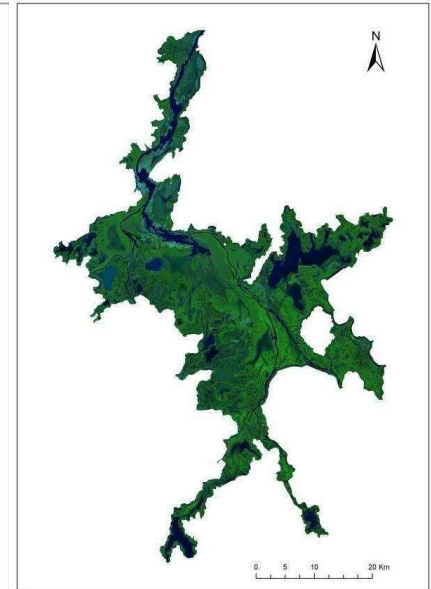
- PYL is critical habitat with almost half of the overall YFP population
- $\sim 4100 \text{ km}^2$  in wet season (June to September)
- $\sim 500 \text{ km}^2$  in dry season (September to March)
- $\sim 150 \text{ km}^2$  from August 2022 to March 2023
- lowest recorded water level since 1951



High water level



Dry water level



Extremely dry water level

# Climate change on regional scale: Poyang Lake



**~160 YFPs  
trapped in  
'sandpits'  
(17 km<sup>2</sup>)  
between  
Aug 2022-  
Mar 2023**



Insufficient food resources

Continuously declining water levels

Separation of mothers and their calves

# Climate change on regional scale: Poyang Lake



## IHB led a rescue operation as following steps

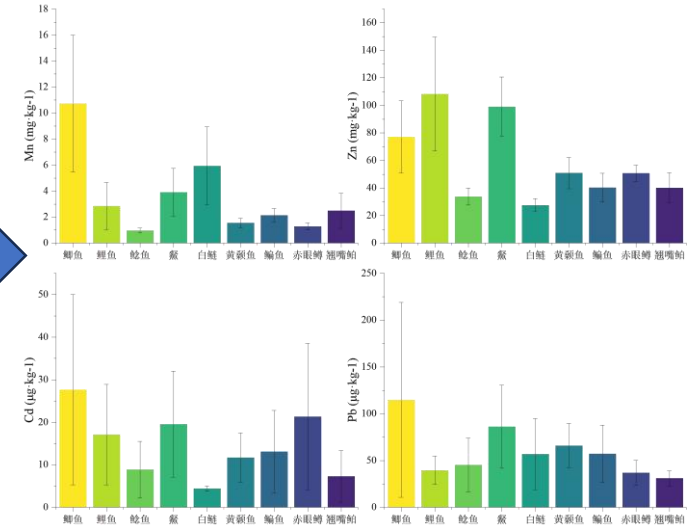
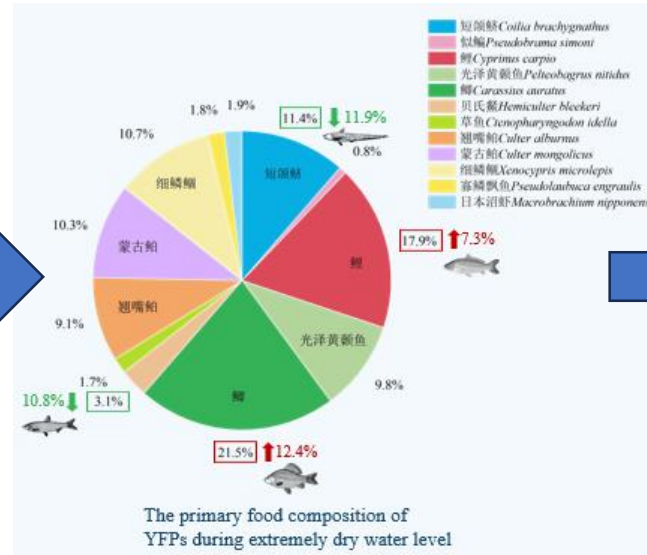
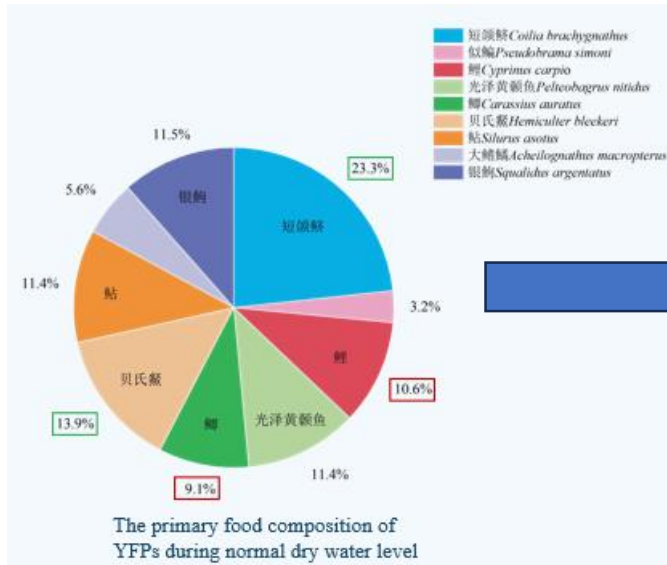
- Deploying food resources ✕
- Dredging ✕
- Driving YFPs from sandpits to deep waters ✕
- Catching YFPs in sandpits and moving them to deep waters
- Translocating injured YFPs to an *ex-situ* facility

- ✓ **111 YFPs were transferred**
- ✓ **2 injured YFPs were rescued**





# Climate change on regional scale: Poyang Lake



- The increased contribution of benthic fish such as crucian carp (*Carassius auratus*) and carp (*Cyprinus carpio*) in the diet of YFPs during extremely dry periods may elevate the risk of exposure to heavy metal pollutants such as Mn, Cd, Pb, etc. in Poyang Lake.

- The Ministry of Agric: Launched a series of rescue policies
  - **Established a rescue system:** Set up a comprehensive system to rescue YFPs during extreme climate events
  - **Developed rescue guidelines:** For the rescue and protection of the YFPs during extreme climate events
  - **Formed an expert group:** Specialized in rescue and conservation of cetaceans, providing guidance and oversight



- Emergency Response Plan for Poyang Lake and Tian-e-Zhou Oxbow
  - **Identification of High-Risk Areas at Different Water Levels:** Identified high-risk areas in Poyang Lake and TEZ Oxbow based on different water levels and potential threats
  - **Formation of YFP Patrol Teams:** Hired local fishers to form patrol teams around high-risk water areas, focused on protecting the YFPs from potential dangers
  - **Establishment of Emergency Relocation Centers:** Set up emergency relocation centers to provide a safe haven for the YFPs in case of extreme conditions or threats





- OUR FURTHER SUGGESTIONS (WISH-LIST): **To promote a seasonal river floodplain restoration project in the Yangtze River mainstem**
- Hydro-ecological water management:
  - ✓ To support plant growth and fish reproduction: water-level control to ensure germination, growth and maintenance of vegetation
- Riverbank rehabilitation:
  - ✓ Remove illegal ports and consolidate ports to reduce bank development
  - ✓ Restore natural shoreline vegetation
  - ✓ Implement 'eco-friendly' embankment hardening measures
  - ✓ Remove subsidiary embankments to reestablish hydrological connectivity between the floodplain and the river mainstem and lakes

*We are more confident than ever to  
protect the beauty of nature !*



**Thank you**

