

# WWF-China / WWF Freshwater Practice

# **YANGTZE FINLESS PORPOISES ON THE BRINK**

How WWF is working with partners to prevent the extinction of the Yangtze River's last remaining cetacean species

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Map of the Yangtze river basin

#### Introduction

The Yangtze finless porpoise (*Neophocaena asiaeorientalis* ssp. *asiaeorientalis*) is a cetacean endemic to the Yangtze River, listed as 'critically endangered' on the IUCN Red List of Threatened Species.<sup>1</sup> The finless porpoise is now found in the middle and lower reaches of the Yangtze's main stem, in two large lakes naturally connected to the Yangtze – Dongting and Poyang – and, more recently, in three oxbow lakes to which finless porpoises have been translocated. At the top of the food chain within the Yangtze River, the species is an indicator of the river ecosystem's health and is a flagship species for WWF's work on the Yangtze.

The most recent survey of finless porpoises on the Yangtze main stem and the two lakes was conducted in 2012, yielding a total population estimate of 1,045 individuals. The finless porpoise population was found to be in accelerating decline -13.73% per year.<sup>2</sup>

This case study describes the finless porpoise conservation work that WWF and its partners have undertaken. Although the main focus is on activities that have happened as part of the first phase of the HSBC Water Programme (2012-2017), past activities are also mentioned, given that finless porpoise conservation efforts were initiated in the 1990s and that WWF's involvement started in 2002. Specifically, activities relating to population monitoring, habitat conservation, the establishment of oxbow lake reserves, policy influencing and awareness raising are detailed in this case study.

#### What problem are we trying to address?

Finless porpoises face varied threats both in the Yangtze main stem as well as in Dongting and Poyang lakes. Some can cause direct mortality, while anthropogenic habitat degradation (e.g. via sand mining or infrastructure construction) contributes to population decline by reducing carrying capacity within finless porpoise habitats. Several of these threats (e.g. navigation, pollution from industry, etc.) are linked to China's rapid economic development since the 1990s, a likely driver for the accelerating trend of the finless porpoise's population decline.<sup>2</sup>

**Navigation**: Boats and ships in both the main stem of the Yangtze River and in Dongting and Poyang lakes impact finless porpoises via collisions as well as acoustically. Finless porpoises' foraging, communication and navigation behaviours are dependent on echolocation, which navigation-related noise can impede.<sup>3</sup> In Poyang Lake, the dry season shrinking of the lake (from over 4,070km<sup>2</sup> to around 150km<sup>2</sup>) concentrates the finless porpoise population within narrow shipping channels, which increases the risk of ship collisions.<sup>4</sup> During the 2006 cetacean survey, a minimum of 19,830 large shipping vessels (more than one vessel per 100m of river) were counted in the main stem between Yichang and Shanghai.<sup>5</sup>

**Dredging and sand mining**: Sand mining adversely affects the finless porpoise through ship collisions, by degrading the habitat of finless porpoises and their prey, by blocking the passage between different water bodies<sup>6</sup> and by impeding the porpoises' ability to hunt using echolocation. Poyang Lake has been a major hub for sand mining for construction since 2001, when dredging was banned on the Yangtze's main stem; the dredging, by enlarging the lake's outflow channel, has altered the lake's hydrological regime and contributed to lower water levels, particularly during the dry season.<sup>7</sup> The average annual volume of sand mining exports from Poyang Lake during 2005 to 2006 was conservatively estimated at 236 million m<sup>3</sup> per year based on remote sensing data, making it the world's

### **Multiple challenges**



Sand dredging boats on Dongting Lake © Justin Jin / WWF-US



Electric fishing © Yifei ZHANG/WWF



Dongting Lake © Yifei ZHANG/WWF



Tian-e-Zhou oxbow lake froze over in 2008

largest sand mining operation.<sup>8</sup> Not all dredging throughout the Yangtze river basin is carried out legally.

**Fishing equipment**: Bycatch of finless porpoises in fishing equipment, primarily gillnets and rolling hook long-lines, is common<sup>9</sup> not least because the most suitable locations for setting fishing nets tends to overlap with preferred finless porpoise habitats.<sup>10</sup> Other fishing methods can also cause injury or death, for example electro-fishing and fishing using explosives. Although such methods are illegal, lack of awareness and poor law enforcement means they are still used in many areas.<sup>11</sup>

**Overfishing**: In addition to direct mortality caused by certain kinds of fishing equipment, fishing has also caused a reduction in the finless porpoise's prey base – some finless porpoise deaths have been attributed to starvation.<sup>12</sup> Indiscriminate fishing – harvesting all sizes of fish using small-meshed nets – decreases the number, age and size of fish in the river.<sup>13</sup> Overfishing can compound other threats; for example, acoustic monitoring of finless porpoises during the 2012 survey found that porpoises tended to hunt primarily near port areas – presumably due to higher prey availability there than in other overfished areas – which then exposes them more to noise pollution and the risk of boat strikes.<sup>14</sup>

**Water pollution**: Generally speaking, water quality in the Yangtze main stem is not poor enough to be one of the major threats to the finless porpoise. However, in certain localised areas, pollution can be a major problem. For example, the Dongting Lake population is affected by pollution.<sup>15</sup> In 2004, six porpoises were thought to have died due to pollution from chemicals used to control schistosomiasis, while 12 died in 2012, with autopsy results showing pollution was one of the main causes of death. Water quality is also a concern in the Tian-e-Zhou oxbow (see page 18).

Habitat loss, degradation and fragmentation: Human activities contributed to finless porpoise extirpation from some of its original range, such as tributaries to the Yangtze and connected lakes; throughout the 20<sup>th</sup> century, land reclamation, dam and dyke construction disconnected many lakes from the river. The Three Gorges Dam (TGD) caused a significant drop in the finless porpoise's prey base: numbers of fish fry and eggs from the four main carp species declined by 95% compared to historic data, due to TGD construction and other factors. The sand mining industry contributes to habitat fragmentation; in Poyang Lake, the presence of a large fleet of sand transportation vessels at the mouth of the lake is thought to inhibit finless porpoise dispersal between the lake and the river, as are the presence of two large bridges.<sup>4</sup>

**Climate change as an emerging challenge**: In February of 2008, the Tian-e-Zhou oxbow froze over for the first time in recorded history. The lake's finless porpoises injured themselves when breaking through the ice to create breathing holes, and subsequent infections of the wounds led to the death of six animals, including two pregnant females. In 2011, a basin-wide drought caused tension between the finless porpoise nature reserves and local farmers who needed irrigation water. Climate models predict a higher incidence of extreme weather events: extreme droughts and floods are a particular concern within the Yangtze river basin.<sup>16</sup> The 2008 and 2011 events were stark reminders of the varied and sometimes unexpected nature of the threats facing the finless porpoise, as well as of some of the limitations of translocations.

Lack of genetic diversity: Not only is the finless porpoise population rapidly declining, but the species is also becoming increasingly fragmented. For example, studies have found that the populations within Dongting and Poyang Lakes are migrating to and from the main stem of the Yangtze River much less frequently, most likely due to the presence of sand transport vessels and large bridges in the estuary areas.<sup>6</sup> This and other examples of population fragmentation<sup>2</sup> have serious implications for genetic diversity, with genetic differentiation increasing the risk of extirpation of small local populations.6 Research has found a particular need to protect the more densely-populated and genetically-diverse populations of the middle Yangtze as well as Poyang and Dongting Lakes<sup>6</sup><sup>22</sup> (finless porpoises in Poyang Lake are the most genetically diverse and have the most balanced sex ratio<sup>17,18</sup>). Further research is needed on several aspects relating to the finless porpoise. For example, recent unpublished research<sup>19</sup> has found that the sex ratio of finless porpoise calves born within Tian-e-Zhou is unbalanced: for every seven males only one female is born. The reason for this is still unknown; hypotheses include inbreeding, prev changes, heavy metal pollution and climate change.

China's population growth and urbanisation trends, as well as geopolitical and economic policy related projects, are likely to increase the scale of the challenges facing the finless porpoise, particularly in the Yangtze main stem. For example, with the Yangtze River Economic Belt<sup>i</sup> shipping traffic, port

<sup>&</sup>lt;sup>i</sup> The Yangtze River Economic Belt, announced in 2014, is one of the components of China's Belt and Road Initiative, an ambitious multi-billion dollar economic and foreign policy initiative aimed at strengthening connectivity between Europe and China, across Central Asia and along Asia's and East Africa's coastline.



Floating oxbow boundary fence ©Xiaodong Sun/WWF-UK



Fish releases to oxbow lakes ©Xiaodong Sun/WWF-UK



Monitoring ©WWF/Kent Truog



Porpoise feeding at Tian-e-Zhou oxbow © Catherine Blancard/ WWF-US

construction and conversion to high-grade waterways (involving channel expansion and deepening) is projected to increase further. This will increase the threats to the finless porpoise unless the species' needs are considered by national and provincial governments involved in planning and construction. As such, the Belt project will remain a major focus of WWF's policy influencing work.

The treats facing the finless porpoise are multiple and serious; in addition, there remains some uncertainty about the significance of the different threats for the population's decline.11 Several issues compound this uncertainty: insufficient post-mortem monitoring; uncertain cause of death (e.g. ship strikes that may have caused mortality or followed death); and insufficient data availability. Consequently, the long-term reversal of this decline will require addressing many of these threats within the finless porpoise's habitats. Within WWF-China's 2015-2025 Yangtze Strategy, the goal is to significantly reduce key threats and guarantee the finless porpoise's population viability within the Yangtze main stem, Dongting and Poyang Lakes, and five oxbow lake translocation reserves (to date Tian-e-Zhou, He-wang-miao/Ji-cheng-yuan and Xijiang oxbows); the objective is to establish a viable population of 600 individuals.

#### What did we do?

WWF's work on finless porpoise conservation as part of the HSBC Water Programme was the continuation of pre-existing partnership work which WWF started to get involved with in 2002. This in turn built on government-led activities starting in the 1990s whose initial aim had been to conserve the sympatric Yangtze river dolphin or Baiji (*Lipotes vexillifer*), which was declared functionally extinct in 2006 after having last been spotted in the wild in 2002.<sup>20</sup>

#### A PARTNERSHIP EFFORT

The partnership nature of the finless porpoise conservation work is central to its delivery. Following a decade of mainly government-led work, the partnership has since 2002 involved the Institute of Hydrobiology of the Chinese Academy of Sciences (IHB), the Ministry of Agriculture's Office of Fisheries Supervision and Management for the Yangtze River Basin, the Yangtze Fishery Resources Commission, WWF, the Wuhan Baiji Conservation Foundation and the different nature reserves in which finless porpoises are found and have been translocated to. These partner organisations were officially grouped together in 2008 under the name of Yangtze Freshwater Dolphin Conservation Network.

#### Wuhan dolphinarium

Five finless porpoises live in the Institute of Hydrobiology's (IHB) dolphinarium in Wuhan: several have been rescued following injuries while others were sourced from planned translocations.



The IHB uses the dolphinarium as a research and education centre. Captive breeding also takes place within the centre: the first captive-born finless porpoise was born there in 2005.



WWF doesn't play a role in this initiative.

In more recent years, the finless porpoise work has started to be more widely publicised within China and to become more inclusive, as a result of the Yangtze Freshwater Dolphin Conservation Network's activities. It was established in order to promote finless porpoise conservation by serving as a partnership platform for information exchange, capacity building (e.g. of nature reserve staff), population monitoring, porpoise rescues and public education. NGOs involved in finless porpoise conservation, including WWF, are starting to better coordinate their efforts: a new platform, the 'Saving Yangtze Finless Porpoise Alliance' was established in June 2017; using this platform, a joint NGO finless porpoise strategy is currently being elaborated to facilitate the establishment of a common action platform; its release is planned for 2018.

The role of the government in particular is key for finless porpoise conservation, providing not only the required permission for much of the work to proceed, but also the involvement and resources to ensure the activities reach a meaningful scale and have a lasting impact.

WWF's policy influencing – for finless porpoise conservation but also in other settings – benefited from partnerships with academic institutions. Indeed, WWF harnessed the strong connection that exists between academia and the government in China not only as a way of getting access to data, but also in order to influence government policies via academic partners, for example through their participation in government fora that WWF doesn't have access to. For the finless porpoise, WWF supported the delivery by academic partners of several policy recommendations through the annual conference of the National People's Congress and the Chinese People's Political Consultative Conference – key decision-making bodies.

#### **POLICY INFLUENCING**

WWF's policy influencing work has taken place at the national level and in more local settings near finless porpoise habitats.

The Chinese government has had a seasonal fishing ban in place since 2003 (April to June, and in 2015 extended from March to June). The ban aims to preserve fish stocks for ecological – including as a food source for the finless porpoise – as well as economic reasons. WWF and other groups and experts have jointly called for a 10-year fishing ban for the whole Yangtze main stem and its main tributaries, arguing that this is required for the long-term recovery of fish stocks, for which seasonal bans are insufficiently effective.<sup>9</sup> The Yangtze Fishery Administration Office agreed in 2017 to enforce a yearround fishing ban starting in 2020, lasting at least five to 10 years. WWF has also been advocating for sand dredging and navigation regulations in Dongting and Poyang Lakes to take finless porpoise conservation into account, for example by suggesting that navigation routes are planned away from areas of high finless porpoise population concentration and that vessel speeds are reduced (and rules enforced). Finally, WWF has been undertaking policy influencing work to ensure that areas along the river where finless porpoises are found in significant numbers are designated as nature reserves and for existing nature reserves that they are upgraded to national level protected areas, which would see them benefit from improved standards of patrolling and law enforcement.

## Upgrading the finless porpoise's protection classification

In 2014, China's Ministry of Agriculture (MoA) upgraded the Yangtze finless porpoise to its strictest wildlife classification category ('National First Grade Key Protected Wild Animals'). This followed years of lobbying on the part of WWF, although there is insufficient evidence to attribute the decision solely to WWF's efforts. This status has several positive implications for finless porpoise conservation. It means that some of the main threats to the species - e.g. infrastructure construction, shipping, dredging, etc. - are or should be monitored and managed within finless porpoise nature reserves (which fall within the MoA's remit). In addition, it entails strict controls of illegal fishing in the central and lower Yangtze, while the new standard could also lead to an increase in finless porpoise conservation funding from the MoA. The upgrading means that those found fishing illegally and doing other activities causing harm to the finless porpoise will be ordered to stop, restore the damage within a fixed time and pay a fine; if serious enough, these activities can be deemed criminal and transferred to judicial authorities for prosecution.

In December 2016, the MoA released the 'Action Plan for Saving Yangtze Finless Porpoise (2016-2025)' – this comprehensive plan is one of the outcomes of the MoA's upgraded classification for the species. WWF was deeply involved in the plan's development and its conservation approaches were reflected in the document. Among other things, the plan calls for finless porpoise surveys to be carried out every two years (see page 20 for details of previous surveys) as well as for water quality and community-related impacts to be addressed in translocation sites, as is being modelled by WWF in two existing oxbow lakes (see pages 12-14). Although the publication of the plan is a positive step, its implementation will be the next hurdle; at the time of writing there was no budget attached to it. Some positive outcomes relating to the MoA upgrading have already been noted. The Anhui and Jiangsu Province governments have since 2014 been considering the implications for finless porpoises of the waterway engineering required as part of the Yangtze River Economic Belt (and will do things like regulate shipping routes and speeds, fund fish releases, etc.). However, there is insufficient data to show whether the upgrading has led to any additional fines, prosecutions, funding or to a reduction in harmful activities. The MoA's classification upgrading has been a key milestone, but the aim is to extend this highest classification uniformly throughout China's national wildlife protection law, requiring approval by the State Council: indeed, the MoA is not the only ministry whose remit covers areas relevant to the finless porpoise. Going forward, WWF's policy influencing work at the national level will focus on this goal in particular.

#### Provincial- and county-level policy influencing

At a more local level, WWF took steps to optimise policies for more effective conservation. For example, a key influencing success for WWF was the 2015 upgrading of the He-wangmiao/Ji-cheng oxbow from a county to a provincial-level nature reserve. To add to the complexity, it is a transboundary reserve, covering a cross-border area of Huarong and Jianli counties (Hunan and Hubei province respectively); the different county awareness and capacity levels posed challenges for planned translocations. WWF organised and participated in meetings to facilitate this upgrading, supported the collection and updating of data to prepare the advisory material required for this administrative change, and balanced the counties' management needs. WWF used others' influence: for example, inviting well-regarded experts and academics to visit the site and make positive comments helped engage government staff. Also, early adoption within Jianli county helped stimulate Huarong county to take the steps required for upgrading.

WWF's close cooperation with local governments brought additional benefits. For example, Shishou county's government (in which the Tian-e-zhou oxbow is located) agreed to follow WWF's recommendation to nominate the site and adjacent areas as a Ramsar site. In 2016 it also invited WWF to provide advice and technical support on regional development and in particular on the planned application for national park status, on how to address challenges linked to land encroachment, on a planned environmental education centre and on ecotourism development. The ecotourism master plan that was subsequently approved endorsed WWF's suggestions regarding wetland restoration and collaboration between the reserve and the local community. Policy influencing can be an ongoing process. As mentioned previously, Poyang Lake is one of the two most important habitats for the finless porpoise outside of the Yangtze's main stem. In 2012-2013, WWF ran a campaign aimed at halting the proposed construction of water control infrastructure at the confluence of the lake and river, arguing (based on research by experts) that this would adversely impact fish stocks, water quality, water levels, finless porpoise and wintering waterbird habitats, among other things. Although the campaign was initially successful, in late 2016 the proposal was resurrected by Jiangxi province's government: at the time of writing, WWF is continuing its advocacy work in opposition to the project.

#### HABITAT CONSERVATION

In addition to working in oxbow lakes, WWF and its partners also collaborated to implement conservation activities within some of the areas currently home to the bulk of the finless porpoise population: the Yangtze main stem and Dongting Lake. WWF's opposition to the proposed dam in Poyang Lake has somewhat hampered its ability to do work there.

WWF was heavily involved in providing management and technical support to local authorities as well as in building the capacity of nature reserve staff. For example, training was offered to staff from Dongting Lake nature reserve (as well as local NGOs and government fishery staff) regarding the finless porpoise's conservation status as well as rescue methods and basic cause of death identification skills. Again in Dongting, WWF trained local NGOs to collect data about illegal fishing using mobile phone software, contributing to a reduction in the occurrence of illegal fishing: from a previous average of 58%, the proportion of fishing activities patrols monitored that were illegal went down to 19% in 2013/4.

WWF has been supporting finless porpoise conservation through capacity building of staff regarding digital patrolling (using mobile phones to monitor illegal activities), management and communication in the Xinluo nature reserve on the Yangtze main stem. More generally, all of the nature reserves created for finless porpoise conservation are part of the Yangtze Freshwater Dolphin Conservation Network, which gives them access to further capacity building.

Finally, the Tongling main stem nature reserve and the Tian-e-Zhou oxbow reserve are also members of the Yangtze Basin Protected Area Network (YBPAN). The YBPAN is an approach to facilitate and enable more effective conservation management of wetland protected areas through mobilising and linking stakeholders, sharing experience and building capacity. By joining, YBPAN members gain access to capacity

#### A long-term goal

The next section details WWF and its partners' oxbow lake strategy for finless porpoise conservation.

Creating viable populations within oxbow lakes is more of a short-term goal, complementary to WWF's long-term goal which is to maintain and enhance natural habitats conducive to the finless porpoise's survival.

Much of WWF's work in relation to the Yangtze main stem and Donging and Poyang Lake took place within the sphere of policy influencing (detailed in the previous section).



Dongting Lake © Michel Gunther / WWF

building, information, knowledge and experience sharing opportunities and are also more likely to benefit from supportive policies, funding or other support from both the government and WWF.



Figure 1: Finless porpoise reserves

Much of the other work WWF undertook and continues to undertake as part of its Yangtze Strategy (2015-2025) indirectly benefits the finless porpoise by improving fish stocks, water flows, water quality and more generally the governance of water resources in the whole Yangtze river basin. This work includes: implementing environmental flows through releases from the Three Gorges Dam; protecting and improving the management of wetland protected areas<sup>ii</sup>; reducing the impact and water risk of the private sector by implementing water stewardship and collective action; helping fish farmers adopt sustainable aquaculture practices<sup>iii</sup>; and promoting the uptake of Integrated River Basin Management, among other things.

#### **OXBOW LAKE STRATEGY**

WWF and its partners are, in addition to habitat conservation efforts in the main stem and connected lakes, implementing an oxbow lake finless porpoise conservation strategy. The oxbow<sup>iv</sup> lake strategy has its roots in the failed efforts to conserve the Baiji; finless porpoises were first translocated to the Tian-e-Zhou oxbow reserve in 1990 to help evaluate the habitat's

<sup>&</sup>lt;sup>ii</sup> WWF-China's work on participatory wetland conservation (case study) <sup>iii</sup> WWF-China's sustainable aquaculture programme (case study)

<sup>&</sup>lt;sup>iv</sup> Oxbow lakes are former river meanders that have over time become isolated bodies of water – though in the Yangtze several oxbows are still seasonally connected to the river.

#### In-situ conservation?

Typically, WWF – and conservationists in general – distinguish in-situ from ex-situ conservation, with the former taking priority where possible. The latter is considered more of a last resort measure because of the associated resources and risk and a general preference for conserving species within their natural habitat.

WWF and its partners' oxbow lake strategy for finless porpoise conservation is considered by WWF to be in-situ conservation: indeed, the oxbow lakes are historical finless porpoise habitats and can still be connected to the Yangtze River on a seasonal basis – either via natural connection when water levels are high (in He-Wang-Miao) or by opening the sluice gates at the dykes' confluence with the river. suitability for planned Baiji translocations, which were much riskier given the Baiji's population status at the time. In the end, only one Baiji was ever translocated to the reserve: the healthy female survived there for six months before her death by drowning in 1996.<sup>21</sup> The finless porpoises on the other hand thrived within the oxbow lake.

The government, WWF and other partners decided to implement a conservation strategy involving the translocation of porpoises to protected areas within a series of oxbow lakes, with the aim of establishing breeding populations. This decision was prompted by the success of the first few translocations, the small total finless porpoise population and its rapid rate of decline (particularly within core main stem habitats, where the rate of decline is more than twice the average rate, findings corroborated by local fishers' observations<sup>11</sup>), the lower threat levels within the oxbows (e.g. in terms of navigation, sand dredging, water quality, etc.), as well as the increasing pace of economic development affecting the Yangtze main stem as well as Dongting and Poyang Lakes.

There are finless porpoise reserves within the Yangtze main stem: the Xinluo section, Anqing, Tongling, Nanjing and Zhenjiang nature reserves. However, studies have found that not only is it challenging to effectively address threats to the species within these reserves, but also that their location within the river doesn't sufficiently correspond with the distribution patterns of finless porpoises, reducing their effectiveness.<sup>2</sup> <sup>22</sup>

The Tian-e-Zhou oxbow was the first, and the translocation strategy was extended to two other oxbow lakes during the 2012-2017 period: He-wang-miao/Ji-cheng and Xijiang. To date, a further two potential translocation sites have been identified as part of the strategy. WWF's primary contributions to the oxbow lake strategy were its advocacy activities, which have succeeded in getting it understood and adopted by the government, as well as the key role it played in setting up nature reserves, improving how effectively these are managed and building the capacity of their staff up.

#### The translocation process

To capture finless porpoises for subsequent translocation, the finless porpoise conservation partners use a scientificallyestablished method called 'acoustic drive netting'. Several boats encircle a finless porpoise pod and drive it to a shallow area where they can be caught in specially-designed nets that don't damage their fins. Suitable individuals are then selected from the group for translocation: gender balance is ensured, and the porpoises are usually between two and four years of age – old enough to have been weaned but young enough to withstand

#### The translocation process



Acoustic drive netting of a porpoise pod ©WWF/Li Kui



Porpoise capture in specially-designed slings ©WWF/Li Kui



Careful monitoring during transportation ©WWF/Li Kui



Release of translocated porpoises to temporary enclosure ©WWF/Yi Qing

the stress associated with transport as well as to be of optimal age for subsequent reproduction within their new habitat.

The selected porpoises are then transported to their translocation site, which can involve many hours of travel: several of the capture and release sites are between 400 and 600km away from each other. The porpoises are placed on hammocks within tanks, and around 80% of their body is submerged in water to relieve the pressure of their own weight on internal organs; careful driving avoids undue stress on the animals. Veterinarians and biologists monitor the porpoises' respiration rates, temperature, heart rate and behaviour during transport. Upon arrival to the translocation sites, so-called "soft release" is employed, whereby finless porpoises are first kept in temporary enclosures (holding pens within the oxbow lakes) for a few days for close monitoring (e.g. of health, food intake, etc.) until they are released to the main part of the translocation site. The capture and transportation process does involve risks because of the stress it puts on the finless porpoises<sup>23</sup> as well as the risk of accidental deaths during capture - for example, eight porpoises died during capture between 1990 and 2008.9 However, great care is taken to reduce the risks; after over 25 years of translocations, the procedures have been fine-tuned.

In addition to having staff as part of the capture and relocation team, WWF's role in the translocations primarily relates to promoting them via local, national and international dissemination channels. The translocations usually create much attention in the media; for example, the March 2015 one was broadcast live and the subject of a special reporting week on CCTV, China's main state television broadcaster.

#### **Tian-e-Zhou oxbow**

The Tian-e-Zhou oxbow in Hubei province is a former river meander that became isolated from the Yangtze River (for most of the year) in 1972 due to natural movement of the river channel. In 1998, the national government built a dyke between the oxbow and the Yangtze for flood control purposes, causing Tian-e-Zhou to lose its seasonal linkage with the main stem: a sluice gate within the embankment now controls water exchange between the oxbow and the river. The water body is over 20km<sup>2</sup> in size and there are two nature reserves on site: the aquatic finless porpoise reserve and an adjacent terrestrial reserve for the Père David's Deer (*Elaphurus davidianus*).



Figure 2: Map of the Tian-e-Zhou protected area

Five finless porpoises translocated in 1990 started the population there; subsequently, captured or rescued porpoises were translocated to the oxbow individually or in small groups (around four on average) every few years, with the population varying depending on deaths (primarily accidental) and births.<sup>9</sup> To date, a total of around 30 have been translocated to Tian-e-Zhou. Between 2012 and 2017, four porpoises were translocated from Poyang Lake to Tian-e-Zhou to boost genetic diversity within the population there, and then onto He-wangmiao/Ji-cheng-yuan oxbow (see the next section).

Around five to ten porpoises (birth rate since 2015, previous to which it was around two to five) are born in Tian-e-Zhou every year, and the total population was 60 in 2015 (with a third of the adults either pregnant or suckling calves), representing a net growth of 108% (excluding translocations).<sup>24</sup> It is the only population of finless porpoise whose numbers are increasing. The oxbow's carrying capacity has been estimated as being around 80 to 100 finless porpoises; the population approaching this number was one of the reasons behind the expansion of the strategy to other oxbow lakes. The findings from a health assessment done in 2015 revealed that although numbers were increasing, the porpoises were underweight, hypothesized as being due to insufficient fish stocks within the oxbow.

WWF has been particularly involved in ensuring the Tian-e-Zhou oxbow remains a suitable habitat for the finless porpoise. Several times since the start of translocations (in 2009, 2012, 2014, 2015 and 2016), the conservation partners (including WWF) have released fish fry into Tian-e-Zhou in order to boost fish stocks primarily for the finless porpoise – in 2016, 2 million fish fry of around 5-8cm long sourced from the Yangtze were released. WWF has also been working with local farmers in order to reduce diffuse pollution (see page 18), as research found that poor water quality had the potential to adversely impact the lake's finless porpoises. WWF agreed to help the Tian-e-Zhou nature reserve design an environmental education centre and a wetland restoration demonstration as part of the reserve's public engagement commitment. Finally, WWF has also been working to influence the operation of Tian-e-Zhou's sluice gate – see page 19.

#### He-wang-miao/Ji-cheng oxbow

Following the experience gained in Tian-e-Zhou, the He-wangmiao/Ji-cheng oxbow was identified as the second possible translocation site; it is a 44km<sup>2</sup> transboundary oxbow, with different names in Hubei and Hunan province, which was formed in 1968 following a diversion of the Yangtze River. Unlike Tian-e-Zhou, He-wang-miao/Ji-cheng oxbow is still seasonally connected to the Yangtze main stem.

In 2012, WWF worked with local governments, IHB and other institutions to conduct a habitat survey of the oxbow lake, which confirmed its suitability for the finless porpoise given its high water quality (class I and II, the two highest classification categories) and the presence of 34 fish species. This led to the establishment of provincial-level nature reserves in the oxbow in both Hubei and Hunan in 2015 – supported by WWF – and to its selection as a translocation site as part of the new 'National Dolphin Translocation Initiative' the MoA launched that same year. The MoA is working to upgrade the nature reserve to a national-level one.

In March 2015, WWF and its partners organised the translocation of four finless porpoises from Poyang Lake to the He-wang-miao/Ji-cheng oxbow, while four more were translocated there in December 2015 from the Tian-e-Zhou oxbow.

Although one adult finless porpoise was subsequently found dead (having choked on a large fish, according to unpublished data), a calf was born and observed in the oxbow in August 2016, reinforcing the confidence of the involved stakeholders in the translocation process.

#### **Xijiang oxbow**

The third oxbow lake into which finless porpoises have been translocated so far is Xijiang in Anhui province, located within Anqing Nature Reserve. Five rescued finless porpoises had already been translocated to the Xijiang oxbow in 2014 and one of these had subsequently given birth; in 2016, the oxbow became an official translocation site. In November 2016, the MoA and the Anhui provincial government translocated seven finless porpoises from the main stem – as well as two from Tian-e-Zhou – bringing the total population up to 15.



Xijiang oxbow © WWF/ Yi Qing

The MoA spearheaded the implementation of Xijiang as a finless porpoise conservation site starting in April 2016, with a feasibility study on habitat suitability being conducted in October 2016, demonstrating the speed with which some interventions can take place with national government impetus. Support for the 2016 translocation was not unanimous: some of the stakeholders involved were reluctant for the finless porpoises to be taken out of their original Yangtze main stem habitat. However, on balance WWF's view was that the translocation would help promote genetic exchange between the different oxbow populations and also help raise awareness of the need to protect finless porpoise habitats more generally.

The limited estimated carrying capacity of 50 porpoises (as calculated by Anqing Normal University, unpublished data) of the Xijiang oxbow (not only in terms of size but also in terms of sustainable fish stocks) and the diffuse pollution affecting it mean further conservation work is needed in and around the oxbow as well as in the finless porpoise's wider habitat.

#### LOCAL COMMUNITY INVOLVEMENT

WWF has championed the involvement of communities in finless porpoise conservation, and the importance of addressing community-related challenges was highlighted in the MoA's 2016 national action plan. Local communities can also help provide data about finless porpoise spatial abundance and decline, helping supplement scientific boat-based surveys, and in a more limited way about patterns and drivers of porpoise mortality.<sup>11</sup>

A 2011 survey of fisher livelihoods was conducted throughout the existing and potential oxbow translocation sites by academic partners within the finless porpoise conservation network and others. This survey, part of the "Help us save its smile" campaign (see page 21) contributed to the feasibility study of new translocation habitats.

#### **Dongting Lake**

Communities living around Dongting Lake are involved in finless porpoise conservation via regular patrolling to check for illegal fishing or sand dredging activities happening on the lake. Furthermore, community patrols also report porpoise deaths to the local fishery bureaus, helping scientists advance knowledge about causes of mortality of the species.

#### **Tian-e-Zhou oxbow**

WWF became involved in Tian-e-Zhou around 2004 and raised the awareness of local communities about conservation. There were more than 450 fishers operating in the oxbow, as well as approximately 1,200 farmers living outside the reserves and

#### A busy neighbourhood

The Yangtze river basin is one of China's most densely populated areas. Dongting, Poyang and the oxbow lakes are surrounded by settlements that depend on them in many ways. They provide drinking and irrigation water and also act as seasonal floodwater stores, helping to protect cities in the region such as Wuhan.

In-situ conservation within the Yangtze main stem and Dongting Lake, as well as designating the oxbows as finless porpoise translocation sites, has required balancing finless porpoises' and local communities' requirements.



Rice cultivation; one of many human activities surrounding finless porpoise habitats © Yifei ZHANG / WWF

making a living from farmland inside the core area of Père David's Deer National Nature Reserve. These agricultural activities were having a significant impact on the rare wildlife and its habitat, also were impeding the effectiveness of the polder as a flood retention area in the middle Yangtze.

Early on, WWF also helped the local government find alternative livelihoods for the roughly 129 families or 568 fishers operating within the lake: the government provided them with farmland located outside of the nature reserve, while WWF helped train them on sustainable farming techniques. In 2004, the Shishou city government allocated approximately 13ha of arable land per fisher to 200 of the 450 the fishers, as a way of providing alternative livelihoods. The remaining 250 fishers were allowed to continue in the fishing industry. In early 2005, WWF worked with the 200 fishers-turned-farmers to help establish a good water distribution and irrigation system, to improve production conditions, and to train the group on agricultural techniques, with the ultimate aim of increasing incomes and lessening their dependence on the oxbow. In 2006, the Shishou city government assigned 100ha of arable farmland outside of the Tian-e-Zhou oxbow to the rest of the fishers as well as 1,200 farmers in order to preserve the floodplains natural flood retention and habitat functions while also providing farmland outside of flood-prone areas.

This approach was not without its problems: the fishers were not allocated parcels of land of sufficient size to meet their livelihood needs, particularly in comparison with similar projects in other nature reserves.

#### He-wang-miao/Ji-cheng oxbow

In 2013, WWF, the Wuhan Baiji Conservation Foundation and HSBC conducted a community economic survey of fisher livelihoods in the He-wang-miao/Ji-cheng oxbow (collecting information about age, education level of fishers and their children, income, full- or part-time involvement in fishing, environmental protection awareness, working hours, etc.) in order to assess alternative livelihood options for the local fishers in advance of the oxbow becoming a finless porpoise translocation site. One of the first steps taken was the removal of stationary fishing nets and net cages from the oxbow.

Subsequently, three distinct areas were designated within the He-wang-miao/Ji-cheng oxbow. Within the 17km<sup>2</sup> core area, which includes the most suitable habitat for the finless porpoise, all fishing is banned. The core area is surrounded by protective nets, which prevent the finless porpoises from accessing the 5km<sup>2</sup> buffer zone, which is the second area. The third area is a 22 km<sup>2</sup> experimental zone at the outer edges of the oxbow. For now, some fishing is allowed in the buffer and experimental zones. The installation of nets around the core zone was one of the approaches taken – supported by WWF and other partners – to alleviate any tension between the needs of finless porpoise conservation and local fishers' livelihoods.



Figure 3: The He-wang-miao/Ji-cheng oxbow areas

Within this oxbow, WWF promoted a co-management approach involving both the local communities and nature reserve staff in finless porpoise conservation. Indeed, WWF took the view that conservation would only be successful if the communities were involved in the reserve's management and supportive of the conservation imperative. WWF and its partners created a volunteering scheme involving a range of stakeholders, including local communities, in the management of the reserve. For example, in 2016, five nature reserve staff members and 20 local fishers went on patrol within the oxbow, locating illegal fishing equipment and removing abandoned fishing gear: the joint reserve-community team subsequently recommended that a manual for reserve maintenance be created including a systematic plan for similar patrols to take place – these regular patrols were initiated in June 2017. Alternative livelihoods for fishers have also been implemented: WWF worked with local authorities to draw up a plan to provide technical and financial support to help local fishermen develop alternative livelihoods; this plan is under development, and will include working with local fishers and NGOs to manage human activities through patrols.

The interaction with communities in the He-wang-miao/Jicheng oxbow has not been without problems. For example, the removal of fishing nets and cages happened very soon after the lake had been identified as a desirable finless porpoise translocation site. However, there was then a long delay until the first translocation took place, meaning that some fishers returned to the oxbows in the meantime.

#### SUSTAINABLE AGRICULTURE

WWF managed and funded several sustainable agriculture projects throughout the Yangtze river basin; one focused in particular on the area around the Tian-e-Zhou oxbow. It aimed to reduce diffuse pollution from agricultural activities (primarily crop cultivation) taking place near the finless porpoise nature reserve, primarily to the west and north; runoff from the farmland reaches Tian-e-Zhou via a system of canals and levies. Eutrophication events have occurred in the past, with water quality sometimes reaching Grade IV (out of a six-grade system where VI is the most polluted); water quality tends to be worst in spring and summer. A 2014 study by the IHB found that 85% of the oxbow's chemical oxygen demand was from inorganic fertiliser runoff.

Researchers warned that although poor water quality wasn't having a detectable impact on finless porpoises yet, it had the potential to adversely affect them by reducing fish stocks and aquatic vegetation coverage,<sup>25</sup> as well as by affecting the species' reproduction. The impact of water pollution (also due to wastewater discharge) was further exacerbated by the oxbow's disconnection from the main stem of the Yangtze River, a problem which WWF also addressed (see next section).

Starting in 2015, WWF (funded through a partnership with H&M) supported organic farming within the Tian-e-Zhou 'island' (the land within the horseshoe-shaped oxbow) by starting up a demonstration project covering a total of 44ha of cotton and involving around 1580 farmers – each year, half of the land area is planted with cotton in rotation with other crops such as rice, rape and soybeans (the production capacity is 45 tonnes of cotton per year). A Yangtze University study into livelihoods around the oxbow found that cotton was the crop receiving the most fertiliser per cultivated land unit and also that farmers were vulnerable to price fluctuations of the cotton market and of inorganic fertilisers.

The theory of change is that organic crop planting including cotton farming would benefit: the finless porpoise through improved water quality, the 148 local farmers, and the wider region by enabling the oxbow to become a source of drinking water. The aim is to scale the project up once the demonstration project has reached its objectives. Initial water quality results are promising: by mid-2016, the nitrogen and phosphorus load from the demonstration plots was reduced by 20% compared to the 2013 baseline. To date, income-related results have been adversely impacted by a slew of flooding events in 2015-6.

#### **ENVIRONMENTAL FLOWS WORK**

Environmental flows are the quantity, quality and timing of flows required for the maintenance of the ecological integrity of rivers, their associated ecosystems and the goods and services they provide to human society. Restoring natural or seminatural flow regimes in river basins requires implementation of environmental flows, for example via flow releases from dams and barrages at critical times for freshwater ecosystems that still allows them to maintain their hydropower generation, flood protection and irrigation functions.

The WWF team in the Yangtze has been one of the first within the WWF network to trial environmental flows implementation (see box in the margin). In addition to working with the operators of the Three Gorges Dam, WWF has also been focusing on the many lakes that are (or were) connected to the Yangtze main stem. Prior to the start of the HSBC Water Programme, WWF had already helped reconnect over 50 lakes to the Yangtze River by opening sluice gates, following demonstrations that showed the benefits in terms of water quality, fish stocks, livelihoods and flood control, and convinced China's Ministry of Agriculture to make lake reconnection to the Yangtze River national policy.

As part of this, WWF has been working to ensure the Tian-e-Zhou oxbow's sluice gate is operated so as to improve water quality and fish stocks for the finless porpoise, by conducting seasonal river-lake reconnections that mimic natural flow fluctuations. Following environmental and social research as well as discussions with a number of stakeholders, a flow management regime was agreed upon, and the seasonal reconnection has been taking place during June and July every year since 2004. For example, the 2012 reconnection, conducted by the Tian-e-zhou Sluice Management Station and the Tian-e-zhou Baiji Reserve, raised water levels by 24cm in three days, cycling 50,000m3 of water, while the 2015 reconnection increased the water level by around 120cm over five weeks. WWF has helped by facilitating partnership work, providing technical assistance regarding required water replenishments, and by building the capacity of the nature reserve and helping it raise funds for the reconnection.



WWF has been working with the Three Gorges Dam's operating company (and other partners like research institutes) since 2011 to ensure environmental flows are released from the dam at critical times of the year for the spawning of four major species of carp, which are a food source for the finless porpoise.

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Monitoring of the nine environmental flow tests has shown carp egg numbers have reached record levels following the releases compared to postimpoundment levels.

About censuses

Censuses conducted using recognised methodologies provide data about species abundance and range, when repeated consistently across seasons and locations, allow population trends to be derived.

However, censuses are expensive, time-consuming and complex, particularly given the involvement of different government agencies and the need for skilled staff to ensure consistency of stretches covered and methods used.

Partnering with governments often enables censuses to happen, but also lends results legitimacy and is efficient given the resource-intensive nature of population surveys.



Line transect sampling in 2012



Acoustic monitoring in 2012

As detailed previously, WWF is also engaged in policy influencing to ensure that other key finless porpoise lake habitats – namely Poyang and Dongting Lakes – maintain their hydrological connection to the Yangtze River.

#### **POPULATION MONITORING**

Research into the Baiji and finless porpoise only started in the 1980s. Systematic population surveys were conducted in 1997-1999 and in 2006, although only the 2006 survey followed the internationally-recognised IUCN protocol which has been adopted since. WWF joined the 2006 survey along with over 30 global experts, who spent 38 days surveying a 3,400 km<sup>2</sup> stretch of the Yangtze River.

The same survey protocol<sup>2</sup> was used during the 2012 survey. In November and December of that year, a 44-day research expedition led by China's Ministry of Agriculture and organized by the IHB, WWF and the Wuhan Baiji Conservation Foundation covered 6,580km of the Yangtze River (and several tributaries of Poyang and Dongting lakes) between Yichang in Hubei Province and Shanghai at the mouth of the river. The survey used a variety of techniques: cetaceans numbers were estimated using a line transect sampling method (which vielded 183 finless porpoise sightings) supplemented by acoustic monitoring. Although researchers also listened for the ticking sounds made by the Baiji, none were heard. Underwater acoustic monitoring equipment was also deployed at night while the boats were moored at port, to provide information about finless porpoise feeding behaviour among other things.14 Finally, other information was also gathered as part of the survey: sampling of the water column and riverbed provided water quality data, while monitoring of fish populations helped researchers better understand the relationship between the status of fish resources and the presence of finless porpoises.

WWF experts participated in the 2012 survey and also helped refine its methodology. The survey findings were extrapolated to estimate the population numbers: an estimated 505 finless porpoises in the middle and lower Yangtze (down from 1,225 in 2006); population surveys in Dongting and Poyang Lakes that same year found 90 and 450 porpoises respectively, bringing the total population estimate to 1,045 individuals. Population densities varied, with the highest main stem densities found from Huayang to Anqing, and also near Nanjing and Zhenjiang in the lower section of the river. The findings led to the species being upgraded from 'endangered' to 'critically endangered' on the IUCN's Red List of Threatened Species in 2013.<sup>1</sup>

In addition to Yangtze main stem surveys, finless porpoise populations in Dongting (in 2012 and 2015) and Poyang Lakes

(in 2012) as well as in the Tian-e-Zhou oxbow lake were also regularly monitored. In Dongting Lake, WWF, IHB, the Yueyang Fishery Administration and the East Dongting Lake Nature Reserve surveyed finless porpoise populations in 2015, recording similar numbers as in 2012, indicating a stable population and reversing the declining trend previous regularly-run surveys had identified. In 2015, a partnership census of Tian-e-Zhou found over 60 finless porpoises, equalling 27 finless porpoise births since 2010 or a net increase (excluding translocations) of 108% – an encouraging result.<sup>24</sup> The IHB did some radio telemetry studies of finless porpoises in the 1990s and also tagged some translocated finless porpoises in Tian-e-Zhou in 2007 using acoustic tags. Further population monitoring is planned in the coming years (see page 23).

#### AWARENESS RAISING

One of the key elements of WWF's finless porpoise work has been to help raise awareness of the species within the general public, which was previously either unaware of its plight or uninterested, not least because of some negative cultural associations with the finless porpoise, known as the 'river pig'. The declaration of the Baiji as functionally extinct in 2006 at least provided some stimulus to the finless porpoise conservation efforts, showcasing the need for urgent action. Awareness-raising has over the years become one of the main elements of WWF-China's work on the finless porpoise, with the aim of using public awareness of and interest in the species as leverage to stimulate government action.

In 2011, WWF initiated the "Help us save its smile" campaign, which marked the beginning of public engagement on finless porpoise issues: since that time, the number of local NGOs working on the species has grown from one to over 20. The campaign included having 15 volunteer groups from universities and all walks of life undertaking a survey of fishing communities in finless porpoise habitats.

WWF, in partnership with the Wuhan Baiji Conservation Foundation, has organised yearly "Run for the finless porpoise" events in the central and lower Yangtze since 2013, where running teams travel across the region raising awareness about and funds for finless porpoise conservation. Each event has involved teams of runners from all over the region running in stages, attracting thousands of participants and raising funds from the public and businesses, as well as generating much media attention. These marathon runners have also been raising awareness about the finless porpoise beyond these yearly events.

#### **Finless porpoise art**

Art exhibitions, of finless porpoise-themed posters or sculptures for example, have also helped raise awareness.





In 2013, WWF and its Yangtze Freshwater Dolphin Conservation Network partners established a platform aimed at engaging the public, NGOs, well-known spokespeople, businesses, the government and research institutes together in finless porpoise conservation. WWF's Yangtze finless porpoise conservation ambassador, the Chinese pop singer Zhang Liangying, has been actively involved in raising awareness and contributing funds via the platform, having for example written a song named "Grateful" for WWF's contribution to the finless porpoise's protection. WWF has organised other public engagement campaigns in cooperation with her, making use of social media, particularly via microblogging and messaging sites like Weibo and Wechat, which are popular in China.

WWF-China developed a yearly communications plan and organized campaigns linked to some milestone events such as International freshwater dolphin day, to mark the upgrading of the finless porpoise's classification by the MoA, during dolphin translocation days, etc. WWF has been actively involved in raising awareness about the finless porpoise on media channels, for example via a feature in the China Weekly (with a finless porpoise on the front cover), via documentaries, national television coverage of translocations, etc.

The Chinese central government is planning the second Yangtze river biological conservation forum in Shanghai in 2018 involving Chinese nature reserves and research institutes, global cetacean experts, as well as international organisations such as Ramsar. WWF is part of the organising committee, will host the international freshwater dolphin conservation workshop, and is also planning to involve other WWF offices in whose countries freshwater cetaceans are found. The event will serve as a platform for an international information exchange regarding freshwater cetacean conservation, seeking to: build on conservation experiences at the global level to enhance finless porpoise conservation, understand and surmount challenges to conservation and river basin management, raise awareness about freshwater cetaceans, and build relevant national governments' awareness to foster increased involvement and resources for conservation. The intention is that this conference will become a regular event.

#### Where will we go from here?

WWF-China plans to continue many of the activities described in this case study: working in partnership as part of the Yangtze Freshwater Dolphin Conservation Network and Saving Yangtze Finless Porpoise Alliance, influencing policy (whether nationallevel upgrading of protection status or local-level advocacy against dams), working to curb illegal fishing on the Yangtze main stem and in Dongting and Poyang Lakes, pursuing community involvement in oxbow lake conservation, building capacity within nature reserves, promoting sustainable agriculture to reduce diffuse pollution, implementing environmental flows, participating in population censuses and raising awareness about the finless porpoise.

WWF-China will contribute to the implementation of the MoA's 'Action Plan for Saving Yangtze Finless Porpoise' via capacity-building for fishery law enforcement (WWF's aim is to reduce illegal fishing by 80% by 2025) and further implementation of environmental flows for example. WWF also plans to encourage a water stewardship-based approach within Dongting Lake, by creating a coalition of dredging and transport companies to help make their operating practices more sustainable for fish stocks and finless porpoise populations (e.g. via speed limitations). WWF will also implement measures to help reduce water pollution within Dongting and Poyang Lakes and the Yangtze main stem, for example working with industrial parks and urban areas, and will help establish a finless porpoise rescue network.

#### **POPULATION SURVEYS**

Finless porpoise surveys (using a unified IUCN-approved methodology) took place in 2006 and 2012 in the Yangtze main stem; the finless porpoise conservation partners have agreed that more frequent surveys are needed to assess the population's status and help plan and evaluate the success of conservation interventions. Indeed, frequent surveys are particularly important within declining populations where changes in baseline populations can be rapid (for instance, the abundance estimate derived from the 2012 survey was substantially lower than predictive modelling had estimated it would be).<sup>2</sup> The MoA's action plan now calls for finless porpoise surveys to be held every two years starting from 2017.

WWF is supporting – primarily via communications activities – the MoA's planned five-year long survey of all aquatic life (including finless porpoises, sturgeons and other fish) and habitats in the Yangtze main stem and its main tributaries, which was launched in May 2017 (see box in the margin). A survey of finless porpoise numbers and health status in the whole basin is also taking place in the winter of 2017 (main stem between 10/11 and 20/12 2017, and in Dongting & Poyang Lakes between 25/12/17 and 10/01/18).

#### FURTHER TRANSLOCATIONS

WWF's Yangtze Strategy calls for the establishment of a total of five oxbow lake translocation sites; three are operational to

## Aquatic life survey

The Ministry of Agriculture (MoA) is planning a five-year long survey of all aquatic life in the Yangtze.

Each year, a survey report will be produced for the sections of the river that have been covered.

This is the first such survey of the entire basin in over 30 years: it will provide an invaluable overview of the Yangtze river basin, including of human activities such as aquaculture and infrastructure.

The aim is for the survey results to help determine where the socalled 'red lines' for conservation – the most important habitats to preserve – are. date. Within these, WWF plans to continue the conservation work described in the rest of this case study, including working with communities, improving water quality, capacity building and policy influencing. In the winter of 2017, the conservation partners plan to translocate four porpoises from Poyang Lake to Tian-e-Zhou (to boost genetic diversity) and eight others from Tian-e-Zhou to He-wang-miao/Ji-cheng oxbow (to increase the population). The population targets are: around 80-100 for Tian-e-Zhou, around 20-50 for He-wang-miao/Jicheng and 20-50 for Xijiang, though experience on the ground may alter the previous estimates for carrying capacity.

A further four potential translocation sites will be established in future: these are Lao-jiang-he (Hubei province), Lao-wan (Hubei province), Xi-hai (Jiangxi province) and Liao-jia-gou (Jiangsu province) which have also been identified as being suitable habitats for the finless porpoise. With these potential additional sites, the aim is for the finless porpoise population in the five oxbow lakes to reach a total of 200.

Challenges to the oxbow translocation strategy remain. Some debate remains around the optimal locations from where to source the porpoises for translocation: although the main stem populations are at most risk, they are also a source of pride for the counties in which they can be found, making their removal a sometimes contentious issue. Also, although having three translocation sites (with a further two planned) is partly a risk mitigation strategy, the future impact of climate change on existing and planned future finless porpoise habitats is something the Yangtze Freshwater Dolphin Conservation Network and Saving Yangtze Finless Porpoise Alliance are considering. Finally, one of the main potential limitations linked to the oxbow translocation strategy is the risk of inbreeding within these isolated populations, which is why the Yangtze Freshwater Dolphin Conservation Network and Saving Yangtze Finless Porpoise Alliance partners have taken great care to source finless porpoises from different areas and to promote temporary as well as permanent exchanges of individual porpoises between the different oxbow lake reserves.

#### FOR MORE INFORMATION

Contact the WWF-China team

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