



**THE SEAWORTHINESS OF NOAH'S ARK:  
*Ex Situ* CONSERVATION CANNOT SAVE ENDANGERED CETACEANS  
DFE Response to ESOCC and ICPC**

**EXECUTIVE SUMMARY**

A 2018 workshop entitled *Ex Situ Options for Cetacean Conservation* (ESOCC) led to the creation of a sub-group of the International Union for Conservation of Nature (IUCN) Species Survival Commission Cetacean Specialist Group, called the Integrated Conservation Planning for Cetaceans (ICPC). The ICPC has proposed to integrate *ex situ* measures with *in situ* efforts in small cetacean conservation plans, including in certain circumstances holding some individual animals in semi-natural reserves and/or artificial enclosures (*e.g.*, concrete tanks) and breeding them in captivity. Integrating these *ex situ* measures into conservation plans has gained supporters as immediate threats (*e.g.*, fishing gear entanglement and habitat loss) continue to impede or prevent the recovery of endangered small cetacean species and populations, leading conservationists to feel a growing sense of urgency regarding their protection.

Dolphinarium-Free Europe (DFE) feels the same sense of urgency but has profound concerns with *ex situ* measures that wholly remove cetaceans from natural habitat. We believe such measures will lead to more harm than good if overemphasised in conservation plans. We believe removing cetaceans from natural habitat is ultimately unethical and raises serious welfare concerns for individual animals. For us, the benefits do not outweigh the costs.

The ICPC seeks to fill in information gaps for endangered small cetacean species, including regarding techniques on chase and capture, and on handling, maintaining and breeding in captivity. Many of these endangered species have never been held in captivity before. DFE's concern is that these techniques will be developed at the expense of some individuals (who may suffer or even die during this development period), while release back to the wild of future progeny, the goal of *ex situ* conservation efforts, is highly unlikely to be successful for small cetaceans raised in captivity, due to their complex sociality and cultural acquisition of life skills.

The ICPC recommends zoos and aquaria take a leadership role in *ex situ* efforts, which DFE contends represents a conflict of interest. In cases where semi-natural reserves are not possible (likely to be the case for many if not all marine small cetaceans, where closing off coastal areas of sufficient size to allow small populations to persist without human intervention will be difficult and perhaps impossible), *ex situ* efforts will likely focus instead on maintaining some number of individuals in artificial enclosures, including commercial public display facilities. Such facilities are not ideal for *ex situ* conservation of terrestrial mammals or birds; they would be far less so for cetaceans, leading to permanent dependence on human intervention and a disconnect from natural selection.

DFE is concerned that policy-makers will favour these *ex situ* measures as the most expedient and least politically costly option for recovering endangered small cetaceans. But we believe *in situ* options—mitigating and/or removing threats from natural habitat, as well as stranding responses—are ultimately the only effective way to recover these species, although in limited cases, particularly river dolphins, semi-natural reserves may work temporarily to preserve small populations (independent of any human intervention) while habitat is restored.

DFE strongly urges policy-makers to focus on eliminating threats and restoring natural habitat rather than removing individual cetaceans from it. Removing small cetaceans from natural habitat poses high risk to them, with limited to no hope of returning individuals to an independent life in the wild.



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**1. Introduction**

Dolphinarium-Free Europe (DFE) is a coalition seeking to end the commercial public display of all cetaceans in Europe and whose members include eminent marine mammal scientists, animal welfare experts, conservationists and non-governmental organisations from around the globe. We wish to clarify our position with regard to the Integrated Conservation Planning for Cetaceans (ICPC) sub-group of the International Union for Conservation of Nature (IUCN) Species Survival Commission Cetacean Specialist Group. While we support a narrowly defined type of *ex situ*<sup>1</sup> conservation (see Section 3), we oppose integrating any *ex situ* measures into conservation plans for endangered small cetaceans that include removing healthy individuals from natural habitat and placing them into artificial enclosures (concrete tanks or sea pens).

The ICPC<sup>2</sup> describes itself as:

*a team of biologists, veterinarians, and population experts that was formed in response to the desperate situation for a number of critically endangered dolphin and porpoise species. Many of these species and populations have shallow-water distributions that entirely overlap areas used intensively by people. Most are declining due to ‘bycatch mortality’ in fishing nets. For some, we already know extinction is imminent without concerted action to save them...*

*The ICPC initiatives will follow IUCN guidelines and will consider both in situ measures and ex situ options to create and implement an integrated conservation plan for each threatened dolphin and porpoise species and population, prioritized by their conservation status, the imminence of catastrophic decline, and the potential for effective mitigation.*

The ICPC follows on from a workshop held in Germany in 2018, on *Ex Situ Options for Cetacean Conservation* (ESOCC) (Taylor *et al.*, 2020), where participants considered the feasibility of *ex situ* measures for protecting and restoring highly threatened populations of cetaceans, including confining individuals to semi-natural reserves and/or artificial enclosures to secure them from immediate threats and for captive breeding.

DFE has profound concerns with certain *ex situ* measures. We believe removing healthy, integrated individual cetaceans from natural habitat for placement in artificial enclosures is unethical for any

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<sup>1</sup> ‘*Ex situ*’ is defined as conditions under which individuals are spatially restricted with respect to their natural spatial patterns or those of their progeny, are removed from many of their natural ecological processes, and are managed on some level by humans. In essence, the individuals are maintained in artificial conditions under different selection pressures than those in natural conditions in a natural habitat (IUCN/SSC, 2014). The ICPC includes stranding responses in its definition of ‘*ex situ*’; DFE does not, other than when the stranding response removes an individual from natural habitat and retains the animal for rehabilitation in an artificial enclosure.

<sup>2</sup> See <https://iucn-csg.org/integrated-conservation-planning-for-cetaceans-icpc/>

purpose. Placement in semi-natural reserves, where individuals can live without human intervention, raises fewer ultimate concerns, but still presents proximate risks to the well-being of selected individuals who would be subjected to handling, transfer and potential disruption of their social groups. Placement in reserves would also expose these individuals to only a subset of their full home range, thereby reducing their inter-generational cultural knowledge of any given area, which could affect the fitness of any reserve-born individuals who are subsequently released.

Our concerns go beyond ethics, however. Using current techniques, small cetaceans (dolphins, porpoises, and small toothed whales) do not cope well with capture and handling and most species do not reproduce well, or at all, in artificial enclosures (Curry *et al.*, 2013). Given their complex sociality and ecology, as well as their cultural acquisition of most life skills (*e.g.*, Rendell and Whitehead, 2001), it is currently uncertain if any small cetaceans born in artificial enclosures, especially concrete tanks, can adequately learn to live independently in the wild (see, *e.g.*, Ralls and Ballou, 2013). Indeed, zoos and aquaria have historically maintained that this is not possible (see, *e.g.*, Georgia Aquarium, 2019; Bossart, 1996; Bossart, n.d.), making their current support for this approach puzzling.

DFE maintains that certain *ex situ* measures are highly unlikely ever to succeed with most (if not all) presently endangered cetaceans, especially those in marine environments. We believe such efforts will simply lead to unnecessary stress and trauma to individual cetaceans, loss of individuals through death or injury during capture and handling and a diversion of attention from the need to preserve and restore natural habitat and mitigate and/or remove threats (*e.g.*, fishing gear entanglement and habitat loss).

## 2. The ICPC—Broad Consideration of *Ex Situ* Measures

The ICPC, among *in situ* and other *ex situ* conservation measures, proposes to consider the model set by China's management of the Yangtze finless porpoise (*Neophocaena asiaeorientalis asiaeorientalis*)—wherein semi-natural reserves, using natural and artificially created oxbow lakes, have been set aside in the Yangtze River, the species' natural habitat (see, *e.g.*, Zhao *et al.*, 2008; see also Section 6)—for several other endangered small cetacean species. These include the Atlantic humpback dolphin (*Sousa teuszii*), the Indian Ocean humpback dolphin (*Sousa plumbea*), the tucuxi (*Sotalia fluviatilis*), the South Asian river dolphin (*Platanista gangetica*), the franciscana (*Pontoporia blainvillei*), the Amazon River dolphin (*Inia geoffrensis*), the Irrawaddy dolphin (*Orcaella brevirostris*), and Lahille's dolphin (*Tursiops truncatus gephyreus*).

The ICPC has stated that these species and subspecies:

*may require ex situ [sic] interventions to bridge the time-gap between when the species could become extinct in the wild and when meaningful management actions allowing recovery would be taken. The extinction of the baiji [Lipotes vexillifer]... and the catastrophic decline to the edge of extinction of the vaquita [Phocoena sinus] ... are both examples of conservation actions being too little and coming too late, and of not having all the necessary tools ready for dealing with those emergencies. Integrated conservation action plans explicitly consider all tools that may be needed to save a species or population and to actively fill-in knowledge gaps.*

(Taylor *et al.*, 2021, p. 2)

The ICPC believes that, well before a declining species is in imminent danger of extinction, techniques for successfully handling, maintaining and breeding the species in confined, protected circumstances should be actively assessed. The assumption is that the risks posed to individual survivorship by such technique assessment are acceptable while there are still enough individuals

extant to make the loss of a small number of them of negligible rather than catastrophic impact at the species level<sup>3</sup>.

### 3. DFE—Limited Consideration of *Ex Situ* Measures

The promise of captive breeding and release opportunities offers false hope when assisted reproduction technologies (ART) have yet to be successfully developed for most small cetacean species and reintroduction methods that are readily replicated have yet to be developed for any (Curry *et al.*, 2013). DFE believes, given the poor survival of many species captured for display in the past (and very rarely displayed now as a result, such as *Stenella* spp. and *Delphinus delphis*), it is unlikely that such species-specific technologies will ever be developed for many of the currently endangered small cetacean species. While ART has been developed for the (non-endangered) small cetacean species routinely displayed to the public in zoos and aquaria (*e.g.*, bottlenose dolphins, *T. truncatus*; beluga whales, *Delphinapterus leucas*; orcas or killer whales, *Orcinus orca*), these facilities and their allies and supporters have persistently maintained that long-term captive and captive-born cetaceans cannot, as a practical matter, be returned to the wild (Zeldovich, 2019; Georgia Aquarium, 2019; Bossart, 1996; Brill and Friedl, 1993; Bossart, n.d.)—not that one day such releases may be possible, but that releasing captive cetaceans is inherently counter-indicated under most circumstances. It is difficult to reconcile this viewpoint with that of the ICPC, whose membership includes zoos and aquaria.

While the ICPC promotes a holistic approach, wherein *in situ* efforts occur in parallel with *ex situ* measures (Taylor *et al.*, 2021), DFE believes that the zoo and aquarium members of this group are strongly motivated by self-interest (maintaining their relevance in a world increasingly opposed to the commercial display of cetaceans (see, *e.g.*, Naylor and Parsons, 2018)). In addition, we are deeply concerned that offering policy-makers an ‘easy fix’, wherein endangered cetaceans are held in semi-natural reserves or artificial enclosures, protected from harm, will inevitably lead to overly favouring these *ex situ* measures, delaying or outright foregoing *in situ* actions that would prove far more effective biologically but are difficult to implement economically and/or politically.

However, our primary objection to these *ex situ* measures is that, in many if not most cases, cetacean deaths “*are likely to be inevitable during the early stages of an ex situ programme, whether the animals are maintained in a semi-natural or other form of captive environment*” (Taylor *et al.*, 2020, p. 13). The ICPC considers this the cost of ultimately successful *ex situ* efforts. We have profound ethical concerns with this attitude, but we also genuinely believe that efforts for some species, such as the vaquita (see Section 5), would never result in success.

Historically, we were not alone in this opinion. Some years prior to pursuing the VaquitaCPR effort (see Section 5), some of those involved stated:

*Although some species have been saved by captive breeding when very few individuals remained, captive breeding is not feasible for vaquitas. Safely capturing these small, cryptic, solitary, and elusive animals in relatively deep water would be extremely difficult, and even if it were possible, maintaining other marine porpoises (Phocoenidae) in captivity in good health over long periods has proven difficult. Captive vaquitas would likely have a high rate of initial mortality, as seen with other small cetaceans such as baiji, Delphinus,*

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<sup>3</sup> See, *e.g.*, CIRVA-9, 2017; Rojas-Bracho *et al.*, 2019. Rather than conclude that some small cetacean species are inherently unsuited to handling and holding in confinement, making certain *ex situ* approaches inappropriate (especially when semi-natural reserves are not available), the ICPC assumes that most, if not all, species could be handled and held in confinement successfully with sufficient study. In short, from this viewpoint, the tragedy of the VaquitaCPR program (see Section 5) was only that the individuals who were harmed were among the last of their kind, not that these individuals were harmed *per se*.

*and Platanista, and, as with other wild species taken into captivity, some of the survivors would not reproduce. Furthermore, experience with other species has shown that captive-bred individuals often lack behaviors needed for survival in the wild and consequently have a poor survival rate when reintroduced. Thus, an in situ [sic] approach has the best chance of saving the species because the food base is still excellent, and there are no serious threats other than bycatch.*  
(Jaramillo-Legorreta *et al.*, 2007, p.1654)

The subsequent failure of *in situ* efforts by those seeking to protect the vaquita did not somehow make *ex situ* efforts more likely to succeed. DFE believes that the costs of individual deaths during the “*learning curve*” (Taylor *et al.*, 2020, p. 13) of developing handling and maintenance techniques would never be outweighed by the ultimate benefit of saving the species through *ex situ* efforts, as that ultimate benefit is too unlikely to be achieved. Considering their complex aquatic environment and the results of decades of unsuccessful effort by zoos and aquaria to maintain certain species in artificial enclosures, most small cetaceans are simply unlikely to adjust to the ‘ark’, certainly not to the extent where conservationists would eventually successfully release progeny back to the wild. Thus, early individual deaths would never translate into future species survival.

In addition, semi-natural reserves such as those established along the Yangtze River for finless porpoises are more difficult to establish than their example suggests. Most endangered cetacean species, such as the Atlantic humpback dolphin, are found in marine regions where setting aside a coastal area large enough for dozens or hundreds of animals to survive without human intervention is arguably impossible, geographically, meteorologically, logistically and economically.

In short, *ex situ* measures requiring removal of individuals from their natural range are, in practice, highly likely to lead not to semi-natural reserves where a small population of an endangered species continues to live independently, reproduce and be subject to natural selection, but to other scenarios. For example, animals may survive in a reserve, but fail to breed and the reserve would empty via attrition. If a reserve is not possible, they may be sent to artificial enclosures—even commercial display tanks—where direct and extensive human intervention would be needed to keep the animals alive. Because zoos and aquaria are extensively involved with the ICPC (Taylor *et al.*, 2020), its projects may show a bias, however unintentional on the part of involved scientists, toward *ex situ* captive breeding options (in artificial enclosures), versus *in situ* conservation or efforts to alter human behaviour. This will inevitably mean that any resulting progeny would be highly unlikely ever to be successfully released into natural habitat, rendering the entire endeavour irrelevant from a conservation viewpoint.

#### **4. Risks Associated with Filling Information Gaps**

The ICPC seeks, *inter alia*, to fill in information gaps regarding the chase, capture, transport, husbandry, captive maintenance and release of several endangered species (Taylor *et al.*, 2020). It considers capture myopathy a phenomenon to study and mitigate; it is an obstacle to overcome, in order to pursue a full suite of conservation efforts. DFE, on the other hand, sees capture myopathy as a barrier sufficient to preclude pursuing certain *ex situ* conservation measures for most small cetacean species, especially when sufficient space in semi-natural reserves is not available to allow translocated individuals to live independently, without human intervention.

Capture myopathy is a metabolic syndrome arising from the extreme stress suffered during chase, capture, handling, restraint and transport (*e.g.*, Breed *et al.*, 2019; Câmara *et al.*, 2020; Vail *et al.*, 2020). The actions of chase and capture cause extreme negative physical, mental and social impacts, which can result in death (Curry, 1999; Fair and Becker, 2000; Cowan and Curry, 2002; Forney *et al.*, 2002; Romano *et al.*, 2002; Romero and Butler, 2007; Mancía *et al.*, 2008; Herráez

*et al.*, 2013; Fair *et al.*, 2014). Capture myopathy is the most common cause of death in wildlife during translocation (Breed *et al.*, 2019). Death during these operations can have significant impacts on conservation efforts, including financial consequences (Breed *et al.*, 2019). Even if an animal survives, other physiological harm from capture-related stress can occur, such as immune system depression, hyperthermia (overheating), reproductive dysfunction and even genetic damage (Curry, 1999; Cowan and Curry, 2002; Forney *et al.*, 2002; Romano *et al.*, 2002; Romero and Butler, 2007; Mancina *et al.*, 2008; Fair *et al.*, 2014).

Many small cetaceans are not easy to locate or restrain, due to their speed and agility. Capture is traumatic for these animals; it involves high-speed boats chasing and encircling the animals, and physically wrestling them on deck, which has the potential to injure or kill (Cowan and Curry, 2002; Forney *et al.*, 2002). It is possible that methods can be modified and tailored for each species, but the extent to which stress and trauma can be avoided is limited for a wholly aquatic taxon that naturally responds poorly to stranding on land (Geraci and Lounsbury, 2005).

Given that historically some genera coped more robustly to these stressors than others (*Tursiops* versus *Stenella*, for example), DFE is confident in its view that most small cetacean species simply *cannot* be handled successfully during translocation, to semi-natural reserves or artificial enclosures. Given it is impossible ahead of time to know whether an *ex situ* project is dealing with a vaquita (too fragile) or a finless porpoise (sufficiently robust), as well as the inability to establish large enough semi-natural reserves for most if not all of the marine small cetaceans at least, we feel that the only ethical and precautionary—and ultimately the most effective—way forward is to pursue *in situ* efforts only.

## **5. One Approach Does Not Fit All—the Vaquita**

DFE feels *ex situ* efforts are more likely to follow the pattern of the unsuccessful Consortium for Vaquita Conservation, Protection, and Recovery (VaquitaCPR) than the Yangtze finless porpoise model (see Sections 3 and 6). The VaquitaCPR was comprised of experts (veterinarians, biologists and marine mammal scientists) whose aim was to save the vaquita from extinction. The project began in 2017. The ultimate goal was to keep individuals safe in a refuge until their imminent threats in the wild were removed, and they could safely be reintroduced to the Gulf of California (VaquitaCPR, 2019; NMMF, 2019).

The VaquitaCPR was backed by the IUCN and many government bodies. It involved an *ex situ* team of 90 experts (on, *inter alia*, cetacean captures, husbandry and conservation) from nine countries and raised US\$5million (Rojas-Bracho *et al.*, 2019). The team was aware that capturing vaquitas and maintaining them in captivity would be risky; despite this, the project proceeded. The perception at that time was that the potential outcome of protecting these animals from entanglement and death in gillnets outweighed the possible loss of life from capture and transport to large sea pens (CIRVA-9, 2017). Two vaquitas were subsequently captured; the first was a juvenile female (apparently separated from her mother, who was not identified). She immediately showed evidence of significant distress: irregular respiratory levels, foaming at the blow hole, erratic heart rhythm and other distress behaviours. She was released, but as she had been separated from her mother, she may not have survived. The second was an adult female who showed similar signs of distress after her capture. She quickly suffered cardiac arrest and died, despite efforts to revive her (Rojas-Bracho *et al.* 2019). The project was halted after this (Pennisi, 2017). Literally, two vaquitas were directly harmed, one fatally, for nothing.

Rather than coming away from the VaquitaCPR with the take-home message that the potential benefits of such *ex situ* conservation interventions were not worth the costs, several of the participants in the CPR programme have ‘doubled down’, moving forward with the 2018 *ESOCC*

workshop and the ICPC. DFE finds this very unfortunate. We also find it unfortunate that, while the VaquitaCPR was overseen by an independent review panel, whose purpose was to review any injury or mortality and provide recommendations as to whether the project should proceed or not, with or without modification (Rojas-Bracho *et al.*, 2019), no such independent oversight appears to be planned for ICPC projects. It thus remains unclear who will control decision making for any ICPC projects, including how many deaths would be acceptable during initial capture and maintenance attempts.

With the VaquitaCPR, zoos and aquaria were not as involved as with the ICPC, and two failed captures ended the project. It is not clear whether future ICPC projects will be similarly conservative or, given that projects will be conducted with species whose numbers are still in the hundreds or even thousands (and the greater influence of zoos and aquaria), whether far more deaths will be tolerated.

DFE does not feel that harming healthy cetaceans, for a laudable but highly uncertain goal, is ethical. The VaquitaCPR take-home message for us is to abandon such a risky approach and focus on *in situ* policies, techniques and technologies to protect endangered small cetaceans. Those involved in the VaquitaCPR said, “*The risk of losing a vaquita during field operations was always acknowledged as a possibility, but it was determined that it was unacceptable to stand by and watch the vaquita porpoise disappear without a heroic attempt at rescue*” (Gotfredson, 2017). Yet at least one vaquita died and another was injured (and possibly died later) with no gain at all. This tragedy should *not* be repeated for other species.

## **6. Conflicts of Interest—the Yangtze Finless Porpoise**

The Tian-e-Zhou semi-natural reserve, an oxbow lake on the Yangtze River, located in Shishou, Hubei, China, was approved in 1992 for an *ex situ* conservation project to save the endangered baiji and Yangtze finless porpoise from extinction (Wei *et al.*, 2002; Xia *et al.*, 2005; Zhao *et al.*, 2008; Wang, 2009). It was the first of its kind (Zhang *et al.*, 1995). The purpose of the project was to provide effective protection from the harmful threats in its habitat due to human activities (such as gillnet entanglement), and to recover the free-ranging populations as their natural habitat improved (Wei *et al.*, 2002; Xia *et al.*, 2005; Pabst, 2018; IWC, 2018). The reserve never held any baiji, but finless porpoises were successfully transferred there.

There are several hundred Yangtze finless porpoises living in the four semi-natural reserves that now exist, but efforts to improve their river habitat and reintroduce these reserve porpoises back into the Yangtze have not advanced (Taylor *et al.*, 2020). DFE is concerned that conflicts of interest may arise when maximum capacity is reached in a semi-natural reserve system, which may in turn encourage counterproductive actions, particularly by zoos and aquaria that partner in such projects with the ICPC. Recent events in China support our concern.

In 2018, China’s Ministry of Agriculture and Rural Affairs approved a plan to remove 14 Yangtze finless porpoises from the semi-natural reserve system, six from the Anhui Xijiang Finless Porpoise Reserve and eight from Tian-e-Zhou Reserve, to be transported to Chimelong Ocean Kingdom (in Zhuhai) and Haichang Ocean Park (in Shanghai), both of them amusement parks similar to SeaWorld in the United States. These are commercial facilities, with multiple mammal, bird, fish and invertebrate species on display, most taken from the wild. Neither has the staff capacity to successfully breed cetaceans in captivity (they both rely on western advisors for any cetacean breeding plans they have and virtually all the cetaceans they currently hold are wild-caught) and any progeny that *did* survive would be highly unlikely to be successfully returned to the river after being born in a concrete tank (see, *e.g.*, Jule *et al.*, 2008). Given the success of the reserve system in the Yangtze River, the removal of these 14 porpoises for captive breeding (ostensibly for

conservation, but really more for commercial display and more captive breeding) makes virtually no sense from a conservation perspective.

It was reported that eight Yangtze finless porpoises were moved to Chimelong Ocean Kingdom and six to Haichang Ocean Park sometime in 2020 (HKU SVIS, 2021). Chinese and international animal protection groups opposed this action because there was no conservation need for it, and China's poor record-keeping meant it would be difficult to track the survival of these animals (You, 2018; CCA, 2019). In addition, plans for the porpoises' return to the Yangtze were unclear (UN Environment, 2019). The IUCN Cetacean Specialist Group wrote a letter in 2018 urging China's Ministry of Agriculture and Rural Affairs to abandon this plan<sup>4</sup>.

DFE fears that ICPC projects may result in some animals being removed from more appropriate situations (*e.g.*, semi-natural reserves, where they are possible) and sent to commercial facilities. Some animals may also simply be sent to captive facilities in the first instance, if semi-natural reserves are not possible. As mentioned previously, it is highly unlikely that any surviving captive-born progeny would ever be released from artificial enclosures. The zoos and aquaria that are partnering with the ICPC have conflicts of interest in this regard—they have a strong incentive to insist at some stage of any *ex situ* project that some individual animals be sent to their facilities. These novel, endangered species exhibits would be a strong draw at any zoo or aquarium, yet are unlikely to have any *in situ* conservation value.

Zoos and aquaria will no doubt contribute significant funds to the ICPC effort. The most obvious way for these facilities to recoup this investment is to acquire some 'rescued' individuals for display, all while pushing the specious narrative that these exhibits are essential elements of a conservation programme. The situation in China, where the IUCN Cetacean Specialist Group and other conservationists were unsuccessful in their efforts to persuade the Chinese government to abandon plans to remove Yangtze finless porpoises from the reserves to be sent to commercial ocean theme parks, supports our concerns in this regard.

## 7. Conclusion

The Tian-e-Zhou Reserve in the Yangtze River is 21 km long, 1–1.5 km wide, and approximately 4.5 m deep (Wei *et al.*, 2002; Xia *et al.*, 2005). We firmly believe a semi-natural reserve of this or greater size would not be possible for the *marine* small cetaceans prioritized by the ICPC, meaning any *ex situ* efforts involving transferring individuals to a 'safe haven' to protect them from threats will likely lead directly to artificial enclosures and extensive human intervention for them. Such reserves may only be possible for riverine dolphins and, even then, extensive analysis would be essential before proceeding with establishing them.

Eliminating or reducing anthropogenic threats in all regions for these species should continue to be the highest conservation priority. While *ex situ* options may be reasonable to pursue with certain taxa, for small cetaceans they are a distraction from *in situ* measures that are difficult to implement economically or politically, but are the only measures likely to save these species. Mythically the ark saved land mammals, not those already in the sea. Reality is no different.

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<sup>4</sup> <https://iucn-csg.org/wp-content/uploads/2018/08/Letter-to-China-Min-of-Agric-17-Aug-2018.pdf>



## **References:**

- Bossart, G.D. (1996). Release of dolphins was inhumane. <https://www.sun-sentinel.com/news/fl-xpm-1996-07-19-9607180251-story.html>.
- Bossart, G.D. (n.d.) Release of Cetaceans (circa 2013). [https://news.georgiaaquarium.org/internal\\_redirect/cms.ipressroom.com.s3.amazonaws.com/216/files/20165/Dr.%20Bossart%20Cetacean%20Release%20Paper.pdf](https://news.georgiaaquarium.org/internal_redirect/cms.ipressroom.com.s3.amazonaws.com/216/files/20165/Dr.%20Bossart%20Cetacean%20Release%20Paper.pdf).
- Breed, D., Meyer, L.C. R., Steyl, J.C. A., Goddard, A., Burroughs, R. and Kohn, T.A. (2019). Conserving wildlife in a changing world: Understanding capture myopathy—a malignant outcome of stress during capture and translocation, *Conservation Physiology* 7(1): cozo27. <https://doi.org/10.1093/conphys/cozo27>.
- Brill, R.L. and Friedl, W.A. (1993). Reintroduction to the wild as an option for managing Navy marine mammals. NCCOSC/NRaD Tech. Report 1549, 86 pp.
- Cámara, N., Sierra, E., Fernández, A., Arbelo, M., Bernaldo de Quirós, Y., Arregui, M., Consoli, F. and Herráez, P. (2020). Capture myopathy and stress cardiomyopathy in a live-stranded Risso's dolphin (*Grampus griseus*) in rehabilitation. *Animals* 10(2): 220. <https://doi.org/10.3390/ani10020220>.
- China Cetacean Alliance. (2019). *Ocean Theme Parks: A Look Inside China's Growing Captive Cetacean Industry*. Hong Kong: China Cetacean Alliance. <http://chinacetaceanalliance.org/wp-content/uploads/2019/06/19-CCA-Report-English-FINAL.pdf>.
- CIRVA-9. (2017). Ninth Meeting of the Comité Internacional para la Recuperación de la Vaquita. <http://www.iucn-csg.org/wp-content/uploads/2010/03/CIRVA-9-FINAL-MAY-2017.pdf>.
- Cowan, D.F. and Curry, B.E. (2002). Histopathological Assessment of Dolphins Necropsied Onboard Vessels in the Eastern Tropical Pacific Tuna Fishery. Administrative Report LJ-02-24C (La Jolla, California: Southwest Fisheries Science Center).
- Curry, B.E. (1999). Stress in Mammals: The Potential Influence of Fishery Induced Stress on Dolphins in the Eastern Tropical Pacific Ocean. NOAA Technical Memorandum 260 (La Jolla, California: Southwest Fisheries Science Center).
- Curry, B.E., Ralls, K. and Brownell, Jr. R.L. (2013). Prospects for captive breeding of poorly known small cetacean species. *Endangered Species Research* 19: 223–243. <https://www.int-res.com/articles/esr2013/19/n019p223.pdf>.
- Fair, P. and Becker, P.R. (2000). Review of stress in marine mammals. *Journal of Aquatic Ecosystem Stress and Recovery* 7: 335–354.
- Fair, P.A., Schaefer, A.M., Romano, T.A., Bossart, G.D., Lamb, S.V. and Reif, J.S. (2014). Stress response of wild bottlenose dolphins (*Tursiops truncatus*) during capture—release health assessment studies. *General and Comparative Endocrinology* 206: 203–212.
- Forney, K.A., St. Aubin, D.J. and Chivers, S. (2002). Chase Encirclement Stress Studies on Dolphins Involved in Eastern Tropical Pacific Ocean Purse Seine Operations During 2001. Administrative Report LJ-02-32 (La Jolla, California: Southwest Fisheries Science Center).
- Georgia Aquarium. (2019). Georgia Aquarium's Response to Empty the Tanks Day, May 9, 2019. <https://news.georgiaaquarium.org/stories/georgia-aquarium-s-response-to-empty-the-tanks-day>.
- Geraci, J.R. and Lounsbury, V.J. (2005). *Marine Mammals Ashore: A Field Guide for Strandings*, 2nd ed. Baltimore, Maryland: National Aquarium.
- Gotfredson, D. (2017). Endangered vaquita porpoise dies after being captured off San Felipe. CBS8. <https://www.cbs8.com/article/news/endangered-vaquita-porpoise-dies-after-being-captured-off-san-felipe/509-d87774d3-03bb-4a2b-97ab-519aea19f6cd>.
- Herráez P., Espinosa de los Monteros A., Fernández A., Edwards J.F., Sacchini S. and Sierra E. (2013). Capture myopathy in live-stranded cetaceans. *The Veterinary Record* 196: 181–188.
- HKU SVIS (Hong Kong University Species Victim Impact Statement Initiative). (2021). Controversy erupts in China over the decision to move 14 Yangtze porpoises to ocean parks, July 7, 2021. <https://www.svis.law.hku.hk/post/controversy-erupts-in-china-over-the-decision-to-move-14-yangtze-porpoises-to-ocean-parks>.

- IUCN/SSC (International Union for Conservation of Nature/Species Survival Commission). (2014). Guidelines on the Use of *Ex Situ* Management for Species Conservation. Version 2.0. Gland, Switzerland: IUCN Species Survival Commission. <http://www.iucn.org/about/work/programmes/species/publications/exsituguidelines>.
- IWC (International Whaling Commission). (2019). Report of the Sub-Committee on Small Cetaceans (Annex M). *Journal of Cetacean Research and Management* 20 (Suppl.) 320–345. [https://archive.iwc.int/pages/view.php?ref=9519&k=&search=%21collection29+&offset=0&order\\_by=title&sort=DESC&archive=](https://archive.iwc.int/pages/view.php?ref=9519&k=&search=%21collection29+&offset=0&order_by=title&sort=DESC&archive=).
- Jaramillo-Legorreta, A., Rojas-Bracho, L., Brownell Jr., R.L., Read, A.J., Reeves, R.R., Ralls, K. and Taylor, B. L. (2007). Saving the vaquita: Immediate action, not more data. *Conservation Biology* 21(6): 1653–1655. <https://digitalcommons.unl.edu/usdeptcommercepub/81>.
- Jule, K., Leaver, L. and Lea, S. (2008). The effects of captive experience on reintroduction survival in carnivores: A review and analysis. *Biological Conservation* 141: 355–363, doi.10.1016/j.biocon.2007.11.007.
- Mancia, A., Warr, G.W. and Chapman, R.W. (2008). A transcriptomic analysis of the stress induced by capture-release health assessment studies in wild dolphins (*Tursiops truncatus*). *Molecular Ecology* 17: 2581–2589.
- NMMF (National Marine Mammal Foundation). (2019). Vaquita Conservation: Facilitating an international collaboration to save the vaquita porpoise from extinction. <https://www.nmmf.org/our-work/conservation-medicine/vaquita-conservation/>.
- Naylor, W. and Parsons, E.C.M. (2018). An international online survey on public attitudes towards the keeping of whales and dolphins in captivity. *Frontiers in Marine Science* 5: 153. <https://doi.org/10.3389/fmars.2018.00153>.
- Pabst, D. A. (2018). Letter sent to Minister Changfu Han, Ministry of Agriculture and Rural Affairs. The Society for Marine Mammalogy. <https://www.marinemammalscience.org/wp-content/uploads/2018/11/Presidential-Letter-to-Minister-HAN-on-the-Yangtze-finless-porpoise.pdf>
- Pennisi, E. (2017). Update: After death of captured vaquita, conservationists call off rescue effort. *Science Magazine*. <https://www.sciencemag.org/news/2017/11/update-after-death-captured-vaquita-conservationists-call-rescue-effort>.
- Ralls, K. and Ballou, J.D. (2013). Captive breeding and reintroduction. In: Levin S.A. (ed.) *Encyclopedia of Biodiversity*, 2<sup>nd</sup> ed., Vol. 1, pp. 662–667. Waltham, Massachusetts: Academic Press. [https://repository.si.edu/bitstream/handle/10088/21037/nzp\\_Captive\\_breeding\\_2013.pdf](https://repository.si.edu/bitstream/handle/10088/21037/nzp_Captive_breeding_2013.pdf).
- Reidell, L. and Whitehead, H. (2001). Culture in whales and dolphins. *Behavioral and Brain Sciences* 24: 309–382.
- Rojas-Bracho L., Gulland, F.M.D., Smith, C.R., Taylor, B., Wells, R.S., Thomas, P.O. et al. (2019). A field effort to capture critically endangered vaquitas, *Phocoena sinus*, for protection from entanglement in illegal gillnets. *Endangered Species Research* 38:11–27, doi:10.3354/esr00931.
- Romano, T., Keogh, M. and Danil, K. (2002). Investigation of the Effects of Repeated Chase and Encirclement on the Immune System of Spotted Dolphins (*Stenella attenuata*) in the Eastern Tropical Pacific. Administrative Report LJ-02-35C (La Jolla, California: Southwest Fisheries Science Center).
- Romero, L.M. and Butler, L.K. (2007). Endocrinology of stress. *International Journal of Comparative Psychology* 20: 89–95.
- Taylor, B.L., Abel, G., Bader, D., Barlow, J., Braulik, G., Cipriano, F., Collins, T., DeMaster, D., von Fersen, L., Gomez, F., Hao, Y., Miller, P.S., Minton, G., Reeves, R.R., Rojas-Bracho, L., Secchi, E., Smith, C.R., Suydam, R., Wang, D., Wells, R.S. and Zerbini, A. (2021). An introduction to Integrated Conservation Planning for Cetaceans, including areas of potential collaboration with IWC to advance small cetacean conservation. Paper SC/68c/SM03, presented to the International Whaling Commission Scientific Committee, May 2021. <https://archive.iwc.int/pages/SC68cSM03>.
- Taylor, B.L., Abel, G., Miller, P., Gomez, F., von Fersen, L., DeMaster, D., Reeves, R.R., Rojas-Bracho, L., Wang, D., Hao, Y. and Cipriano, F. (eds.) (2020). Ex situ options for cetacean conservation. Report of the 2018 workshop, Nuremberg, Germany. Occasional Paper of the IUCN Species Survival Commission No. 66. Gland, Switzerland: IUCN. <https://portals.iucn.org/library/sites/library/files/documents/SSC-OP-066-En.pdf>.
- UN Environment. (2019). Recent and ongoing live captures of cetaceans. Convention on Migratory Species, 13<sup>th</sup> Meeting of Conference of the Parties Gandhinager, India, 17–22 February 2020. UNEP/CMS/COP13/Inf.21. [https://www.cms.int/sites/default/files/document/cms\\_cop13\\_inf.21\\_live-captures-of-cetaceans\\_e.pdf](https://www.cms.int/sites/default/files/document/cms_cop13_inf.21_live-captures-of-cetaceans_e.pdf).
- Vail, C.S., Reiss, D., Brakes, P. and Butterworth, A. (2020). Potential welfare impacts of chase and capture of small cetaceans during drive hunts in Japan. *Journal of Applied Animal Welfare Science* 23: 193–208.

- VaquitaCPR. (2019). VaquitaCPR conservation program plan for critically endangered vaquita in the upper Gulf of California. <https://www.vaquitacpr.org/vaquitacpr-conservation-program-plan/>.
- Wang, D. (2009). Population status, threats and conservation of the Yangtze finless porpoise. *Chinese Science Bulletin* 54: 3473–3484. [http://www.pelagicos.net/MARS6910\\_spring2012/readings/Ding\\_2009.pdf](http://www.pelagicos.net/MARS6910_spring2012/readings/Ding_2009.pdf).
- Wei, Z., Wang D., Kuang X., Wang K., Wang X., Xiao J., Zhao Q., Zhang X. (2002). Observations on behavior and ecology of the Yangtze finless porpoise (*Neophocaena phocaenoides asiaeorientalis*) group at Tian-e-Zhou Oxbow of the Yangtze River. *The Raffles Bulletin of Zoology Supplement* 10: 97–103.
- Xia, J., Zheng, J. and Wang, D. (2005). *Ex situ* conservation status of an endangered Yangtze finless porpoise population (*Neophocaena phocaenoides asiaeorientalis*) as measured from microsatellites and mtDNA diversity. *ICES Journal of Marine Science* 62: 1711–1716. <https://doi.org/10.1016/j.icesjms.2005.06.002>.
- You, L. (2018). Conservationists Slam Porpoises' Relocation to Aquariums. Sixth Tone. <http://www.sixthtone.com/news/1002743/conservationists-slam-porpoises-relocation-to-aquariums>.
- Zeldovich, L. (2019). The Great Dolphin Dilemma. Hakai Magazine. <https://www.hakaimagazine.com/features/the-great-dolphin-dilemma/>.
- Zhang X., Wei Z., Wang X., Yang J. and Chen P. (1995). Studies on the feasibility of establishment of a semi-natural reserve at Tian-e-Zhou (Swan) Oxbow for baiji, *Lipotes vexillifer*. *Acta Hydrobiologica Sinica* 19: 110–123.
- Zhao, X., Barlow, J., Taylor, B.L., Pitman, R.L., Wang, K., Wei, Z., Stewart, B.S., Turvey, S.T., Akamatsu, T., Reeves, R.R. and Wang, D. (2008). Abundance and conservation status of the Yangtze finless porpoise in the Yangtze River, China. *Biological Conservation* 141: 3006–3018. <http://digitalcommons.unl.edu/usdeptcommercepub/505>.

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