

# **SC/68C/SM/02**

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**An updated range wide assessment of *Neophocaena*: threats and priorities for research and conservation**

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**Title:** An updated range wide assessment of *Neophocaena*: threats and priorities for research and conservation

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### ***Neophocaena* Workshop Purpose**

At the 2019 World Marine Mammal Conference in Barcelona, Spain, a workshop was held with 30 scientists presenting research on finless porpoise (*Neophocaena spp.*) populations (Table 1). There are two recognized species of finless porpoises inhabiting coastal waters (<50m) from the Persian Gulf through Southeast Asia, China, Korea, and Japan. The Indo-Pacific Finless Porpoise (*N. phocaenoides*) and the Narrow-Ridged Finless Porpoise (*N. asiaeorientalis*). Within *N. asiaeorientalis* there are two subspecies, the Yangtze Finless Porpoise (*N. a. asiaeorientalis*), found in freshwaters in China and the East Asian Finless Porpoise (*N. a. sunameri*), found in coastal marine waters of China, Korea, Japan, and Taiwan. All population trends are considered to be decreasing and the Yangtze Finless Porpoise population critically endangered by the International Union for Conservation of Nature (IUCN) Red List (Wang et al., 2013; Wang & Reeves, 2017a; Wang & Reeves, 2017b). Habitat degradation, pollution, and anthropogenic activities are a few known threats affecting populations, with bycatch as one of the worst threats. Workshop participants agreed that a major issue impeding conservation for *Neophocaena spp.* in most areas is the lack of basic information about their distribution, abundance, and population structure. This lack of knowledge and these critical threats showcase a need for range-wide research that contributes to conservation planning for finless porpoise populations. Scientists discussed research, management, and conservation efforts regarding known finless porpoise populations. From this workshop, delegates agreed research on population distribution, habitat and ecology, fisheries related mortality, and alternative solutions to mitigate bycatch needs to be prioritized. Participants also recommended standardizing research protocols and approaching

conservation and management creatively with public and educational outreach programs. The first half of the day consisted of presentations from invited delegates (Table 2).

### **Identification of Issues and Threats**

The main issues and threats concerning finless porpoise populations were identified to be i) bycatch, ii) standardized research protocols, and iii) management and conservation planning. These were discussed in breakout rooms. Delegates were broken up into four groups. Each group prepared a summary report to present back to the meeting as a whole. Additional topics listed were discussed:

- Overall lack of data
- Density and abundance estimates
- Habitat and basic ecology
- Methods and limitations on density and abundance estimates research
- Mapping hotspot areas
- Overall threats and solutions by region
  - Ship traffic (collisions)
  - Habitat degradation
  - Inadequate funding
  - Climate change
  - Lack of awareness of conservation
  - Fisheries Bycatch

### **Topics Summary**

#### ***Bycatch: Issues and Solutions***

The delegates agreed that the issue of bycatch in small-scale and commercial fisheries is threatening finless porpoise populations throughout their distribution. There are a lack of data and information on the magnitude and extent of bycatch numbers, status of fisheries, the spatial and seasonal use of fishing gear and how these topics relate to fishers' livelihoods and culture. Previous efforts involved in assessing bycatch in fisheries usually revolves around gillnet fisheries, commonly considered to be the greatest threat (Reeves et al., 2003; Brownell et al., 2019). Along with gillnets, purse seine and nearshore nets that are left unattended for hours were

found to be a major threat in both Myanmar and Malaysia. In South Korea, stow nets are preferred by artisanal fishers and are as common as gillnets. Throughout areas in China and the Taiwan Strait, still nets are favored for their fixed ability that move with the current. Increased monitoring and new information show a lack of awareness of communities and fishers. People believe finless porpoises are a big fish instead of a cetacean or their lack of concern stems from not having direct benefits from the animal. Information also showed the continued occurrence of consumption. Individuals that were incidentally bycaught were usually sold and consumed. In some areas, this activity has ceased due to enforcement of laws and regulations, in others there is still a demand causing the market to grow.

Given the severity of the issue of bycatch, solutions and recommendations were identified to try to mitigate bycatch. The consensus from all the delegates was to focus on continuing to conduct research on finless porpoises. The research needs that were chosen to be prioritized were: i) population assessments, distribution, habitat use and ecology, ii) fishery related mortality, iii) risk assessments, and iv) alternative solutions to mitigate bycatch. Unfortunately, the overarching concern was the lack of funding and resources available. To effectively try to mitigate bycatch there should be dedicated forums to better understand fishery operations, management, gear usage and alternatives. Additional solutions were i) applying observer programs, ii) implementing and enforcing regulations, iii) incentives to use alternative gear, report bycatch, and decrease consumption, iv) no penalty or fines for bycatch reporting and v) replace high risk gear with less risk gear types.

Within some areas throughout finless porpoise distribution there have been new developments in both awareness and efforts to reduce bycatch. One alternative researchers have been using are acoustical deterrents. Pingers have been shown to be effective; however, there is research that showcases the constant usage leading to habituation or displacement. Research also indicates that it could become a 'dinner bell' sound to individuals. In South Korea, some research showed that pingers increased bycatch. The methodology for pingers is not complete and could take a significant period of time; smaller finless porpoise populations may not have that amount of time. Another method is using acoustical monitoring to determine distribution and seasonal movements and can be used as a tool for long-term monitoring. This tool can increase efforts with boats performing transect lines but also effectively using drones to conduct transect

surveys in areas where boats are unable to navigate through. In some areas with access to drones, it has shown to be successful in finding a more accurate estimate on population and abundance.

### ***Standardizing Research***

The delegates agreed that standardized research and protocols needs to be developed to effectively research finless porpoises. Finless porpoises inhabit coastal waters throughout a wide geographic range. They are not easily observed, therefore, their preferred habitat and distribution are difficult to identify. Standardizing methodology begins with coordinating efforts to address the issue from an international perspective. The delegates agreed on first establishing an international committee compiling national protocols to develop an international standardized methodology. This committee would then begin assisting nations with their national networks once the methodology was approved.

One area chosen to be prioritized was standardizing stranding network protocols. Causes of strandings have increased significantly due to anthropogenic impacts. Stranded individuals could indicate a change in the ecosystem, disease, pollution, or fishing pressures. Standardizing protocol for a stranding begins with training personnel on information collection i) animal condition and size, ii) environment, iii) species, iv) metadata, v) GPS coordinates, and vi) photos. In necropsies, sampling of the animal (e.g., skin, stomach contents, bones) is prioritized. Unfortunately, a concern is insufficient funding and resources to fully establish a stranding response network. Overall funding for equipment, no access to facilities, or training materials. To effectively establish a stranding response network, nations with established networks can make their protocols accessible. Workshop delegates recommended the creation of an open access online platform for stranding network methodology and protocols as a dedicated forum for scientists, personnel, and marine mammal veterinarians to share information.

### ***Management and Conservation***

The diversity of threats affecting finless porpoise populations requires creative tools to address management and conservation. Practical management opportunities begin with bycatch mitigation and testing alternative proposed methods to perceive their rate of success and implementation. A non-technical method begins with spatial-temporal closures (seasonal or permanent) to reduce the overlap of fishery activities and finless porpoise populations. This

method would need to be followed by replacing gear from high to low-risk practices, however, this has been proven to be difficult. Fishing is the main livelihood in many local communities. High risk nets (gillnets, purse seine, stow nets, still nets, etc.) are essential to livelihoods within these communities. They are less expensive, easier to maintain, and can be set for hours at a time. The delegates agreed these gear types are putting finless porpoises at risk but were at an impasse on how to begin the process of phasing them out. There are regulations on fishing gear in place in some countries, but they are not always enforced. Managers, stakeholders, and policymakers need to take into consideration how essential certain gear types are for communities and livelihoods. Possible solutions the delegates agreed upon were government buy-back programs and gear modifications. In South Korea, stow nets are in the process of being modified by the National Institute of Fisheries Science (NIFS) to include guiding nets leading to escape holes for finless porpoises to use. Research shows in the short amount of time of testing, the net loss of target catch was about 1% of the harvest and the next step is to evaluate if finless porpoises are able to utilize the escape hole unharmed.

Approaches to conservation should be multifaceted. No one single strategy will help facilitate the recovery of finless porpoise populations. The delegates unanimously agreed that the first step towards conservation begins with education and outreach. Local community support is essential in creating and enforcing conservation measures. Raising public awareness with programs (e.g., talks, workshops, etc.) to be conducted with fishers, stakeholders, and communities. These would include basic information on finless porpoises with illustrations, interactions with boats and disturbance and incorporate information on local research on finless porpoise populations to help understand the importance of their community involvement. These programs are known to be effective in providing a platform for sharing information directly to target audiences (e.g., schools, local communities, fishers. etc.) also to prepare and distribute printed material (e.g., pamphlets, posters, calendars). These are an effective means to distribute information widely and can be used for targeted audiences. Documentaries and videos are known to be an effective way of increasing awareness by providing customized information on specific issues critical for conservation. Scientists, government agencies, stakeholders, the fishing industry, fishers, and communities will need to collaborate to develop innovative solutions to assure conservation efforts are effective.

### **Ongoing activities of the workshop group**

Keep Swimming: Sharing Marine Mammal Stranding Expertise between East and West was held virtually on March 11, 2021. This was a regional marine mammal stranding workshop with over 60 delegates covering topics regarding current challenges, insufficient funding, standardizing methods, and possible solutions. Delegates discussed these topics in depth and chose to highlight challenges some nations face in creating and maintaining a stranding network. The predominant concern was the lack of funding.

Table 1. Workshop participants and affiliations

<b>Delegate</b>	<b>Title</b>	<b>Geographic Representation</b>
Akira Shiozaki, PhD	National Museum of Nature and Science, Tokyo	Japan
Alexandria Bevan	Estuary & Ocean Science Center, San Francisco State University	United States
Aung Naing Soe, MSc	Myanmar Coastal Conservation Lab	Myanmar
Brian Kot, PhD	City University of Hong Kong	Hong Kong
Bruno Díaz Lopez, PhD	Bottlenose Dolphin Research Institute BDRI (Spain)	Spain
Chalatip Junchompoo, PhD	Department of Marine and Coastal Resources, Thailand	Thailand
Danielle Krebs, PhD	Conservation Foundation for Rare Aquatic Species of Indonesia (Yayasan Konservasi RASI)	Indonesia
Dipani Sutaria, PhD	Ecologist	India

Ellen Hines, PhD	Department of Geography & Environment, Estuary & Ocean Science Center, San Francisco State University	United States
Gianna Minton, PhD	Megaptera Marine Conservation	The Netherlands
Jack Wei-cheng Yang, PhD	National Taiwan University	Taiwan
John Wang, PhD	CetAsia Research Group (Canada), National Museum of Marine Biology and Aquarium, Taiwan, & Trent University	Taiwan and Canada
Kyunglee Lee, PhD	Cetacean Research Institute, National Institute of Fisheries Science	South Korea
Louisa Ponnampalam, PhD	MareCet Marine Mammal Organization	Malaysia
Marguerite Tarzia, MSc	IWC Bycatch Mitigation Initiative	Portugal
Moshen Rezaie-Atagholipour, MSc	Qeshm Environmental Conservation Institute	Iran
Nick Tregenza, PhD	Chelonia Limited & Exeter University	United Kingdom
Nozomi Kurihara, PhD	Utsunomiya University, Japan	Japan
Putu Liza Mustika, PhD	Cetacean Sirenian Indonesia (CETASI) & James Cook University, Australia	Australia & Indonesia
Rebekah Lane	Estuary and Ocean Science Center, San Francisco State University	United States
Sandra Teoh, BSc	MareCet Marine Mammal Organization	Malaysia



Saliza Bono, MSc	MareCet Marine Mammal Organization	Malaysia
S��verine Methion, PhD	Marine Division of the Terrestrial and Marine Biodiversity Sector, Environment Agency of Abu Dhabi	Abu Dhabi (UAE) & Spain
Tara Sayuri Whitty, PhD	Myanmar Coastal Conservation Lab @ PointB Design + Training	Myanmar & United States
Thomas Jefferson, PhD	Clymene Industries & Marine Mammal and Turtle Division, Southwest Fisheries Science Center, NMFS, NOAA Fisheries	United States
Tishma Patel	Estuary and Ocean Science Center, San Francisco State University	United States
Wint Hte, MSc	International Union for Conservation of Nature & Myanmar Coastal Conservation Lab @ PointB Design + Training	Myanmar
Yin Yin Htay, BSc	Myanmar Coastal Conservation Lab @ PointB Design + Training	Myanmar
Youngran Lee	World Wildlife Fund Korea	South Korea

Table 2. Workshop presentations

<b>Delegate Name</b>	<b>Presentation Title</b>
Akira Shiozaki, PhD	Strandings and bycatch surveys on Kyushu Island and finless parasitology
Brian Kot, PhD	Biological health and profiles of Indo-Pacific finless porpoise in Hong Kong waters, a virtopsy approach
Bruno Díaz Lopez, PhD	Habitat use and distribution of finless porpoises in Abu Dhabi (Persian Gulf)
Danielle Kreb, PhD	Finless porpoise sightings in Balikpapan Bay area, East Kalimantan, Indonesia
Dipani Sutaria, PhD	Mortality rates and bycatch in India
Ellen Hines, PhD	Habitat use of finless porpoises in Hong Kong
Jack Yang, PhD	Diseases of finless porpoises in Taiwan
Kyunglee Lee	Finless porpoise bycatch in Korea
Marguerite Tarzia, MSc	Bycatch Mitigation Initiative, International Whaling Commission
Moshen Rezaie-Atagholipour, MSc	Distribution and threats in Iranian waters

Nick Tregenza, PhD	Finless porpoises bycatch mitigation/acoustic population monitoring
Nozomi Kurihara, PhD	Population structure of <i>N. asiaeorientalis sunameri</i> in Japanese waters
Thomas Jefferson, PhD	Finless porpoise abundance in Hong Kong
Wint Hte/Yin Yin/Aung Naing Soe & Tara Whitty	Finless porpoises in the Gulf of Mottama, Myanmar
Youngran Lee	Video on finless porpoise bycatch in Korea

## References

- Brownell Jr, R., Reeves, R., Read, A., Smith, B., Thomas, P., Ralls, K., Amano, M., Berggren, P., Chit, A., Collins, T., Currey, R., Dolar, M., Genov, T., Hobbs, R., Krebs, D., Marsh, H., Zhigang, M., Perrin, W., Phay, S., ... Wang, J. (2019). Bycatch in gillnet fisheries threatens Critically Endangered small cetaceans and other aquatic megafauna. *Endangered Species Research*, 40, 285–296. <https://doi.org/10.3354/esr00994>
- Reeves, R. R., Smith, B. D., Crespo, E. A., & Notarbartolo di Sciara, G. (2003). *Dolphins, whales and porpoises: 2002-2010 conservation action plan for the world's cetaceans*. IUCN/SSC Cetacean Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK.  
<https://doi.org/10.2305/IUCN.CH.2003.SSC-AP.2.en>
- Wang, J.Y., Reeves, R. 2017a. *Neophocaena asiaeorientalis*. *The IUCN Red List of Threatened Species 2017*: e. T41754A50381766. <http://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T41754A50381766>
- Wang, J.Y., Reeves, R. 2017b. *Neophocaena phocaenoides*. *The IUCN Red List of Threatened Species 2017*: e.T198920A50386795. <http://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T198920A50386795.e>
- Wang, D., Turvey, S.T., Zhao, X. & Mei, Z.  
2013. *Neophocaena asiaeorientalis ssp. asia eorientalis*. *The IUCN Red List of Threatened Species 2013*: e.T43205774A45893487. <http://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T43205774A45893487.en>