

• 09 August 2023

# Threatened coastal species absent from Chinese protection lists

The lack of legal protections for large coastal animals is leaving them — and their ecosystems — at risk, researchers say

• [Dyani Lewis](#)



An Indo-Pacific finless porpoise (*Neophocaena phocaenoides*) lies dead on Sheung Sze Wan beach in Hong Kong. Credit: Dickson Lee/South China Morning Post via Getty

China's large coastal animals are poorly served by biodiversity protections, a nation-wide assessment has

revealed. The study<sup>1</sup>, published in *Science Advances*, suggests that there's a need for improved conservation measures along China's coasts.

Study co-author Qiang He, a coastal ecologist at Fudan University in Shanghai, says that larger coastal animals are often overlooked. "You can see a lot of news about the giant panda and terrestrial biodiversity conservation, but you don't see a lot of news about megafauna in coastal areas in China," he says.

To gauge how coastal animals are faring, He and his colleagues collated data on fish, mammals, birds, reptiles and cephalopods — including octopuses, squid and cuttlefish — with an adult body mass of at least 10 kilograms that live in China's coastal habitats. They identified more than 200 species across ecosystems including salt marshes, mangrove forests, seagrass beds, coral reefs and deeper waters.

They then looked at whether those species were identified as being threatened on the International Union for Conservation of Nature (IUCN) Red List — a global inventory of species' conservation status — and what level of protection exists in China.

Almost half of the species identified (44%) are classed as critically endangered, endangered or vulnerable on the IUCN Red List. Yet 78% of the species have not been assessed for local extinction risk, and so don't appear on

China's own Red List, or are listed as data deficient. "Even if they're critically endangered or endangered on a global level, they are still not assessed in China," He says. And almost three-quarters are not protected by any of China's wildlife-protection laws.

### **Regulation gaps**

The researchers also assessed species' importance using a measure called the FUSE index — standing for functionally unique, specialized and endangered — which scores endangered species on the basis of the importance of their roles in their ecosystems. Of the top 50 large coastal animals ranked by their FUSE score, only 17 are currently protected in China.

This is a problem, says co-author Xincheng Li, an ecologist at Fudan University. Populations have declined for species including the red-crowned crane (*Grus japonensis*) and the critically endangered Chinese sturgeon (*Acipenser sinensis*). And Li says that the precise mixture of threats to most of the species the team looked at is poorly understood. Large marine species are often inadvertently killed as by-catch in fishing. But these and other creatures are also threatened by pollution, competition from invasive species and depletion of prey species owing to over-fishing.

"These results point out the existing gaps in the current management system of China's coastal protected areas,"

says Baoshan Cui, a wetland ecologist at Beijing Normal University. And he says that other countries, especially those that with rapidly expanding economies, probably have similar conservation gaps.

Nicholas Murray, a conservation ecologist at James Cook University in Townsville, Australia, says the lack of protection for larger species “suggests that most coastal species in China — the small ones as well — are being similarly impacted”.

The study lays important groundwork that will help conservation in these coastal zones, says Murray. “They did a lot of work to build a new database,” he says, and the more such data sets become available for analysis, the better countries such as China will be able to manage their coastal ecosystems.

### **Better protections**

China has made progress towards reducing overfishing in its domestic waters, says Songlin Wang, president of the Qingdao Marine Conservation Society. In 2017, the agriculture ministry adopted a ‘negative growth’ policy for its domestic fishing harvest in an attempt to reduce catch levels each year. And in June, China formally signed on to the World Trade Organization’s international agreement to end harmful fisheries subsidies. But Wang says that the slow decline in small-

scale fishing won't be enough to protect its coastal ecosystems.

As a first step, He says, "the Chinese government needs to include many more of those coastal megafauna species in the nation's register" of protected species.

Wang says that this could be difficult. Although marine mammals such as whales, dolphins, porpoises and marine turtles have legal protections in China, few species of fish are protected, because of their commercial value as seafood.

The Chinese Ministry of Agriculture and Rural Affairs did not immediately respond to a request for comment.

Protected areas can help, says He, but they need to be properly enforced. China has more than 200 marine protected areas, he adds, but these are poorly regulated: "There's so many marine protected areas, but there's no boundary information available to the public," so there's no way for fishers to know whether they are in a protected area.

Furthermore, protected areas are often small and unconnected, says ecologist Zhonghua Ning at Beijing Normal University. This compromises their effectiveness as refuges, he says.

But Wang says that marine protected areas alone are inadequate to protect large marine species — he says that better enforcement of laws requiring fishers to use gear that doesn't trap large animals such as turtles, dolphins and sharks as by-catch would do more to protect those species. Wang says that despite regulations, fishers often modify their gear or use illegally small mesh to maximize their harvest.

*doi: <https://doi.org/10.1038/d41586-023-02513-9>*

## **References**

- Li, X. *et al. Sci. Adv.* **9**, eadg3800 (2023).