The unnoticed collapse of big freshwater animals

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It's the largest animals who tend to occupy the most space in our hearts. They might be imperilled – indeed they usually are, as it's not easy being big in a human-dominated world – but at least people know and care. There's one group of large animals, however, whose decline has gone mostly unremarked: those who live in lakes and streams and rivers.

"Globally, freshwater megafauna populations declined by 88 percent from 1970 and 2012," write biologists led by Fengzhi He and Sonja Jähnig, both of Germany's Leibniz Institute of Freshwater Ecology and Inland Fisheries, in the journal *Global Change Biology*. "Compared to megafauna in terrestrial or marine realms, they have received much less research, conservation efforts, and public attention."

Big or small, the situation for freshwater animals in general is quite grim. According to the Living Planet Index, their populations fell by 80% in the last 40 years – roughly double the declines experienced by terrestrial and ocean-dwelling vertebrates. During the 20th century, freshwater fishes went extinct at rates unsurpassed by any other guild.

He and Jähnig are especially concerned, though, about the largest of these creatures. They tend to live a long time but reproduce very slowly, and travel between far-flung spawning and feeding areas; when combined with heavy human impacts on freshwater ecosystems, these traits make them especially extinction-prone. The researchers suspected that their rates of decline exceeded even those of other freshwater species.

Despite all this, write He and Jähnig and colleagues, "monitoring of freshwater megafauna species remains limited, particularly at continental or global scales." To fill the gap, they gathered worldwide population data for 126 freshwater species – 81 fishes, 22 mammals, 21 reptiles and two amphibians – who can attain a size of 30 kg or more.

Number-crunching yielded the aforementioned 88% contraction of freshwater megafauna. Declines were especially precipitous in Europe, Asia and northern Africa, with losses of between 97 and 99%. Large fishes were hit hardest, followed by reptiles; mammals, interestingly, appeared to be increasing in population, though the researchers cautioned that data for them is sparse.

"Our results show a clear decline of freshwater megafauna across the globe," write the researchers. And since many megafauna are so long-lived, individuals may survive long after species reproduction has ceased, their lingering presence masking the full degree of their peril.

Such sharp declines are thus a harbinger of extinction – and fighting to protect them isn't just about preserving Earth's biological heritage, say He and Jähnig. Just as terrestrial megafauna like grizzly bears and elephants are often apex predators or keystone species, so are their aquatic counterparts. Their loss leaves ecosystems simplified and prone to collapse.

Future healthy freshwater ecosystems may well depend on the preservation of these animals. As of now, however, "monitoring and targeted conservation actions for the vast majority of freshwater megafauna appear inadequate," write

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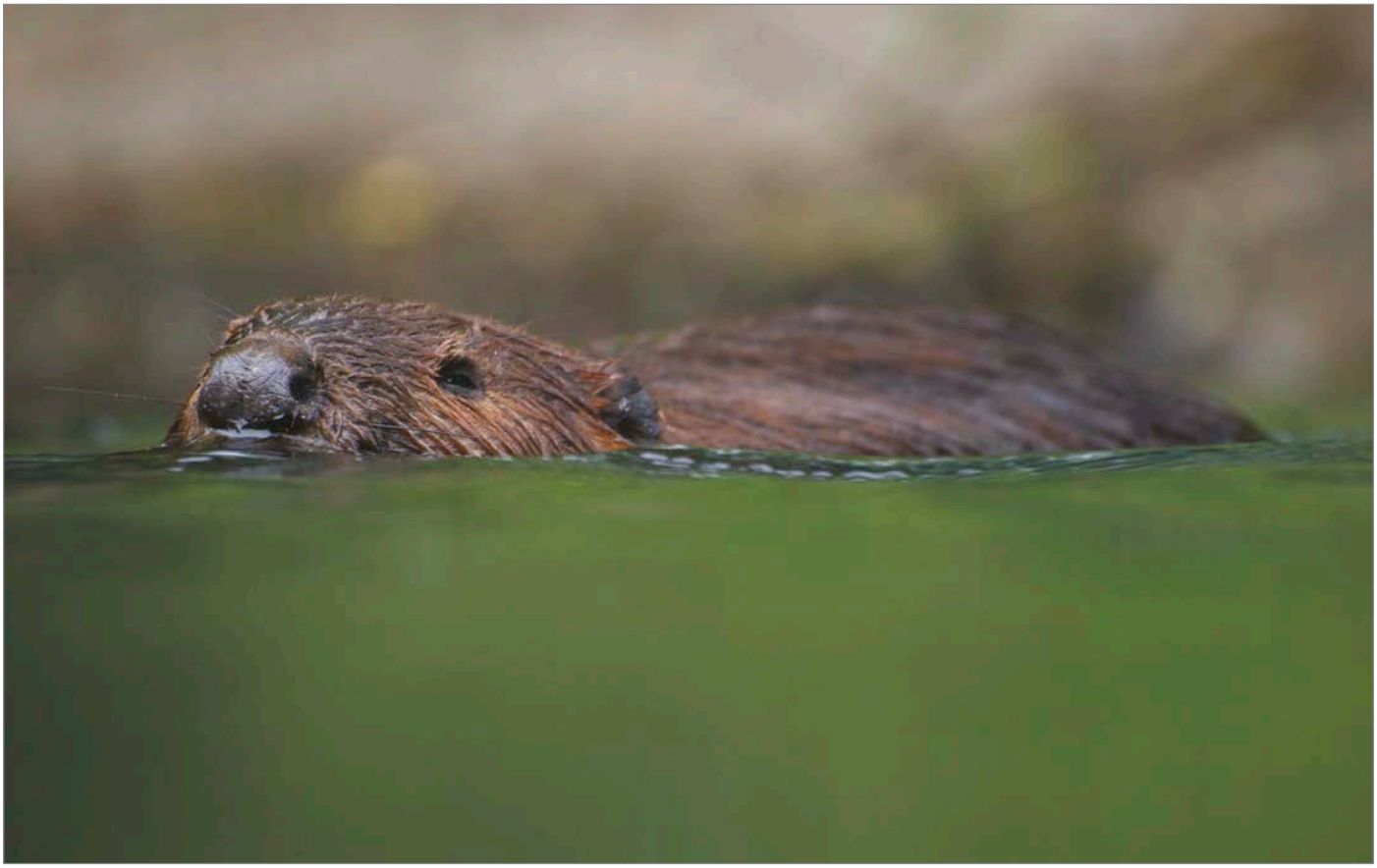

Figure 1. A Eurasian beaver, a species which has been reintroduced to many parts of Europe (photo: Matteo Tarenghi [CC BY-NC-ND 2.0; https://creativecommons.org/licenses/by-nc-nd/2.0/]).

the researchers. Basic knowledge of their migratory routes and spawning grounds is limited.

Further information is needed to protect them – but, even more than that, people need to care. The researchers suggest that conservationists tap into the fascination people naturally feel for big animals, turning giant salmon carp and river turtles and crocodiles into the next generation of so-called charismatic megafauna and flagship species.

Figure 2. An Irrawaddy river dolphin in Cambodia (photo: Jim Davidson [CC BY-NC-ND 2.0; https://creativecommons.org/licenses/by-nc-nd/2.0/]).

With overexploitation continuing and some 3700 large-scale hydroelectric dams now under construction or scheduled, it won't be easy. Yet it is possible: in the US, populations of thirteen sturgeon species are now increasing. Beavers have been reintroduced to many parts of Europe (Figure 1); in South Asia, Irrawaddy river dolphin numbers recently rose for the first time in two decades (Figure 2).

"Despite the plight of freshwater megafauna described in this study," write He and Jähnig and colleagues, "opportunities to protect them still exist." ■

References

He F, Zarfl C , Bremerich V *et al.* (2019) The global decline of freshwater megafauna. *Global Change Biology*, 8 August. Available at https://doi.org/10.1111/gcb.14753 (accessed September 2019).