

Commentary

A Bad Precedent: What the Loss of the Vaquita Would Mean to Marine Mammal Conservation

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Marine mammals have been exploited by humans for centuries. Many species have been driven to very low population levels by past hunting. But most of these have recovered. This was largely due to the fact that, as the species became rarer and rarer, it became less worthwhile to pursue them, and generally a more abundant species was turned to. This concept of a species being too rare to make it worth exploiting is known as “economic extinction.” Luckily for the animals, and for those of us who care about them, economic extinction generally comes before biological extinction, and so therefore may give the species a second chance. It is probably the main reason we have only lost four species of marine mammals in centuries of killing them and chasing them to all corners of the Earth.

These four species consist of one sirenian, two pinnipeds, and one cetacean. If you consider the sea mink a marine mammal, then it would get added to the list. The Steller sea cow (*Hydrodamalis gigas*) was wiped out by fur hunters just 27 years after its discovery, a clear victim of ignorance and carelessness (9). The two pinnipeds, the West Indian monk seal (*Monachus tropicalis*) and Japanese sea lion (*Zalophus japonicus*), both went extinct most likely in the 1950s, both victims of hunting programs that pushed the point of economic extinction for these species too close to biological extinction for them to survive (5, 6). They were all victims of overhunting (the sea mink too). But the most recent marine mammal to go extinct, and so far the only cetacean, the baiji (*Lipotes vexillifer*) was never heavily hunted (10). It was a victim of accidental deaths in fishing gear and rampant destruction of its habitat.

The baiji represents the dawning of a new age of marine mammal endangerment. This is one in which the animals are not killed directly or intentionally, but rather the extinction risk is caused by incidental impacts of human activities like fishing, coastal development, agriculture, shipping, or minerals extraction. The animals simply get in the way of our ambitions to shape

the world as we would like it to be.

The solutions to these new sets of problems are not so simple as just banning hunting and leaving the animals alone to recover. Generally, the problems are complex and involve many different activities that often do not have easily quantifiable impacts on marine mammal populations. This was certainly the case with the baiji, which suffered from accidental killing from rolling hook and dynamite/electric fishing, injury and death from vessel traffic, river modification schemes, and rampant pollution of its environment by countless toxic chemicals, not to mention sewage from something like 10% of the world’s human population.

Despite decades of warnings from scientists that the baiji population was declining and heading toward extinction, the threats only got worse, and the species’ numbers plummeted, reaching “functional extinction” in about 2006-2007. Presumably, the last baiji to inhabit the planet died sometime after that, with no ceremony or special attention. Perhaps this should not surprise anyone. China, where the baiji, lived, has a deplorable record of wildlife conservation, a totalitarian government determined on becoming a major economic powerhouse, the worst human overpopulation problem on the planet, not to mention that the threats to the species were so varied and difficult to quantify, much less control or eliminate. Maybe the baiji was doomed for a long time, and in truth it would have taken a monumental effort to save it (11).

However, the vaquita is different... quite different. It lives in a relatively “pristine” environment, with virtually no development, little ship traffic, and minimal water pollution. The surrounding region is sparsely populated, and the desert climate means that agriculture is barely present. The vaquita really only has one problem – a particular type of net called a gillnet. The number of boats setting these kinds of nets in the vaquita’s range is only several hundred to maybe a thousand, and the range is a very small area – about



a quarter the size of the Los Angeles metropolitan area. This sounds like a relatively easy problem to solve, especially when one considers that it has been understood that the vaquita was rare and endangered since the species was first discovered in the 1950s (7).

The vaquita's problems are imminently solvable – it is really simply a matter of replacing the several hundred gillnets in this area with an alternative type of fishing gear that is vaquita safe. And some progress has been made towards this goal. But, ultimately, it appears that the Mexican government, despite the claims that have been made over the years, does not have the political will to do what is needed to save the vaquita. Widespread corruption, and infighting between different departments that should be working together, have created an environment in which denial of facts, misuse of funds, planning for failure, and repeated delaying of needed measures have occurred. See the article by Cantu *et al* in this issue for more details on this sad, sad story.

Now, here in mid 2015, we have less than 80 vaquitas left on the planet, and they are declining at a rate of at least 18.5% annually and maybe faster (2). A breaking point, in which the species' numbers drop so low that even the elimination of the threats will be unlikely to save them, could happen as early as later this year. The situation is getting desperate and now is the time for the Mexican government to show the world that it is serious about saving the vaquita. There is still a chance!

If the vaquita were to go extinct in the next couple of years, we would have had two cetacean species lost in just a bit over a decade. This, despite the loss of not a single cetacean species in several hundred years of relentless hunting, using newly-developed technologies to make the hunt more efficient. So, what next?

After the vaquita, the world's most endangered cetacean species is undoubtedly the North Pacific right whale (*Eubalaena japonica*), which is currently listed as Endangered by IUCN. The Eastern North Pacific population is estimated at around 30 animals, with possibly several hundred found in a western Pacific population (though there is no reliable estimate for the western Pacific). The North Atlantic right whale (*Eubalaena glacialis*) is also listed as Endangered by IUCN, and is thought to number no more than 300-350

individuals in the western North Atlantic. The eastern North Atlantic stock is thought to be extirpated, or nearly so (4).

The Indus River dolphin (bhulan) is currently considered a subspecies of *Platanista gangetica*, which is listed as Endangered by IUCN. But recent studies strongly suggest that the bhulan should be considered a separate species. Its population is thought to number about 1,600-1,700 individuals. It lives in a war-torn part of the world, Pakistan, and clearly its prospects do not look bright (1).

Hector's dolphin (*Cephalorhynchus hectori*) is considered Endangered by IUCN, and the current estimate of abundance for the species is about 7,800. A subspecies, known as Maui's dolphin, is listed as Critically Endangered and only numbers approximately 55 individuals (8).

Two pinnipeds, the Mediterranean and Hawai'ian monk seals (*Monachus monachus* and *M. schauinslandi*, respectively), are listed by IUCN as Critically Endangered. The Hawai'ian monk seal's population is estimated at about 1,000 individuals, and the Mediterranean monk seal is in even worse shape at about 350-450 animals. The latter is the world's most-endangered pinniped species (3).

Any of these species, plus one or more of the sirenian species, could be facing extinction in the next 10-15 years. None of them are actively hunted, and the threats facing them are diverse, but always indirect, like those of the vaquita. We need to recognize that a failure to save the vaquita, when the threats to the species are so well-known and the conservation actions required to save it are so feasible, would have a very severe bearing on our ability to save these other species, for which our understanding of their threats are much less.

One way to look at this is in terms of what lawyers call a "precedent." Precedents have value and implications that go well beyond the merits of the specific case that they are based on, because they have a strong influence on the direction of future legal decisions. In a similar way, the success or failure of conservation efforts toward the vaquita can be viewed as a precedent in marine mammal conservation. The current precedent, the extinction of the baiji in the late 2000's, is obviously negative for marine mammal conservation. Our hope would be that we can save the

vaquita, not only for the value of maintaining the biological diversity of the species itself, but also to help reverse the negative precedent that is currently in place. If and when, in the future, we find ourselves in a situation where we are desperately trying to save one of the species listed above from extinction, having a positive precedent to lean on will be valuable in terms of trying to persuade governments, industry, and other stakeholders to change their behavior for the benefit of marine mammal conservation.

Going back to the baiji situation, the Chinese government's efforts to try to conserve the species had been almost completely aimed at developing a captive breeding colony and very little effort was put into trying to preserve habitat for the animals in nature, or in other words, almost all efforts were put into *ex-situ* approaches and very little was put into *in-situ* approaches. Even in the last decade or so of the baiji's existence, and despite strong recommendations from scientists and conservationists from around the globe, the Chinese government steadfastly maintained its course of only supporting *ex-situ* conservation. Even as the species was sliding into extinction, there was a strong refusal to accept that other approaches were needed. This stubbornness contributed to the extinction of the baiji (11).

We must be careful not to make the same mistake again with the vaquita. Efforts over the last several years by the Mexican government, and with support from outside of the country, have been well intentioned and made sense at the time. These efforts have primarily been directed towards voluntary buy-outs and switch-outs of fishing gear to more vaquita-friendly nets (7). However, we are now at a point where it is apparent that these approaches are simply not working. In order for the vaquita to survive even another few years we need to embrace new approaches. These new approaches will necessarily involve an immediate and complete elimination of all gillnets from the entire range of the vaquita, even if this cannot be done through a completely voluntary program. The vaquita just does not have time to wait anymore.

Now in mid 2015, there is new reason for optimism. The Mexican government has instituted a 2-year gillnet ban, and early indications are that it is being effectively enforced and may be working. However, it is still too early to tell, and everyone

involved has emphasized that the gillnet ban needs to be permanent to have any chance to save this species. The president of Mexico appears to be serious about saving the vaquita, so there is good reason for hope. However, if the ban is not effectively enforced and made permanent, then economic sanctions against import of Mexican seafood products may be needed. Let's all hope we don't need to go there! We failed the baiji... we need to get this one right. We owe it not only to the vaquita, but also to all the other marine mammal species for which the threat of extinction lies looming, just around the corner.

References

1. Braulik GT. Conservation ecology and phylogenetics of the Indus River dolphin (*Platanista minor*). 259 pp. Ph.D. thesis, University of St. Andrews. 2012.
2. CIRVA (International Committee for the Recovery of the Vaquita). Report of the Fifth Meeting of the International Committee for the Recovery of the Vaquita (CIRVA), Ensenada, Baja California, México, 8-103 July 2014. 43 pp. 2014.
3. Gilmartin WG, Forcada J. Monk seals *Monachus monachus*, *M. tropicalis*, and *M. schauinslandi*. In: Encyclopedia of Marine Mammals (Second Edition) (ed. by W.F. Perrin, B. Würsig & J.G.M. Thewissen), pp. 741-744. Academic Press. 2009.
4. Kenney RD. Right whales *Eubalaena glacialis*, *E. japonica*, and *E. australis*. In: Encyclopedia of Marine Mammals (Second Edition) (ed. by W.F. Perrin, B. Würsig & J.G.M. Thewissen), pp. 962-972. Academic Press. 2009.
5. Le Boeuf BJ, Kenyon KW, Villa-Ramirez B. The Caribbean monk seal is extinct. *Marine Mammal Science* 2:70-72. 1986.
6. Ohdachi SD, Ishibashi Y, Iwasa MA, Saitoh T. The Wild Mammals of Japan, Shoukahoh Book Sellers and Mammalogical Society of Japan. 2010.
7. Rojas-Bracho L, Reeves RR. Vaquitas and gillnets: Mexico's ultimate cetacean conservation challenge. *Endangered Species Research*. 21:77-87. 2013.
8. Slooten E, Davies N. Hector's dolphin risk assessments: old and new analyses show consistent results. *Journal of the Royal Society of New Zealand* 42:49-60. 2012.
9. Turvey ST, Risley CL. Modelling the extinction of Steller's sea cow. *Biology Letters* 2:94-97. 2006.



10. Turvey ST, Pitman RL, Taylor BL, Barlow J, Akamatsu T, Barrett LA, *et al.* First human-caused extinction of a cetacean species. *Biology Letters* 3:537-540. 2007.
11. Turvey S. *Witness to Extinction: How We Failed to Save the Yangtze River Dolphin*, Oxford University Press. 2008.



Figure 1: Vaquita mother and calf. Photograph reproduced with permission.