



Why IUCN Should Replace “Data Deficient” Conservation Status with a Precautionary “Assume Threatened” Status—A Cetacean Case Study

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The IUCN’s Red List categories are utilized internationally by governments for assessing the conservation status of species and for prioritizing conservation actions upon these species (Lamoreux et al., 2003; De Grammont and Cuarón, 2006; Rodrigues et al., 2004; Mace et al., 2008; Vié et al., 2008). Even though individual countries may have their own criteria for assessing and prioritizing conservation actions, Governments typically use IUCN categorizations as a guideline—for example the US Government often looks to IUCN evaluations when making assessments of species under the US Endangered Species Act.

Under these categories, the IUCN defines “data deficient” species as ones where “there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status” (IUCN, 2001). However, some policy-makers interpret “data deficient” species as species of “least concern,” which precludes a statutory requirement to enact conservation measures. Moreover, this may also reduce the incentive for policy makers to support scientific investigations of the species. Limited agency funds are prioritized toward species that are “endangered” or “vulnerable,” and the species that urgently need more scientific attention—because there is so little information on them, or there are significant gaps in our understanding—are sidelined. Hence, designating a species as “data deficient” may effectively place those species “out of sight, out of mind” for some policy-makers. However, “data deficient” species are often amongst those most likely to actually be endangered as their abundance is low and sightings are rare or they may be cryptic, making it difficult for scientists to estimate their numbers or statistically determine population trends; their distribution may be so restricted or fragmented that surveys may easily miss occupied habitat; top predators may be embroiled in human-wildlife conflict scenarios that threaten their populations; they may have only recently been described as a species and data is lacking, but this recent identification is likely due to the difficulty in identifying and sighting; and, they may be located in developing countries that lack the scientific and legislative resources to survey and protect the species. Such species need extra survey effort to monitor their numbers, but as they are listed as “data deficient” their monitoring is rarely a policy-maker’s or resource-strapped manager’s priority. They languish in a conservation “Catch 22” situation. This was observed multiple times in the case of Indo-Pacific humpback dolphins (*Sousa chinensis*) in Southeast Asia (which although are now classed as “near threatened,” were for a long time considered to be “data deficient”). Because they weren’t considered to be threatened, funding for their study, and political will for their conservation were rarely forthcoming (pers. obs.). In Hong Kong, conservationists tried to get political and public attention for the population there by “marketing” the population, getting the species recognized as an official mascot of Hong Kong (Wright et al., 2015). For the dwindling population in Taiwan, instead efforts were made to get the population to be recognized and designated as “critically endangered” (Reeves et al., 2008) which greatly increased national and

international concern, even toward current discussions about listing this population under the US Endangered Species Act (Animal Welfare Institute, Center for Biological Diversity, and WildEarth Guardians, 2016).

One example of a large and diverse group of "data deficient" marine species, where the designation is probably impeding conservation, is the beaked whales (family Ziphiidae). Beaked whales are presented here as a case study because: (a) cetaceans are charismatic and generally attract public and political concern; (b) beaked whales are particularly problematic and difficult to study; and (c) they are faced by global level threat because of their vulnerability to underwater noise, as discussed below.

Beaked whales spend so much time below the -largely opaque - water surface, and are wide ranging top predators that may naturally occur in low numbers in their habitats, making it expensive and logistically difficult to research in the wild (Parsons et al., 2015). For example, Perrin's beaked whale (*Mesoplodon perrini*; Dalebout et al., 2002), despite occurring off the coast of California—arguably the location with one of the greatest concentrations of marine mammal scientists in the world—it was only recently described to science, and has yet to be officially observed in the wild. Beaked whales, with dives that can last 3 h (Schorr et al., 2014), spend only minimal time at the surface (Tyack et al., 2006) and are notoriously difficult to detect visually (Barlow and Gisner, 2006). But beaked whales are vulnerable to anthropogenic activities, most notably underwater noise such as naval sonar, and there is substantive evidence that naval sonar causes beaked whales to strand *en masse* (Parsons et al., 2008). Moreover, sonar has been linked to "bends-like" lesions in tissues (Jepson et al., 2003; Fernández et al., 2004, 2005), injuries that may affect beaked whales disproportionately due to their behavior (Cox et al., 2006) and physiology (Houser et al., 2001; Crum et al., 2005). Beaked whales have even reacted to sonar use in naval exercises over 100 km away (DeRuiter et al., 2013).

Ninety percent (19 of 21 listed; <http://www.iucnredlist.org/>) beaked whale species remain "data deficient" and it is likely that many of these species are, in fact, "vulnerable" or "endangered" due to low numbers, recent declines and fragmented, or restricted, habitat. But without expensive, dedicated monitoring, such assessments are unlikely. Furthermore, there are conflicts between the conduct of military exercises and conservation activities of beaked whales in their habitat (e.g., Zirbel et al., 2011a), which may further reduce the incentive for legislative conservation actions, despite the public support for such actions (Zirbel et al., 2011b).

In addition to beaked whales, there is a high proportion of cetacean "data deficient" species. Of 87 IUCN-listed cetaceans, 52% are categorized as such (2 species are "critically endangered," 7 "endangered," 6 "vulnerable," 5 "near threatened," 22 "least concern," and 45 "data deficient"; <http://www.iucnredlist.org/>).

The 1982 World Charter for Nature introduced the concept of the precautionary principle on the international stage. Subsequent treaties, such as the 1992 Convention on Biological Diversity highlighted the "precautionary principle" which subsequently became ratified and enshrined in the legislative

frameworks of many signatories (notably European Union countries¹, although not currently the USA). The precautionary principle states that "where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat"². The 1990 UN Earth Charter (which again has not been adopted by the USA) outlines the precautionary principle even more stringently, putting the onus clearly on those that want to undergo a potentially damaging activity that it will not harm species: "*When knowledge is limited apply a precautionary approach... Place the burden of proof on those who argue that a proposed activity will not cause significant harm, and make the responsible parties liable for environmental harm*"³. This particular definition is important as the IUCN has officially endorsed the Earth Charter.

It is my proposal that the "data deficient" category be renamed a more precautionary "assume threatened" status, with the description of the category emphasizing that the burden of proof to say that the species is not, in fact threatened, is on those wishing to conduct activities that could impact one of these species, relieving the current burden which is largely that of the conservation science community. The IUCN's description of the "data deficient" category states that there is: "*the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available... If the range of a taxon is suspected to be relatively circumscribed, and a considerable period of time has elapsed since the last record of the taxon, threatened status may well be justified*" (IUCN, 2001). While this wording suggests that the precautionary approach could be taken with this category, it does so weakly, and this suggestion for precaution is somewhat overwhelmed by the empathic statement in the same description that "data deficient is therefore not a category of threat" (IUCN, 2001). There is, thus, little formal incentive for policy makers or managers to commit resources to data deficient species. However, if species were classified as "assumed threatened" there would likely be considerably less risk that rare, or hard to study species, may go extinct before scientists have a chance to document their status. Moreover, there would be a major incentive for developers and policy makers to commit resources to evaluate these data deficient species.

AUTHOR CONTRIBUTIONS

The author confirms being the sole contributor of this work and approved it for publication.

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¹Via Art. 191, Para 2. of the "Treaty of Lisbon," December 2007—the Consolidated Version of Treaty on the Functioning of the European Union.

²Convention on Biological Diversity, June 5, 1992, preamble Available at: <https://www.cbd.int/convention/articles/default.shtml?a=cbd-00>.

³Principle II(6) of the UN Earth Charter, June 1990. Available at: <http://earthcharter.org/discover/the-earth-charter/>.

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Conflict of Interest Statement: The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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