

Captive Cetaceans: The Science Behind the Ethics
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Introduction:

In most discussions on the controversy surrounding captive cetaceans, it is generally argued that the issue is a matter of ethics and belief rather than science, or a question concerning individual animal welfare rather than conservation (Reeves and Mead 1999; Reynolds *et al.* 2000). However, there is in fact a small body of scientific evidence that, on its face, supports the “anti-captivity” position. Peer-reviewed papers (*e.g.*, Small and DeMaster 1995a, 1995b; Clubb and Mason 2003) suggest that capture and captivity for cetaceans is inherently stressful. This science is at best seen as not definitive and is at worst entirely overlooked, devalued, and even misinterpreted by the public display and scientific communities. Yet there seems to be no concomitant body of scientific evidence to support the rhetorical claims by the public display community that captivity is beneficial for cetaceans.

Capture:

Only a handful of cetacean species have reproduced successfully in captivity and even fewer have produced offspring beyond the second generation (see US National Marine Fisheries Service Marine Mammal Inventory Reports). Regionally (*e.g.*, in the U.S.), only one or two captive species have approached the ability to maintain their numbers through captive breeding; globally, no cetacean species has done so. Consequently, many (indeed most) cetaceans currently being held in public display facilities around the world have been captured from the wild.

Capture of wild cetaceans, regardless of methodology, is undeniably stressful (NOAA Fisheries 2002; Curry 1999) and animals can face as much as a six-fold increase in mortality risk in the first month after capture (Small and DeMaster 1995b). Beyond this harmful individual impact, however, disruption or damage to a captured animal’s social group caused by its removal, while largely unknown and uninvestigated, may be substantial (*e.g.*, southern resident orcas, Ford *et al.* 1994). In addition, live captures of cetaceans for public display are on-going in several global “hotspots,” including the Caribbean and Asia (Reeves *et al.* 2003), where few if any data are available on local, often small, populations. Therefore, while some argue that the public display of a relatively small number of cetaceans only encompasses welfare or ethics concerns, public display clearly has implications for conservation. In addition, even though many North American and European facilities have not removed cetaceans from the wild in years and have policies requiring sustainability for any captures contemplated, their economic success is arguably an incentive to entrepreneurs in the developing world to pursue unsustainable or inhumane captures.

Of all aspects of cetacean public display, capture from the wild is thus the most ethically challenging to justify. The science underlying this assertion is non-controversial, yet is frequently overlooked or ignored when captivity is discussed. As an interesting example of this odd bias, Small and DeMaster (1995b) maintained that a “60-[day] acclimation period is recognized as a distinct interval of relatively high mortality that should be treated separately from long-term survival estimates when evaluating husbandry practices of oceanaria and zoos” (p. 510). In other words, they recommend treating the period of high mortality just after capture as if it were unconnected to the overall impact of a facility’s husbandry practices on cetacean survival rates. However, many facilities either conduct their own captures or directly supervise local capture operators. It seems that in these cases the capture process should be considered part of a facility’s husbandry practices. Alternatively, if live capture, no matter how well conducted, inevitably leads to high mortality, then it is arguably not ethical.

Captivity:

Once in captivity, cetaceans face a very different environment from their natural habitat. There is very little peer-reviewed literature on the impact of these differences on the well-being or behavior of cetaceans; what there is suggests that, under certain circumstances, bottlenose dolphins at least can adapt well and continue to exhibit natural behaviors in captivity (Samuels 1996; Reynolds *et al.* 2000). However, the survivorship of bottlenose dolphins in captivity compared to the survivorship from a well-studied wild population in Florida suggests that in fact their adaptation has limits.

Small and DeMaster (1995a) and Woodley *et al.* (1997) both concluded that the overall survivorship of captive dolphins had with time come to match that of free-ranging dolphins (but see *e.g.*, Reeves *et al.* 1994 for data from a facility exhibiting poor survivorship). However, both studies noted that survivorship of captive dolphins continued below that of free-ranging dolphins (although the difference was not statistically significant) and neither study found that captive dolphins survived *better* than their free-ranging counterparts. In other words, causes of mortality for captive dolphins, while clearly different, are nevertheless equivalent in impact to causes of mortality in the wild. Captive dolphins do not need to contend with predators, food shortages, by-catch, pollution, or other hazards encountered in nature, as the public display community and some scientists (Reynolds *et al.* 2000) emphasize. Therefore, the question arises (but is almost never asked aloud in this debate): what kills them in captivity with equivalent efficiency? A possible explanation is that captive cetaceans may suffer persistent low-level stress due to, *inter alia*, confinement and artificial social groupings. It is well established that stress can lead to immunosuppression and increase susceptibility to infection and disease (St. Aubin and Dierauf 2001).

As for orcas, the same studies concluded that this species' captive mortality rate had persistently and significantly remained three times higher than the mortality rate seen in a well-studied population in the northeastern Pacific (Small and DeMaster 1995a; Woodley *et al.* 1997). Their larger size and less flexible social structure when compared to bottlenose dolphins (see Perrin *et al.* 2002) might explain this difference. It should be irrefutable that the artificial environment provided in captivity negatively impacts orca welfare and longevity. Yet in fact the public display community ignores free-ranging survivorship data when defending captive orca exhibits and the scientific community has not focused on or even admitted to the survivorship discrepancy.

A recent paper by Clubb and Mason (2003) provides additional support for the argument that cetaceans are not well-adapted to captivity. The authors reviewed the literature on 35 species of carnivores routinely held in captivity (not including cetaceans, as the authors focused their analysis on "pacing", an obviously terrestrial stereotypy, but one exhibited by cetaceans in the form of repetitive swimming patterns). They found increased levels of stereotyped pacing and lowered levels of reproductive success in captive large carnivores that range widely in nature, compared to large carnivores that do not range widely. Virtually all cetacean species held in captivity would qualify as wide-ranging! The paper concluded that "the keeping of naturally wide-ranging large carnivores should be either fundamentally improved or phased out" (p. 473).

Conclusion:

The rationale for promoting cetacean public display relies more on educational benefits for people than on welfare benefits for cetaceans, as well as on the idea that public display supports valuable conservation research. However, the educational benefits are largely anecdotal and not supported with systematic sociological analysis (Reeves and Mead 1999; Reynolds *et al.* 2000) and most captive research relates to improving husbandry or veterinary science rather than to conservation (Rose 1996). Despite the fact that what science there is suggests captivity is detrimental to cetacean welfare, there has been no serious push by the public display community to pursue critical welfare research (or allow its pursuit by independent scientists using exhibit animals as subjects). In addition, efforts to improve care and maintenance standards, through such obvious actions as requiring larger enclosure sizes or natural sea water in tanks, have been consistently opposed by the public display community (pers. obs.).

It is true that the debate centered on captive cetaceans is one based on ethics and belief, but the claim by many in the public display and scientific communities that science has no role to play in the argument is incorrect. The data supporting the conclusion that capture of wild cetaceans is harmful to individuals are not in dispute, but are too often left out of the discussion or inexplicably considered irrelevant. The fact that many captures are counter to sound conservation principles receives even less consideration in the debate. The few data suggesting that captive cetaceans fare poorly compared to wild cetaceans are ignored or misinterpreted, or else are viewed as justified, given the educational and research benefits of public display. However, the research benefits are limited and the education benefits have not been systematically evaluated. In short, the preponderance of hard evidence should lead to the conclusion that captivity and its related practices are ethically *and* scientifically unjustified. That it rarely does is in itself an ethical conundrum.

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