Response to "Resonance and Dissonance: Science, Ethics, and Sonar Debate"
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Gannon et al. (2004) take issue with comments made by one of us (HW) at a special session on "The Science Behind Noise and Marine Mammals" at the biennial meeting of the Society for Marine Mammalogy in Greensboro, N.C. The comments were that:

1) It is becoming clear that sounds produced by navies are dangerous to marine mammals (the U.S. Navy has admitted its own sonar was responsible for the deaths of several whales in the Bahamas; National Marine Fisheries Service and United States Navy 2001);

2) The U.S. Navy funds a major part of marine mammal science (sponsoring 70% of all marine mammal research in the U.S., and 50% of marine mammal research worldwide; S. Tomaszeski; Oceanographer of the U.S. Navy; Presentation at the First Plenary Meeting of the Advisory Committee on Acoustic Impacts on Marine Mammals, 3-5 February 2004, Bethesda, Maryland; http://www.mmc.gov/sound/plenary1/pdf/plenary%201_tomaszeski2.pdf);

3) For instance, all the presenters of "The Science Behind Noise and Marine Mammals" at the special session were partially funded by the U.S. Navy, as was the conference itself;

4) This is a major problem, akin to a situation where most research on lung cancer, and a special information session on lung cancer at a professional meeting of oncologists, was funded by the tobacco industry.

Gannon et al. (2004) state that "...the objectivity of scientists investigating the effects of military sonar on marine mammals was called into question because of the source of their funding." In fact, there was no such comment. Many marine mammal scientists, including some of us, have collaborated with military agencies in a variety of ways. HW's point was aimed at the structural problem of naval funding of marine mammal science rather than at the objectivity and ethical behavior of any scientist.

In this regard, the problem faced by marine mammal science is severe. If all ONR (U.S. Office of Naval Research)-funded scientists were completely objective, and even if there were no attempts to influence their public statements, there is a substantial problem of perception of conflict of interest. It is easy to understand why many scientists and members of the public see a potential conflict when the U.S. Navy, a major noise producer, directly funds the majority of research on the effects of noise on marine mammals and holds the dominant funding position in marine mammal research. Perceived conflict of interest "can erode public trust in science and scientists" (Anon. 2001). The problem of perceived conflict of interest in marine mammal science has been previously raised by some of us (Whitehead and Weilgart 1995), and noted by the U.S. National Research Council's Report on Marine Mammals and Low-Frequency Sound (National Research Council 2000; p. 84): "...sponsors of research need to be aware that studies funded and led by one special interest are vulnerable to concerns about conflict of interest. For example, research on the effects of smoking funded by [the U.S. National Institute of Health] is likely to be perceived to be more objective than research conducted by the tobacco industry." U.S. naval funding has resulted in scientists being reluctant to speak out against the U.S. Navy for fear that it could affect their future research funding (Whitehead and Weilgart 1995). Even if the Navy actually took no action against researchers, such self-censorship would impede marine mammal science and conservation.

Consider how a disinterested observer would read the public-record e-mail

exchange disclosed by the U.S. Navy and reprinted in the Appendix. Clearly the operational U.S. Navy considered that ONR-funded scientists had obligations to the U.S. Navy in their public comments on this controversial noise-related issue. It is untrue that ONR functions separately from the operational branch as asserted by Gannon et al. (2004). Thus, the conflict of interest can in some cases be real as well as perceived, with respect to public statements on conservation issues.

In the title, and final paragraph, of their letter, Gannon et al. (2004) lay the Naval funding debate out as an ethical issue. We disagree: while there are ethical sides, the primary problem is structural. More ethical guidelines will not solve the problem. Scientists will always be human. We do not, for instance, expect parents to shed their bias when writing letters of reference for their children. Instead, we simply don't allow it, even though some parents could be capable of perfectly objective assessments. While peer-review, non-interference by the sponsor into the research and publishing, the absence of pre-publication "vetting" of manuscripts, and other ethical guidelines undoubtedly help solve some aspects of the problem of conflict of interest, it still remains a substantial issue. Bias can be introduced, unwittingly or not, in: a) which research questions are asked, b) which methods of analysis are used, c) which projects are funded, and d) how results are interpreted, presented, and published. Because of the way marine mammal science is funded, it is vulnerable to a failure of public confidence. Why place scientists in difficult positions when one could restore public trust by altering the funding structure?

We believe the funding system should be changed to safeguard the credibility of the field and to protect us all from conflict-of-interest. The U.S. Navy is to be commended for its generosity in funding, but funds need to be administered independently, through a non-aligned body. An independent committee which has power and meaningfully represents all major stakeholders could establish priorities for the research, commission it, and recommend regulations. For instance, the U.S. National Research Council's Report on Marine Mammals and Low-Frequency Sound suggested: "Concern for peer review, efficiency, and independence argues for having an agency such as [the U.S. National Science Foundation] take the lead in managing an interagency research program on the effects of noise on marine mammals" (National Research Council 2000; p. 84).

Gannon et al. (2004) are correct that "...many members of our Society are funded by organizations having political agendas". While the U.S. Navy is a polluter, taxpayer supported, and overwhelmingly dominant compared with any other funder, it would be best for environmental groups and others to channel their funds through independent bodies as well.

We hope that the goal of "vigorous, constructive scientific debate" mentioned in Gannon et al. (2004) will allow a dispassionate review of the funding structure of marine mammal science. As Nature Medicine (Anon. 2001) notes for the medical community, marine mammalogy must "win back crucial public trust before the situation becomes irrevocable", and we believe a crucial step is to remove the overwhelming influence of the U.S. Navy on our field.

Appendix (Administrative Record, August 6-9, 2001, Natural Resources Defense Council v. Evans, 279 F. Supp. 2d 1129 (N.D. Cal. 2003).)

E-mail exchange between a representative of the operational branch of the U.S. Navy and an official of the Office of Naval Research, upon receiving comments from ONR-sponsored marine mammal scientists "X" criticizing some aspects of the marine mammal science on the effects of noise in an environmental review of a U.S. Navy program.

[Operational U.S. Navy representative]: "[ONR official], is the Navy funding any of X's research? Did they say anything to you on this issue?"

[ONR official]: "[Op. Navy rep.], yes, I fund their research. They [Researchers X] did mention that they would be sending in comments on [the Navy program] but I did not get a copy of what they sent. I gather the input was not entirely positive."

[Op. Navy rep.]: "[ONR official], their comments were in the attachment. Yes, they were negative and in my opinion, out of the box. If they are funded by the Navy, the proper way to bitch is via the sponsor (you), and not in a letter to [the regulator]. All of the data cited was run by your office...A letter from [Researchers X] to [the regulator] is nothing more than an attempt to discredit the Navy and stop [the Navy program]. Maybe I'm missing the big picture, what say you?"

[ONR official]: "[Op. Navy rep.], I told them as much in a pretty scorching phone call. I think they had some inkling that they might be about to take our money and make themselves look good to the enviros too, but I can't prove that...Scientists are like that, they'll review anything they're asked to review and give their honest, sometimes harsh critique, without knowing any of the politics or circumstances. Its [sic] the way you do things in peer review of a colleague's paper and they just apply the process to everything they read...".

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