Cautions about precautions

Commentary on **Birch** on *Precautionary Principle*

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Abstract: Assuming an animal to be sentient in the absence of conclusive evidence to the contrary is an extreme position, hence it should not and could not be the default assumption. Birch explains how the precautionary principle may be used to substantiate decisions to give the animal the benefit of doubt. Although I am reluctant to accept all of his points, Birch has provided an excellent argument for the use of the precautionary principle for the detection of animal sentience. I agree that more research is needed to refine and understand this relationship.

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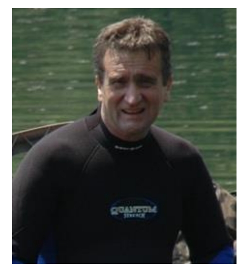

Birch (2017) posits the quantity and quality of data needed to convince us that an organism is sentient. He distinguishes between a broad sense of sentience that considers organisms' subjective experiences of the world and a narrower one that focuses on subjective experiences with an attractive or aversive quality (e.g., pain, suffering, pleasure, joy, etc.). He argues that the narrower meaning is what is used in animal welfare science and animal ethics. Although the precautionary principle was originally used to direct environmental policy and later public health, he proposes an Animal Sentience Precautionary Principle (ASPP) that would prevent "serious, negative animal welfare outcomes." Birch employs two rules provided by John (2011) for precautionary principles. First, the epistemic rule is that if scientific data suggest a causal relationship of sentience, one should set an intentionally low evidential bar. Second, the decision rule is that once such evidence is demonstrated, we should proceed in a timely and cost-effective manner to implement actions that prevent aversive outcomes. To assume that an animal is sentient in the absence of conclusive evidence to the contrary is an extreme position, hence it should not and could not be the default assumption.

Birch's two proposals — the first for the epistemic rule (BAR), and the second for the decision rule (ACT), are the following:

> BAR — *For the purposes of formulating animal protection legislation, there is sufficient evidence that animals of a particular order are sentient if there is statistically significant*

> *evidence, obtained by experiments that meet normal scientific standards, of the presence of at least one credible indicator of sentience in at least one species of that order.*
>
> *ACT — We should aim to include within the scope of animal protection legislation all animals for which the evidence of sentience is sufficient, according to the standard of sufficiency outlined in BAR.*

Birch gives examples of classes (e.g., Cephalopoda, Malacostraca) and several orders (e.g., Salmoniformes, Gadiformes, Cypriniformes) to support the use of orders rather than some other level in the Linnaean hierarchy. These arguments cannot be justified. I regard species as ontological individuals (sensu Ghiselin 1997). Since levels above the species (e.g., genus, family, order, class) began with a single speciation event, these higher levels are also ontological individuals. There are no guidelines, however, for grouping species into genera, genera into families, families into orders, etc. As long as each level is composed of a monophyletic assemblage, it is valid under the International Code of Zoological Nomenclature. For example, Mayden (1989) elevated a subgenus of *Notropis*, i.e., *Cyprinella*, to genus level. The division of the ranks above the species level is governed in part by our knowledge of the diversity of the groups. Perhaps Birch should consider the size of selected groups rather than choosing a specific phylogenetic level.

I applaud Birch's arguments that there must be "credible indicators of sentience." I disagree with the examples cited from the literature and provided by him as methods to determine these indicators. For example, an animal learns to administer pain-relief drugs (i.e., opioids) is taken as evidence of sentience. Perhaps, as in humans, it is sometimes just an example of addiction. Furthermore, Birch's argument about motivational tradeoffs is weak. He assumes that if an animal avoids a stimulus, it was noxious and the avoidance indicates pain. I have conducted numerous studies on temperature preference and avoidance in fishes (e.g., Stauffer et al. 1974, 1976, 1980). Fishes will prefer certain temperatures and avoid others based on their acclimation temperatures. These preferred temperatures differ based on sex and age (Stauffer et al. 1985). Reynolds et al. (1976, 1978, 1980) demonstrated that pathogens of poikilotherms exhibit a behavioral febrile response and thus result in a higher preferred temperature. These behaviors were interpreted as a result of natural selection, not sentience.

Despite my reluctance to accept all of his points, Birch has provided an excellent argument for the use of the precautionary principle for the detection of animal sentience. I agree that more research is needed to refine and understand this relationship.

References

Birch, J. (2017). Animal sentience and the precautionary principle. *Animal Sentience* 17(1).

Ghiselin, M. T. (1997). *Metaphysics and the origin of species.* State University of New York Press, Albany, 377 pp.

John, S. (2011). Risk and precaution. In A. Dawnos (Ed.), *Public Health Ethics: Key Concepts and Issues in Policy and Practice*, pp. 67-84.

Mayden, R. L. (1989). Phylogenetic studies of North American minnows, with emphasis on the genus Cyprinella (Teleostei: Cypriniformes). University of Kansas Miscellaneous Publications. No. 80. 189 pp.

Reynolds, W. W., M E. Casterlin, and J. B. Covert. (1976). Behavioral fever in teleost fishes. *Nature* 259:41-42.

Reynolds, W. W., M. E. Casterlin, and J. B. Covert. (1978). Febrile responses of bluegill (*Lepomis macrochirus*) to bacterial pyrogens. *Journal of Thermal Biology* 3:129-130.

Reynolds, W. W., M. E. Casterlin, and J. B. Covert. (1980). Behaviorally mediated fever in aquatic ectotherms. In M. M. Lipton (Ed.), *Fever,* pp. 207-212. Raven Press, New York.

Stauffer, J. R., Jr., C. H. Hocutt, and W. F. Goodfellow. (1985). Effects of sex and maturity on preferred temperatures: a proximate factor for increased survival of young *Poecilia latipinna*. *Archiv für Hydrobiolgia* 103(1):129-132.

Stauffer, J. R., Jr., E. L. Melisky, and C. H. Hocutt. (1980). Temperature preference of the northern redbelly dace, *Phoxinus eos* (Cope). *Archiv für Hydrobiolgia* 90(1):121-126.

Stauffer, J. R., Jr., K. L. Dickson, and J. Cairns, Jr. (1974). A field evaluation of the effects of heated discharges of fish distribution. *Water Resources Bulletin* 10(5):860-876.

Stauffer, J. R., Jr., K. L. Dickson, J. Cairns, Jr., and D. S. Cherry. (1976). The potential and realized influences of temperature on the distribution of fishes in the New River, Glen Lyn, Virginia. *Wildlife Monographs* 50:1-40.