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CORRESPONDENCE

Mislabeled Seafood Does Not Promote Sustainability: A Comment on Stawitz *et al.* (2016)

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Fish; DNA barcoding; IUCN Red List; seafood; substitution; biodiversity; sustainable food.

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Abstract

Recently, Stawitz *et al.* collated existing primary literature on DNA identification of finfish products and conducted a series of analyses to explore the environmental and economic ripples of species substitution. While we agree that the assessment of the impacts of seafood mislabeling is paramount, we show that the main conclusion of the study, which hints at a positive ecological impact arising from misnaming traded finfish species, is not warranted by the data, and may inadvertently cause damage to public perceptions of seafood provision, sustainability, and marine resource management.

The study by Stawitz *et al.* (2016) is the latest attempt to assess the global environmental and economic consequences of seafood mislabeling, a conservation issue that has rapidly come to prominence over the last decade (Pardo *et al.* 2016). After perusing the article with keen interest, we identified a number of shortcomings that undermine the veracity of the authors' main conclusion: the idea that somehow seafood mislabeling has a positive impact on ecological sustainability.

First, the use of the IUCN Red List is a very blunt tool for comparing the collated dataset. The "labeled" products are sourced from a range of stocks under varying degrees of demographic/management status, making them poorly comparable with genetically identified substitutes. Questions also hang over the "averaging" of IUCN status across genera/families (Figure S1). Even assuming we could rely on IUCN status for the labeled "species," many species/stocks increasingly featuring on global markets have never been assessed by the IUCN. In fact, the surplus of 358 genetically identified samples that fall in the "Data-Deficient"/"Not-Evaluated" categories excluded from the analysis, inevitably generate an upward bias in conservation status of "true ID" specimens. These "ghost" species

ring a significant alarm bell regarding the issue of IUU fishing (Pramod *et al.* 2014), which is mentioned by the authors in the introduction, but then is disappointingly left at the margins.

Furthermore, Figure 2 in Stawitz *et al.* shows that five of 11 categories exhibit a worsened IUCN conservation status between label and ID, two show no change, and only four reveal improved status in ID samples. Closer examination of the study dataset and IUCN categorizations employed (Figure S1) reveals cases where downgrading of conservation status with mislabeling is more severe than indicated by Stawitz *et al.*, others where alleged improvements are less "favorable" than advocated, and some where the picture is blurred by global versus regional assessments.

The collated dataset is a heterogeneous mix of capture and farmed products, a collection of extensively studied species and less thoroughly investigated taxa, mostly grouped into ambiguous/"umbrella" terms (Griffiths *et al.* 2013). The decision to standardize definitions to the US-FDA seafood list introduces additional ambiguities associated with such groupings (e.g., "bream," "flounder," "snapper," etc.), which have dramatically different

meanings in different regions. Even between Europe and North America. Even *within* North America. Within each category, depending on the sampling region, a range of species may be present that differ remarkably in terms of taxonomy, life-history, habitat, production method, and conservation status. A more judicious analysis might therefore consider country-specific seafood labeling/naming conventions, IUCN regional assessments (e.g., swordfish, cod), and complementary fisheries management/seafood consumption rating systems (e.g., www.ices.dk; www.seafoodwatch.org; www.goodfishguide.org; wwfsassi.co.za; etc.).

Overall, the message of “seafood mislabeling increasing fishery sustainability,” based on such unsteady foundations, stifles attempts to empower consumer knowledge and choice, and thwarts governments’ and civil society’s efforts to achieve traceability and combat IUU. Provoking ideas are the essence of academic discourse, but paradigm shifts require robust evidence. We would not support the idea of allowing poachers to roam freely in nature reserves as this may control overabundant elephant populations. The same applies to judging malpractice and illegality in marine resource exploitation.

Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher’s web site:

Fig. S1. Re-appraisal of Figure 2 presented in Stawitz *et al.* (2016) using the IUCN Red List categorisations and IUCN averaging metrics proposed by Stawitz *et al.* Black arrows represent our tentative additions overlaid on Stawitz *et al.*’s original version, where the beginning of the arrow marks the IUCN status of the labeled items and the end of the arrow marks the IUCN status of the genetically identified species.

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