

Reply

# Reply to Flessa, K.W. et al., Comment on Manjarrez-Bringas, N. et al., Lessons for Sustainable Development: Marine Mammal Conservation Policies and Its Social and Economic Effects. Sustainability 2018, 10, 2185—Holistic Socio-Ecological Approach to Promote Integral Public Policies to Preserve an Endangered Species: The Vaquita Marina

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We really appreciate the valuable comments made by our scientific colleagues Flessa et al., concerning the essence of our manuscript [1], as they clearly pointed out: “Manjarrez-Bringas et al., performed a valuable service in characterizing the Mexican fishing community of El Golfo de Santa Clara’s (GSC) demographics, economic activities, and attitudes and perceptions regarding conservation efforts. And they are correct to identify GSC as caught between the externally forced policies designed to reverse the decline in the population of the vaquita (*Phocoena sinus*) and the needs of its residents for a viable and sustainable economy. No easy solutions exist [2].”

Flessa et al., are absolutely accurate in highlighting the fact that our academic article published in Sustainability essentially focused on the perception of fishermen in the Upper Gulf of California and are regarding the measures that have been applied in the region to protect the Vaquita Marina. The main purpose of our academic article was to describe the perceptions the local actors participating, by geographic happenstance, in the efforts of saving the vaquita from extinction.

We want to emphasize that more than 90 % of our manuscript is devoted to these local fishermen perception analyses.

However, in its final section, our article does refer that one of the potential distal causes of the decline of the Vaquita Marina could also have been the affectation of its original habitat and that such one cause could be due to the damming of the Colorado River by the United States of America. For all the comments received, which we appreciate, we are aware now that, given the very delicate, and even sometimes perilous conditions in which occurs the application of proximal conservation to saving the Vaquita, especially in terms of measures for this species, that simply alluding to potential distal causes that could potentially have affected this species in the past could be used out of context, to attack the present measures being applied to protect and ensure the survival of the Vaquita Marina.

Simply by referring to distal causes, this reference can be used to question the proximal measures of protection so urgently required in the present to prevent the extinction of this species. In this context, we really appreciate that Flessa et al., have very clearly pointed out, that our allusion to the Colorado River damming could be used out of context.

Therefore, it should be emphasized that our academic manuscript at no time refers, for example, to advice, or even suggests, or insinuates, that current agreements and current proximal measures applied for the protection of the Vaquita must be lifted.

Of course, our manuscript in any paragraph, advice, or even suggestion, or even insinuation to relax the current vigilance actions that are required and are being taken to avoid illegal fishing in this area. Our purpose was never to create a diversion that only results in further divisions among the collaborative efforts required to save this species from extinction.

The reference to the damming of the Colorado river was made to be inclusive and only to provide another potential distal cause that could affect this species. Furthermore, we would like to make it clear that our purpose was never to create any comments that could be construed as to laying blame on any one single set of factors in the anthropogenic derived threats to the survival of this species. Our analysis is focused on the perceptions of the people that have direct access to the use of the fishery resources; when, how much, where, how they live, and the opportunities and aspirations that they have. We were observers of perceptions, and data that stands out from the social scientific point of view.

We are totally coincident with Flessa et al. that all the efforts devoted to eradicating the illegal fishing in the Vaquita habitat not only must be sustained but also even be reinforced. The motivation of our work was to make recommendations that avoid the extinction of this endangered species. Included in this analysis are the local perceptions of legally-licensed fishermen. Eradication of illegal fishing is mandatory and required to decisively ensure the conservation of the Vaquita, as well as, the wellbeing and adequate livelihood of the local legally-licensed fishermen.

Our article essentially refers to the perception that legally-licensed fishermen have on the evolution of the measures that have been taken for the protection of this species in the region. Principally to outline their contribution to the conservation actions being taken to preserve this endangered species. We emphasize that local perceptions are crucial and must be considered for a successful outcome, not only in the Upper Gulf Reserve but in other marine protected areas, wherever fishing should be regulated in order to contribute to attaining local conservation endeavors.

We believe that being precisely the legally-licensed fishermen of the area, the main and key factors to consider for the survival of the Vaquita, we need to accurately know their perceptions if we want to avoid the extinction of this species. Thus, knowing their perceptions about the measures applied for their protection undoubtedly provides a crucial contribution to improve public policies for the conservation of the Vaquita Marina.

And this was the essence of the manuscript. This was the contribution that was sought with its publication: To promote social participation of the local inhabitants in favor of the conservation endeavors, as established both in its title and its Summary.

We really believe that collaborative efforts are required to save this species from extinction, and that includes analyzing, in a holistic manner, three main socio-ecological factors: (1) The current proximal causes that affect their individuals; (2) the potential distal causes that affect their original habitat, as a contributing factor for its long-term survival as species; and, (3) the social participation of the local people to support the measures required to save the Vaquita. Our manuscript in Sustainability analyzed the two last aspects, trying to contribute to the preservation of this endangered species and to promote the construction of public policies, which includes the perceptions of the local inhabitants.

Concerning public policies, just very recently, 21 March 2019, four different Ministries of the Mexican Federal Government, Environmental Ministry; Agricultural and Fishery Ministry; Marine Ministry and Social Welfare Ministry, announced five complementary strategies to save the Vaquita Marina [3,4], which included all the three socio-ecological aspects discussed above.

In the governance aspect, the goal of the Federal Government is to apply the rule of law in the habitat of the vaquita, through the elimination of all illegal fishing activities, mainly to finish with the illegal capture of Totoaba and all furtive fishing of other species; to end the illegal trade in Totoaba's swimming blade and to eradicate all the fishing nets left adrift by poachers (the ghost fishing nets) in the Upper Gulf of California.

In the sustainable fishery aspect for the local population, the Federal government seeks to develop sustainable fishing systems and reorganize cooperatives with current permits; eliminate bycatch of species at risk in the catch of finfish and shrimp; increase the prices of the products of the region for their environmentally friendly practices and improve the efficiency of this productive activity.

In the productive diversification aspect, the Federal government proposes to offer new productive activities to the fishing communities located within the Vaquita habitat, such as the promotion of tourist-recreational activities and the installation of 28 aquaculture production modules.

In the conservation and habitat restoration aspects, the Federal strategy establishes the need for a new population count of vaquita marina; the restoration of marine and terrestrial natural resources, strengthening of an effective management of the Upper Gulf of California Biosphere Reserve, and the Colorado River Delta, as well as strengthening the environmental and fisheries legal framework.

In the social welfare aspect, the Federal strategy contemplates the registration of the inhabitants of the area in welfare programs; guaranteeing 100% basic and upper secondary education for children and adolescents. The social welfare strategy includes providing efficient urban services and assistance to local inhabitants, thus reducing the rates of migration, crime, and addictions in the population of children and adolescents in San Felipe and Golfo de Santa Clara.

We are very happy to see that the announced Federal strategy includes to using all the manpower of the Mexican navy and army to eradicate all the illegal fishing activities in the habitat of the Vaquita Marina, this will reduce their bycatch to zero.

We are also happy to see that the Federal strategy for the conservation of the Vaquita includes, as a public policy, the perceptions and the needs of the local inhabitants.

In order to attain Vaquita Marina local conservation endeavors, understanding of the motivations and perceptions of legally-licensed local fishermen is essential, because they are the key actors involved in the day-to-day battle of survival of the Vaquita, as well as themselves and their family.

We applaud enthusiastically the recent strategy announced by the Federal government because we are certain that in the conservation of nature and species such as the case of the Vaquita Marina, where human presence exists, success will not be achieved if local social participation is not promoted and a consensus is sought in favor of conservation. This was the essence of our original manuscript published in Sustainability.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

1. Manjarrez-Bringas, N.; Aragón-Noriega, E.A.; Beltrán-Morales, L.F.; Cordoba-Matson, M.V.; Ortega-Rubio, A. Lessons for sustainable development: Marine mammal conservation policies and its social and economic effects. *Sustainability* **2018**, *10*, 2185. [[CrossRef](#)]
2. Flessa, K.W.; Calderon-Aguilera, L.; Cintra-Buenrostro, C.E.; Dettman, D.L.; Dietl, G.P.; Goodwin, D.H.; Jacobs, D.K.; Kowalewski, M.; Nelson, S.M.; Rowell, K.; et al. Vaquita Face Extinction from Bycatch. Comment on Manjarrez-Bringas, N. et al., Lessons for Sustainable Development: Marine Mammal Conservation Policies and Its Social and Economic Effects. *Sustainability* **2018**, *10*, 2185. *Sustainability* **2019**, *11*, 2161.

3. Iniciativa para la Sustentabilidad en el Norte del Golfo de California. Available online: <https://www.gob.mx/conanp/articulos/iniciativa-para-la-sustentabilidad-en-el-norte-del-golfo-de-california> (accessed on 8 April 2019).
4. Gobierno presentará programa de sustentabilidad en hábitat de vaquita marina. Available online: <http://www.inforural.com.mx/gobierno-presentara-programa-de-sustentabilidad-en-habitat-de-vaquita-marina/> (accessed on 8 April 2019).



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