

BYCATCH RISK ASSESSMENT TOOLKIT (BYRA)

Good practice



Description

/ Introduction

Helping governments that rely on fisheries exports to address gaps in knowledge of marine mammal bycatch has been one of the drivers for the creation of the ByRA toolbox. This toolbox allows the spatial/temporal assessment of bycatch risk using any amount of data, identifying areas for critical research and possibly immediate management actions while accounting for reliability and robustness in toolbox results. The need for more data to inform conservation management and policy can also delay conservation action. There is an equally strong need to make better use of existing data to develop bycatch risk assessments for marine mammals of conservation concern and use these data to improve population-level

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estimates and inform management strategies. Risk assessments identify, analyse, and evaluate the likelihood or probability of an event happening, and the consequences of that event.

/ Involved stakeholders

BENEFICIARIES:

Scientists, government agencies, NGO's, fishers cooperatives

USERS:

Scientists, government agencies, NGO's

IMPLEMENTING AGENCY:

Fisheries or marine management agencies

/ Impact

The ByRA results provide resident scientists and managers with information on areas and seasons of bycatch risk, as well as the levels of risk for various fishing gear at those times and locations, which can support precautionary actions, policies, and inform carefully designed research. By synthesizing and organizing bycatch risk assessment methods in an accessible framework, the reach of this project extends beyond the local areas used to demonstrate the toolkit.

/ Innovation

The research undertaken that underpins the Bycatch Risk Assessment Toolkit (ByRA) represents the first regional view of how these methods can support practitioners to estimate marine mammal distribution, fisheries gear use and bycatch, and find effective measures to reduce bycatch to sustainable levels. Syntheses of ByRA outputs can suggest management interventions by subregion, species, and gear type for targeting at-risk areas and reducing risk. Spatially and temporally explicit scenarios can be built and further improved to evaluate conservation outcomes for additional taxa with large-scale and transient habitat requirements.

Analysis

/ Sustainability

We have used the ByRA methods and trained scientists in 14 different countries at this time with several local experts to assist ByRA users and trainees.

/ Success factors

It is important that scientists and managers work together to generate the best data on marine animal and gear distribution possible. In this light, and due to the range of data available, the tool creators have methods of analysis developed for all levels of data.

/ Constraints

Someone with mapping and GIS expertise is critical as a member of the ByRA team.

/ Lessons learnt

Time for data gathering must be factored into the project schedule, as well as time for critical conversations about fisheries and marine animal distribution and bycatch.

Conclusion

ByRA can be used to gather critical information, initiate conversations on bycatch, support development of MPA's/marine spatial planning/management, is low cost and uses free software. The toolkit identifies areas of high bycatch risk, gaps in knowledge and provides seasonal maps. It also values in input and knowledge of fishermen, scientists and managers.

Additional resources

- Costanza, AB, Guidino, C, Mangel, JC, Alfaro-Shigueto, J, Verutes, G, Caillat, M, Samanta, A, and Hines, E. 2021. [Participatory Risk Assessment of Humpback Whale \(*Megaptera novaeangliae*\) and Leatherback Turtle \(*Dermochelys coriacea*\) Bycatch in Northern Peru. *Frontiers in Marine Science*](#)
- Verutes, GM, Johnson, AF, Caillat, M, Ponnampalam, LS, Peter, C, Vu, L, Junchompoo, C, Lewison, RL, and Hines, EM. 2020. [Using GIS and stakeholder involvement to innovate marine mammal bycatch risk assessment in data-limited fisheries. *PLoS ONE*](#)
- Hines, EM, Johnson, A., Ponnampalam, L., Peter, C., Junchompoo, C., Vu, L., Thien, H., Caillat, M., and Verutes, G. (2020). [Getting to the Bottom of Bycatch: A GIS-based toolbox to assess the risk of marine mammal bycatch. *Endangered Species Research*](#)

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Author:
Ellen Hines

Representation:
San Francisco State University/
Center for Coastal Studies

Marine protected areas:
Related MPA(s) where the good practice has been implemented

Location/geographical coverage:
Global

Contact details:
Ellen Hines
ehines@sfsu.edu

URL:
[Bycatch Risk Assessment Toolkit \(ByRA\)](#)

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Ocean
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