The circle hook in Brazil:

What have we learned along 15 years of research and awareness campaign

Bruno Giffoni[1]; Gilberto Sales[2]; Fernando N. Fiedler[3] [1]Milagros L. Mendilaharsu; Maria Ângela Marcovaldi[1]

[1] Fundação Pró-TAMAR, Rua Rubens Guelli, 134 sala 307, 41815-135 Salvador, Ba, Brazil. bruno@tamar.org.br

[2] Centro TAMAR/ICMBio, Beco dos Coroas, 503, 88061-600. Caixa Postal: 10.136 Barra da Lagoa | Florianópolis | Santa Catarina | Brasil, SC, Brasil

[3] Centro Nacional de Pesquisa e Conservação da Biodiversidade Marinha do Sudeste e Sul (CEPSUL), Av. Vereador Carlos Ely Castro 195, 88301-445 Itajaí, SC, Brazil

Until 1998 there was no information regarding sea turtle interaction with longline fisheries in South Western Atlantic Ocean (SWAO). Uruguayan researchers presented the first note in this topic during the XXVIII International Sea Turtle Symposium. At the same year, Brazilian researchers presented a short note about incidental capture of loggerhead turtles in longline fishery, during a national oceanography conference. In 2001, Projeto Tamar started the national program to assess and mitigate the incidental capture of turtles in fisheries. This resulted in a systematic collection of information. Through increasing regular monitoring of the longline fleet by the Brazilian Government and by a pool of institutions leaded by Projeto Tamar, including others partners (CEPSUL, Projeto Albatroz, Nema, UNIVALI and UFRPE), it became clear that pelagic longline posed a major threat for sea turtles in SWAO. Here we will report the strategies adopted by Projeto Tamar, throughout 15 years: beginning with the study of the effectiveness of circle hook's to reduce bycatch, to the publication of a federal regulation requiring the use of these hooks and mitigation toolkit. Between 2004 and 2008, Projeto Tamar, supported by NOAA, performed the circle hook's tests (18/0 10º offset) in Brazil, reaching encouraging results. This would not be possible without the voluntary participation of fishers and fishing companies. There is no consensus among scientists about the advantages of circle hooks, mainly due to the increase of shark capture. However, there is no ideal mitigation measure for longline fishery (i.e. that one which reduces the captures of threatened species, maintain or increase the captures of target species and reduce the captures of all species below the catchable size). Moreover, in Brazil, sharks are target species, which

makes more complex the discussion about its implementation. Thus, understanding the need to disseminate the information and promote the discussion about circle hooks among different stakeholders (i.e. scientists, fishers, fishing entrepreneurs and ordinary people); a set of actions started. Thereby, recognizing the distinct interests of the stakeholders and the need to build a common sense between them, communication strategies were developed, such as: i) weekly informal talks with captain and longline crew anchored on the most important fishing harbor complex in Brazil (Itajaí / Navegantes), ii) donation of circle hooks, mitigation toolkits and fishermen training, iii) publication of scientific papers and presentations of results in conferences, iv) lectures and meetings in the fishing associations, v) production of two short videos about the impact of longline fisheries on sea turtles and the use of circle hooks, vi) interviews for tv programs and journals. At the same time, we brought the circle hook's discussion to the decision maker scale, to be part of the main governmental forums (i.e. Scientific Sub-Committee for Tunas and Permanent Committee for Tuna Fishing Management). We also participated on ICCAT's Sub-committee on Ecosystem meetings. As a consequence of this process, in November 2017, the Brazilian government published a specific normative (Act 74/2017) forbidding the J hooks and requiring the use of circle hooks, as well as mitigation tools (i.e. de-hookers, line cutters and dipnets) for all licensed longline vessels targeting swordfish and tuna. Although published in 2017, this legislation would only become valid a year later. We were in face of a new challenge. How to avoid a market shortage caused by near future strong demand for circle hooks and mitigation tools? Therefore, during this period, we contacted manufacturers and importers to inform about the new act and consequently new demand expected for circle hooks and mitigation tools. The set of strategies reported here succeeded due to an agreed common objective and an institutional mobilization through a solid network.

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