Western and Central Pacific Fisheries Commission

SCIENTIFIC COMMITTEE
TWENTIETH REGULAR SESSION

Manila, Philippines
14 – 21 August 2024

Proposal for undertaking research analyses to inform discussions of mitigating impacts on cetaceans in the WCPFC purse seine tuna fishery

WCPFC-SC20-2024/EB-WP-13

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EXECUTIVE SUMMARY

This paper explores scientific research that could materially assist evaluating how to mitigate impacts on cetaceans in the WCPO purse seine tuna fishery.

WCPFC has taken important steps to prohibit the intentional setting on cetaceans and require the live release of cetaceans caught in purse seine nets. However, cetacean interactions persist including what may cause deleterious impacts on false killer whales, rough-toothed dolphins, short-finned pilot whales, spinner dolphins, bottlenose dolphins, and occasionally Brydes and blue whales.

We invite the SC's support for a proposal to conduct an analysis of existing WCPFC ROP observer data in order to provide objective data to answer key questions about the relative impacts of various purse seine fishing methods on Western Pacific cetaceans. This research could play a critical role in assisting discussions on the impacts on cetaceans by WCPO purse seine fleets and how to best mitigate such impacts.

Scientific analyses have been undertaken by the Inter American Tropical Tuna Commission (IATTC) examining the relative dolphin mortality between purse seine sets made in darkness and sets made in daylight hours in the Eastern Pacific Ocean (EPO). The analysis is based exclusively on existing observer data and provides a useful reference point for a possible scientific analysis by the WCPFC.

INTRODUCTION

Earth Island Institute's International Marine Mammal Project works with the world's leading tuna fishing companies to comply with Dolphin Safe fishing practices. We maintain a network of more than eight hundred fishing companies, canners, brokers, suppliers, and retailers that require procurement of tuna caught without setting nets on dolphins. Many of these companies also utilize the Dolphin Safe tuna label which requires that tuna is caught in sets that do not result in any killing or serious injury to dolphins.

Conservation and Management Measures for Protection of Cetaceans from Purse Seine Fishing (CMM 2011-03) include a provision for CCM to ensure that potential impacts on the sustainability of cetaceans from accidental mortality through purse seine operations are mitigated.

Since the enactment of this CMM there have been major changes in the WCPFC tuna purse seine tuna fishery. There has been continued increase in tonnage of tuna catches, as well as unprecedented growth in the use of drifting fish aggregating devices (dFads).

Figure 1. Cetaceans Reported Caught -- Purse Seine Nets from 2012 – 2019 (WCPFC-TCC19-2023-RPO2 Annual Report on the Regional Observer Program)

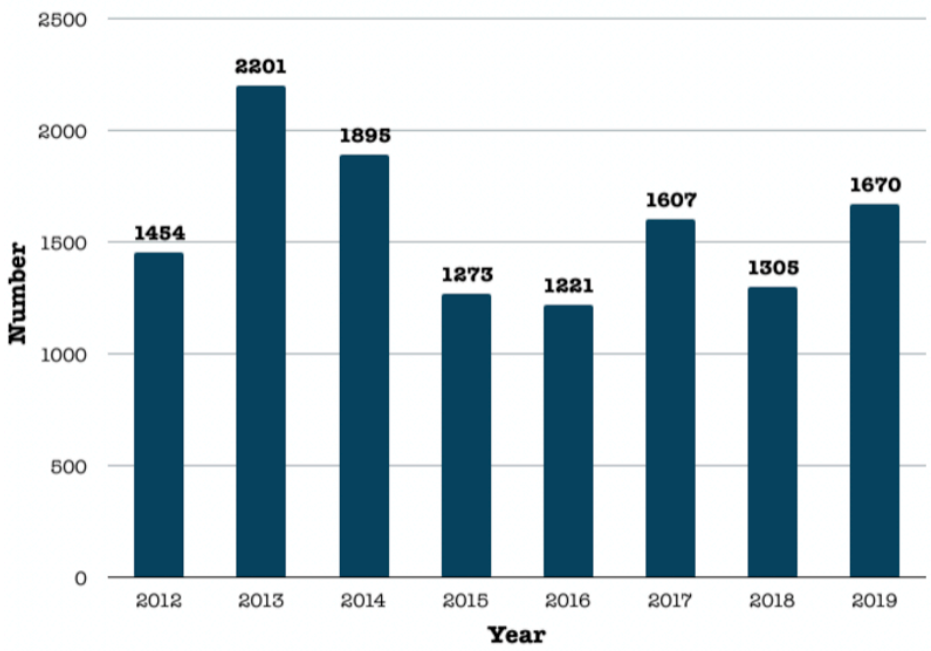

Figure 1 shows a range from 1221 – 2201, with an average of 1578 cetaceans caught. Years 2020-2022 have been excluded as COVID-19 caused reduction of observers preventing accurate yearly data.

Figure 2. Cetaceans Reported Dead -- Purse Seine Nets from 2012 – 2019 (WCPFC-TCC19-2023-RPO2 Annual Report on the Regional Observer Program)

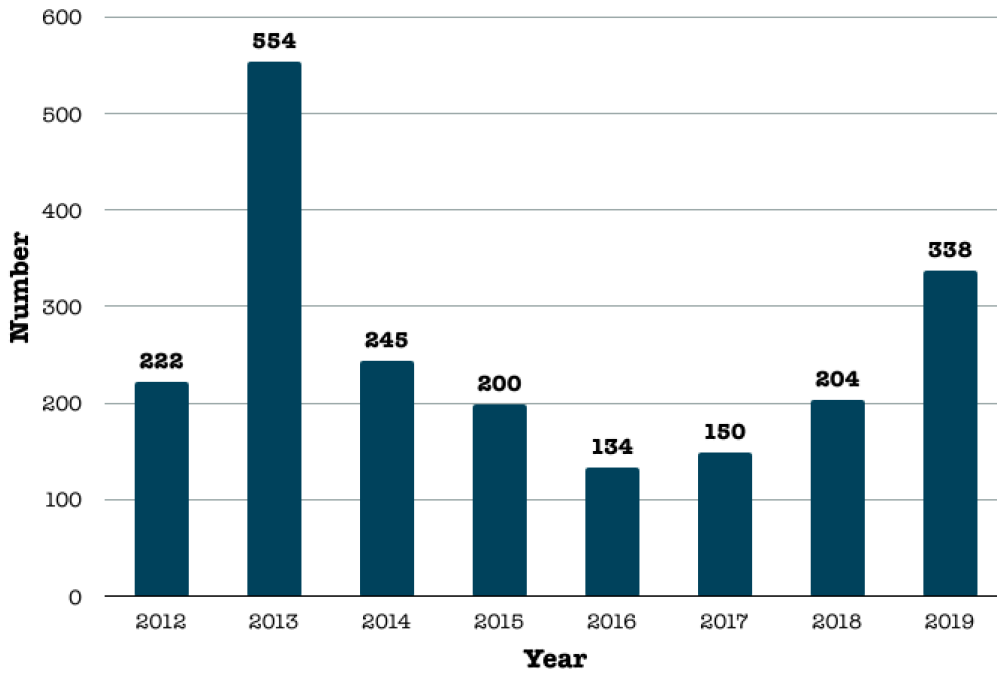

Figure 2 shows a range from 134 – 554, with an average of 256 cetacean mortalities. Years 2020-2022 have been excluded as COVID-19 caused reduction of observers preventing accurate yearly data.

Research Review

The Inter American Tropical Tuna Commission (IATTC), as part of its International Dolphin Conservation Program, has over the past several decades undertaken analyses to assess purse seine fishing methods and their impacts on dolphin species. Although purse seine fishing methods pursued in the EPO are quite different than in the WCPO, the methodologies used in the IATTC analysis may be useful in development of research analyses for the WCPFC.

An IATTC report released in 2011 analyzed the relative impacts on dolphin mortality comparing sets made in darkness hours to sets made during daylight hours (Document IRP-50-10). A copy of this study is attached.

The analysis is based entirely on observer data managed by the IATTC, including precise times of initiating and completing sets, tuna catch per set, and impacts on dolphins and other bycatch.

Eastern Pacific Ocean (EPO) and WCPO data sets are different, and we believe through anecdotal information that the WCPFC data set is equally robust. A recent informal discussion with an SPC OFP staffer indicated that there may be more advanced and better methods now available to conduct this type of analysis.

Such a study could provide detailed data comparing cetacean impacts during daylight purse-seine compared to sets during darkness. This could be further broken down to determine the relative impacts of sets on logs, on anchored Fads, on drifting Fads, and on free schools. A possible validation or comparison could be made with information provided by vessel operators on Regional Purse seine log sheets.

We believe scientific analyses are greatly needed in order to help understand the nature of the impacts on cetaceans from purse seine fisheries. It could also provide a stronger basis for management decisions regarding mitigation of impacts on cetaceans.

Recommendation for SC Consideration

We have made some informal inquiries about the anticipated cost and timeframe of conducting such an analysis. We recognize that research budgets are stretched and we believe that we could bring some outside funding to assist such a study. Once a more precise determination is made on the anticipated costs, we are prepared to engage with the SC and the Secretariat to provide the Commission with a funding option, under the assumption that the SC agrees that this analysis is worthy of support.

We invite SC20 to make a recommendation to the Commission to approve a scientific data analysis of existing observer data in order to provide more definitive information on impacts on cetaceans from tuna fishery activities.

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INTERNATIONAL DOLPHIN CONSERVATION PROGRAM

INTERNATIONAL REVIEW PANEL

50TH MEETING

DEL MAR, CALIFORNIA (USA)
20 OCTOBER 2011

DOCUMENT IRP-50-10

POSSIBLE EFFECTS OF MODIFYING THE REQUIREMENTS OF THE AIDCP REGARDING NIGHT SETS

1. INTRODUCTION

The operational requirements set out in Annex VIII of the AIDCP prohibit making night sets, defined as those sets in which the backdown maneuver is not completed within thirty minutes after sunset.

During the 23rd Meeting of the Parties in September 2010, the Secretariat was asked to "*evaluate the impact on dolphin mortality of increasing by 30 minutes the time for determining whether a set was a night set*", and was also asked for "*information on dolphin mortality in sets defined as night sets.*"

1. DEFINITIONS

For this analysis, two categories of sets on dolphins were defined, night sets and daytime sets. Daytime sets are defined as sets on schools of tunas associated with dolphins in which dolphins were captured and in which the backdown maneuver finished 30 minutes or less after the moment at which the sun goes down below the horizon (sunset); night sets, identified in Annex VIII, paragraph 3.d of the AIDCP, are those in which the backdown maneuver finishes more than 30 minutes after sunset.

2. DATA COLLECTED BY OBSERVERS

Table 1 summarizes the data for the last period before the ban on night sets (1991) from the AIDCP database (including all the data from national programs), and the same data for 2010. It shows the number of sets in each of the categories defined above, the total mortality of dolphins in those sets, the index of mortality by category (MPS), the total tonnage caught (t) of the three commercially important species of tunas (yellowfin, bigeye, and skipjack), the proportion of the total catch (as a percentage), by set type, and the catch rate per set (CPS). The data for 1991, the last year during which there were no restrictions on making night sets for the international fleet, are shown in bold type. 1991 was chosen as the base year for projecting the additional mortality that might result from a modification of the prohibition of night sets; it was not considered appropriate to use a range of years as a base case due to the strong tendency over time in the frequency of night sets in the years prior to the ban. Data for United States flag vessels were excluded, since during various years there were regulations in force regarding night sets for some fishing captains, and this could bias the results. Therefore, the data used were those for when it is certain that there were no restrictions and for when there were, in order to compare the years.

The last two columns of the table identify the quotient of the mortality rates by category. For example, the mortality per set observed for night sets in 1991 was 3.18 times greater than for daytime sets.

ESTIMATES

Two estimates were obtained. In the first, it was assumed that there were no restrictions of the time backdown with captured dolphins finished; in the second, the frequency of sets in 1991 with a backdown that lasted more then 30 minutes after sunset was calculated.

The proportion of night sets in 1991 was 4% of the number of day sets, and it was maintained at that level. To estimate an expected mortality per night set in 2010, we use the MPS (day in 2010) multiplied by the quotient night/day in 1991. Similarly for CPS of tunas.

The expected changes based on the assumptions made would be:

Scenario A) Elimination of ban on night sets

4% of 11,541 day sets in 2010 = 467 additional dolphin sets

467 sets x MPS (night) = 467 x (0.108*3.180) = 467 x 0.318 = + 148.4 dolphins

467 sets x CPS (night) = 467 x (13.53*0.85) = 467 x 11.5 MT = + 5,370 MT tunas

Scenario B) Change of 30 minutes in the definition of night set

The figures in this case would amount to 53% of the previous values, since 53% of all night sets happen in those 30 minutes (95/177 in table below).

53% of dolphin mortality = + 78.7 dolphins

53% of tuna catch = + 2,846 MT tunas

In the second scenario, the frequency of sets in 1991 whose backdown finished more than 30 minutes after sunset, in intervals of 10 minutes until an hour after sunset, was calculated. The result was as follows:

Interval (min)	**Number**	**%**
31-40	41	23
41-50	30	17
51-60	24	14
60+	82	47
	177	100

It was shown previously that the variance in the mortality in night sets is greater than in daytime sets, due possibly to the lack of visibility and thus the speed of the crew's reaction in such circumstances.

Finally, it should be noted that the observers are instructed to document any mortality they believe occurred, but can record only dolphins that they actually saw dead. It is possible that darkness could impede, to some degree, their ability to observe some mortality.

The expected changes would be an increase in dolphin mortality of 148.4 individuals in the first case (allowing all night sets) and of 78.7 individuals in the second case (changing the period by 30 minutes). The increases in tuna catches would be 5,370 MT and 2,846 MT respectively. The variances of these figures would be considerable, but the population impacts can be assessed from the point estimates.

TABLA 1. Datos recopilados por los observadores, 1991 y 2010. MPL: mortalidad por lance; CPL: captura por lance; LN: lance nocturno
TABLE 1. Data collected by observers, 1991 and 2010. MPS: mortality per set; CPS: catch per set; NS: night set

	Lances diurnos observados						**Lances nocturnos observados**						**Índice dif.**	**% LN**
	Lances	Mortalidad	Captura (t)	% Capt.	MPL	CPL	Lances	Mortalidad	Captura (t)	% Capt.	MPL	CPL		
	Daytime sets observed						**Night sets observed**						**Diff. index**	**% NS**
	Sets	Mortality	Catch (t)	% Catch	MPS	CPS	Sets	Mortality	Catch (t)	% Catch	MPS	CPS		
1991	**4,234**	**11,294**	**65,833**	**96.7**	**2.67**	**15.55**	**177**	**1,502**	**2,271**	**3.33**	**8.49**	**12.83**	**3.18**	**4.01**
2010	11,641	1,155	157,560	99.99	0.10	13.53	5	14	18	0.01	2.80	3.60	28.22	0.04

Difference Index = Quotient between night set mortality and day set mortality

FIGURA 1. Porcentaje anual de lances nocturnos, 1986-2001.
FIGURE 1. Annual percentage of night sets, 1986-2001.

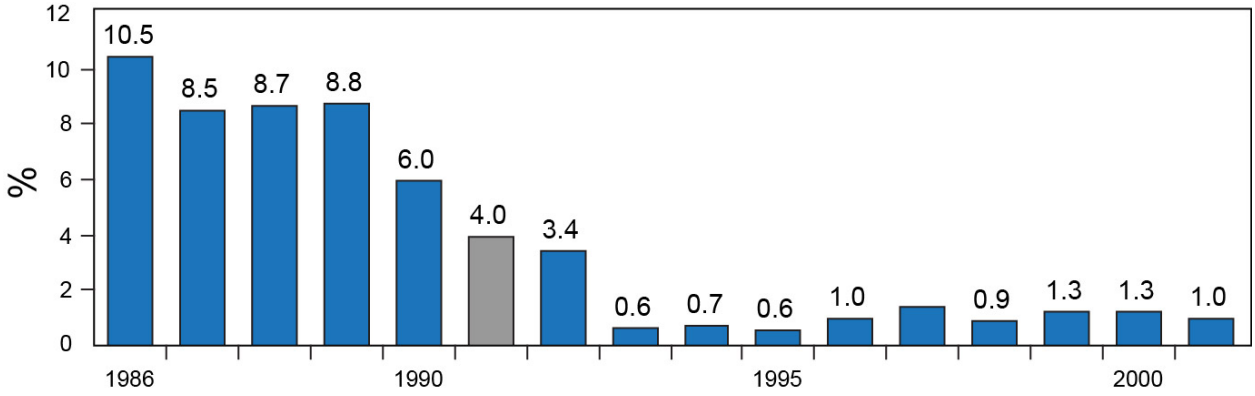

FIGURA 2. Tasa de mortalidad en lances nocturnos, 1986-2001
FIGURE 2. Mortality rate in night sets, 1986-2001.

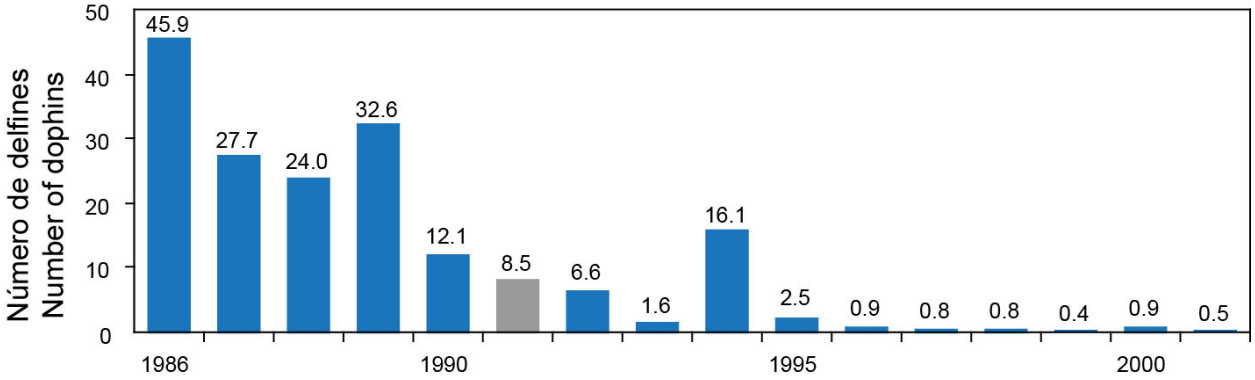

FIGURA 3. Cociente de mortalidad en lances nocturnos y diurnos, 1986-2001.
FIGURE 3. Quotient of dolphin mortality in night sets and daytime sets, 1986-2001.