EARTHJUSTICE

October 12, 2021

Mr. Michael D. Tosatto
Pacific Islands Regional Administrator
National Marine Fisheries Service
1845 Wasp Blvd., Bldg. 176
Honolulu, HI 96818

RE: Domestic Measures to Address Purse Seine Fishery Impact on Silky Shark Stocks in the Western and Central Pacific

Dear Mr. Tosatto,

We submit these comments on behalf of Mike Nakachi, Moana Ohana, and Conservation Council for Hawai'i regarding domestic management recommendations to address the overfishing of silky sharks (*Carcharhinus falciformis*). It is crucial that NMFS address the overfishing of silky sharks in *all* domestic fisheries, including the purse seine fishery, which catches and kills thousands of silky sharks every year. We urge the National Marine Fisheries Service ("NMFS") to adopt domestic regulations to address the relative impact of purse seine vessels on the silky shark population, as required under Section 304(i) of the Magnuson-Stevens Fishery Conservation and Management Act ("MSA").

In October 2020, NMFS notified the Western Pacific Fishery Management Council ("Council") that the silky shark is currently subject to overfishing.[1] NMFS's letter to the Council last October only accounted for silky shark mortality in longline fisheries.[2] The letter did not report on the relative impact of U.S. purse seine vessels.

In June of this year, the Council put forward recommendations for domestic regulation and international action to address the relative impact of U.S. vessels on the stock. However, the recommendations only addressed the relative impacts of U.S. longliners and ignored the substantial impacts from U.S. purse seiners. With respect to longliners, the Council recommended that NMFS and the U.S. State Department employ the same measures for silky sharks that were developed to protect and rebuild the Western and Central Pacific Ocean ("WCPO") stock of oceanic whitetip shark (*Carcharhinus longimanus*). Specifically, this includes the prohibition of wire leaders in the Hawaii deep-set longline fishery.[3]

These recommendations are wholly insufficient. The Council failed to address the relative impact of purse seine fishing vessels that incidentally kill silky sharks in significant numbers. In order to meet its obligations under MSA Section 304(i), NMFS must develop domestic regulations to address silky shark mortality in the U.S. purse seine fishery.

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[1] *See* Letter from Tosatto to Soliai re: Change in Silky Shark Status, (October 20, 2020).
[2] *Id.*
[3] *Silky Shark 304(i) Recommendations* (Western Pacific Regional Fishery Management Council, 186th Council Meeting, Agenda 6(C), June 22, 2021) (transcript on file with Earthjustice).

I. Silky Shark Mortality With Associated Sets in the Purse Seine Fishery

Silky sharks, once abundant throughout the world's oceans, are rapidly disappearing. In the Pacific, silky shark populations have declined by as much as 70% from 1995 to 2009.[4] This decline is largely due to increasing fishing pressure.[5] In recognition of this, the International Union for Conservation of Nature ("IUCN") officially listed the silky shark as vulnerable in 2017.[6]

The Western and Central Pacific Fisheries Commission ("WCPFC") Shark Working Group has conducted two stock assessments of the silky shark. The first assessment, completed in 2012 and updated in 2013, evaluated the silky shark in the WCPO. It showed consistent population declines from 1995 through 2009, coupled with increasing fishing mortality.[7] The assessment concluded that fishing mortality was far in excess of what is sustainable and that overfishing is occurring.[8] In particular, the assessment noted that the purse seine fishery has a disproportionate effect on the silky shark population because the fishery catches predominantly juveniles.[9] The assessment also noted that the spawning biomass of the stock had declined to unsustainable levels, so it was highly likely that the stock was overfished.[10]

In 2018, the WCPFC completed another assessment of silky sharks.[11] The assessment concluded that the WCPO population has continued to decline steadily and that "fishing mortality rates are likely to have increased considerably."[12] Although the assessment concluded that the population is not overfished based on considerable uncertainty associated with the biomass levels, the assessment concluded that overfishing is still occurring.

Available evidence indicates that purse seine fisheries are especially harmful to silky sharks—the species accounts for about 95% of all shark bycatch in purse seiners in the WCPO.[13] According to WCPFC aggregate data, tens of thousands of silky sharks die as a result of purse seine fishing activities each year.[14] In 2019 alone, it is estimated that 112,953 silky sharks were caught in

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[4] Joel Rice and Shelton Harley, "Updated Stock Assessment of Silky Sharks in the Western and Central Pacific Ocean," Western and Central Pacific Fisheries Commission Scientific Committee, WCPFC-SC-2013/SA-WP-03 (2013) [hereinafter Rice and Harley, 2013 Assessment].
[5] Pacoureau N, et al., *Half a Century of Global Decline in Oceanic Sharks and Rays*, Nature, Vol 589 (2020).
[6] Rigby, C.L., Sherman, C.S., Chin, A. & Simpfendorfer, C. 2017. Carcharhinus falciformis. The IUCN Red List of Threatened Species 2017: e.T39370A117721799. https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T39370A117721799.en (last accessed Oct. 7, 2021).
[7] Rice and Harley, 2013 Assessment at 2.
[8] *Id.* at 3
[9] *Id.* at 13.
[10] *Id.* at 3.
[11] Clarke, S et al. *Pacific-wide Silky Shark (Carcharhinus falciformis) Stock Status Assessment*, WCPFC Scientific Committee 14th Regular Session (2018).
[12] *Id.* at 60.
[13] *See* Lawson, T., *Estimation of Catch Rates and Catches of Key Shark Species in Tuna Fisheries in the Western and Central Pacific Ocean Using Observer Data*, WCPFC Scientific Committee 7th Regular Session (2011).
[14] *See* WCPFC Regional Observer Programme Database 2013-2019 Data, https://www.wcpfc.int/regional-observer-programme.

purse seine fisheries, with 36,359 of them dying at-vessel, and many more dying post-release.[15] According to NMFS's own estimations, when silky sharks are caught, their post-release mortality is as high as 84.2%.[16] Moreover, silky shark bycatch is chronically underestimated.[17] A recent study looking at 74 fishing sets conducted during four purse seine trips underestimated the shark counts 50% – 100% of the sets, with a mean shark count underestimation ranging from 9% – 40%.[18]

In the U.S. purse seine fleet, silky sharks are some of the most common large-size bycatch species.[19] WCPFC data indicated that in 2019, the U.S. purse seine fishery released 7,316 silky sharks, 2,926 of which were alive, and 4,389 of which were dead.[20] For comparison, the longline fishery counted 304 silky sharks released in the Hawai'i-based longline fishery (293 alive and 11 dead), while the American Samoa-based fishery saw 714 silky shark releases (696 alive and 18 dead).[21] Similar numbers were reported for all three fisheries in 2018.[22]

In addition, silky sharks are one of two shark species that is "known to regularly associate with floating objects."[23] In the WCPO, when a purse seine vessel makes an associated set[24] on a fish aggregating device ("FAD"), twice as many silky sharks will be caught as compared to an unassociated set.[25] Studies also show that juvenile silky sharks aggregate at FADs[26] and that the majority of silky sharks caught in FAD-associated sets are juveniles.[27] This is problematic because "high mortality on the juvenile life stages of elasmobranchs has the most profound effect on silky shark population growth or decline."[28] The impact of this activity is so significant that

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[15] *Id.*

[16] PACIFIC ISLANDS REGION, OFFICE OF PROT. RES., NAT'L MARINE FISHERIES SERV., TRACKING NO. PIR-2017-10251, BIOLOGICAL OPINION ON AUTHORIZATION OF THE UNITED STATES WESTERN AND CENTRAL PACIFIC OCEAN PURSE SEINE FISHERY 238 (2021) [hereinafter BiOp].

[17] *See, e.g.,* Forget F, Muir J, et al. 2021. *Quantifying the accuracy of shark bycatch estimations in tuna purse seine fisheries.* OCEAN & COASTAL MANAGEMENT. 210:105637. https://doi.org/10.1016/j.ocecoaman.2021.105637.

[18] *Id.*

[19] *See* Pelagics Fishery Ecosystem Plan 148 (2009). http://www.wpcouncil.org/fep/WPRFMC%20Pelagic%20FEP%20(2009-09-21).pdf.

[20] Annual Report to the Commission, WCPFC Scientific Committee Sixteenth Regular Session (2020) 25, https://www.wcpfc.int/file/488524/download?token=mfA4OUbM

[21] *Id.*

[22] Annual Report to the Commission, Part 1, WCPFC Scientific Committee Fifteenth Regular Session, WCPFC-SC15-AR/CCM-27 (2019) 26, https://repository.library.noaa.gov/view/noaa/23709/noaa_23709_DS1.pdf

[23] BiOp at 296.

[24] Associated sets are those purse seine sets that are made on drifting Fish Aggregating Devices (FADs). This is in contrast to unassociated purse seine sets which are made on free-schools of tuna. FADs can be either manmade or natural. Manmade or artificial FADs "are typically outfitted with a tracking buoy" and can be in the form of "small rafts, often made of bamboo, plastic pipe or wood, and typically have net or rope hanging from them, which passively drift with the currents." Natural FADs include natural logs, and other objects. BiOp at 25.

[25] *See* Hutchinson, M., Itano, D., Muir, J., Leroy, B., Holland, K., *Post-Release Survival of Juvenile Silky Sharks Captured in Tropical Tuna Purse Seine Fishery*, MARINE ECOLOGY PROGRESS SERIES 521: 143-54, at 152 (2015).

[26] *Id.*

[27] *Id.* at 144 (noting high juvenile catch rates on FAD-associated sets in the Eastern Pacific Ocean, Atlantic Ocean and Indian Ocean).

[28] *Id.*

researchers have concluded that, "[i]f the current level of purse seine fishing effort on FADs is not mitigated, silky shark populations could be driven beyond the point of recovery."[29]

II. NMFS is Required to Make Recommendations on the Relative Impact of Purse Seine Fishing Vessels

Despite the purse seine fishery's significant impact on silky shark populations in the WCPO, the Council did not put forward concrete recommendations to address the relative impact of the U.S. purse seine fishery. Section 304(i) of the MSA requires more, stating that "within 1 year after the Secretary's [overfishing] determination, the appropriate Council, or Secretary, for fisheries under § 1852(a)(3) of this title *shall* develop recommendations for domestic regulations to address the relative impact of fishing vessels of the United States on the stock."[30] This means the relative impact of all fishing vessels must be considered. NMFS and the Council cannot ignore the relative impact of the U.S. purse seine fishery, particularly when, as noted above, the fishery has considerable impacts on silky sharks. Accordingly, in order to meet its obligations under the MSA, NMFS must either put forward domestic regulations to address the relative impact of purse seine fishing vessels or direct the Council to put forward concrete recommendations that address domestic purse seiners.

III. Domestic Management Recommendations For the Purse Seine Fishery

Your office recently released a Biological Opinion (BiOp) that provides guidance for measures that can be taken in the purse seine fishery to address interactions with protected species. In the BiOp there were recommendations for the oceanic whitetip shark (*Carcharhinus longimanus*), a shark in the same genus as silky sharks (*Carcharhinus falciformis*). In fact, where data was deficient on oceanic whitetip, the BiOp relied upon silky shark data to inform its analysis. The relevant reasonable and prudent measures (RPMs) and implementing terms and conditions put forward in the BiOp, therefore, can be applied to the silky shark interactions with the purse seine fishery, in concert with additional measures needed to address the increased threats connected with associated sets. Below are some suggestions on regulations relating to the use of FADs, data collection, better handling practices, and observer coverage.

a. Prohibition or Reduction of the Use of FADs

NMFS should prohibit the use of FADs and associated sets in order to meaningfully attempt to end the overfishing of silky shark. Silky shark catches are up to six times higher on both natural and man-made floating object sets, such as sets on FADs, as opposed to sets on free-swimming schools.[31] In addition, these sets have a disproportionate effect on the silky shark population because the fishery catches predominantly juveniles.[32]

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[29] *Id.*
[30] 16 U.S.C. § 1854(i)(2).
[31] *See* Restrepo, V., L. Dagorn and G Moreno, *Mitigation of Silky Shark Bycatch in Tropical Tuna Purse Seine Fisheries*, ISSF Technical Report 2016-17, International Seafood Sustainability Foundation (Dec. 2016), https://www.researchgate.net/publication/311740500.
[32] Rice and Harley, 2013 Assessment at 3.

Setting on FADs is prohibited in the purse seine fisheries in the WCPO for a few months out of the year.[33] NMFS should enact regulations that go further. This could include a complete prohibition on FAD sets, an extension of the current FAD set closure periods, a limitation on the number of sets available to each vessel, and/or a prohibition of sets on manmade floating objects. Studies show that even a small 20% shift of fishing effort to free-swimming schools and away from floating object sets can reduce silky shark bycatch by as much as 16%, because of how much more likely they are to be caught around FADs.[34]

A prohibition of FADs or increased restrictions would not only directly benefit silky sharks, but also the ocean ecosystem habitat in which they live. FADs cause additional harm to ocean ecosystems as ocean debris and because they change the migratory patterns of marine wildlife. FADs typically soak for 6 months and exhibit zonal drift.[35] As a result, FADs are modifying the habitats, behavior and migratory patterns of species that associate with these objects.[36] Moreover, most FADs which are deployed stay in the ocean, with studies indicating only 15.7% of FADs deployed are property retrieved by the deploying company.[37] This leaves many FADs floating in the ocean as waste, creating a source of pollution and degrading breeding areas for sharks and rays.[38]

b. Improved Data Collection

The purse seine fishery currently suffers from a dearth of data. For example, there is no data "on the number of FADs deployed by each vessel, soak time, or information on the rate that protected species become entangled in FADs."[39] This limits catch data for silky sharks and oceanic whitetips, the two shark species that "regularly associate with floating objects."[40] In addition, there is no data relating to the number of FADs deployed by U.S. vessels, nor information on their inspections, the number of FADs that are lost, or the efficacy of FAD designs intended to decrease entanglements.[41] NMFS should implement regulations that require collection of this data.

The BiOp included as an RPM that "NMFS shall ensure that data are collected for the United States WCPO purse seine fishery on the capture, injury, life history, and mortality of all

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[33] BiOp at 26-27. The purse seine fishery is prohibited from setting on FADs from July 1 - September 30 and in any area of high seas, from November 1 through December 31. *See* 50 C.F.R. § 300.223.
[34] *See* Restrepo, et al. (2016) *supra* note 31.
[35] BiOp at 27; Marsac, F. et al., *Drifting FADs used in tuna fisheries: An ecological trap?*, PÊCHE THONIÈRE ET DISPOSITIFS DE CONCENTRATION DE POISONS at 28 (2000).
[36] Perez et al, *Effects of habitat modifications on the movement behavior of animals: the case study of Fish Aggregating Devices (FADs) and tropical tunas*, MOVEMENT ECOLOGY (2020); Marsac, F. et al., *supra* note 35; Sinopoli, M. et al., *Extensive use of Fish Aggregating Devices together with environmental change influenced the spatial distribution of a tropical affinity fish,* 9 SCI REP 4934 (2019), https://doi.org/10.1038/s41598-019-41421-9.
[37] BiOp at 178 ("A recent study estimated that over 20,000 FADs were deployed in the region in 2018 and that 51.8% were classified as lost; 10.1% were retrieved; 6.7% were beached; 15.4% were sunk, stolen, or had a malfunctioning buoy; and 10.4% were deactivated by the fishing company and left drifting (Escalle et al. 2019)").
[38] *See* BiOp at 173 (citing to Duncan and Holland 2006).
[39] BiOp at 193.
[40] BiOp at 296.
[41] BiOp at 193.

threatened and endangered sea turtles, marine mammals, and elasmobranchs."[42] NMFS should adopt a similar measure for silky sharks, to collect data and monitor progress in ending overfishing for the species.

c. *FAD Design*

Many FADs are set adrift with hanging masses of mesh netting that pose a significant entanglement threat to silky sharks. FADs typically soak for 6 months, providing ample opportunity for interactions with marine wildlife.[43] Silky sharks are caught and killed due to entanglement in FADs.[44] NMFS is currently putting regulations in place, as required by the WCPFC, related to FAD design requirements to reduce entanglements.[45] NMFS should go beyond these baseline requirements and collect data on the efficacy of these designs, consider regulations that would require the use of biodegradable materials, and/or consider additional measures that would reduce entanglement. For example, NMFS could require fishing vessels to regularly maintain their deployed FADs. This would ensure that subsurface netting remain "sausaged"[46] in bundles as required and/or that any permitted mesh netting remains above the surface after FAD deployment.[47]

d. *Handling Practices*

NMFS should put into place regulations addressing the handling and release of silky sharks, including types of gear. Research shows that handling and release practices of purse seiners can significantly impact post-release mortality of silky shark bycatch.[48] For instance, a 2015 study showed post-release mortality of silky sharks was 31.3% for sharks merely caught in the net, but by the time sharks were brought up in the first brail,[49] post-release mortality jumped to 83.3%.[50] A similar study in the Indian Ocean showed 18% post-release mortality at the net entanglement stage, but 48% at the brailing stage.[51] Thus, requiring the release of silky sharks as early as possible in the fishing operation process is essential.

One method for releasing sharks earlier in the process is to fish the sharks out of the purse seine net prior to brailing. By the time the sharks are brailed, they are likely already dead from asphyxiation. One study suggests that fishing the bycaught sharks out is a relatively easy method

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[42] BiOp at 378.
[43] BiOp at 27.
[44] BiOp at 174; *see also* Filmater et al., *Looking behind the curtain: quantifying massive shark mortality in fish aggregating devices*, 11(6) FRONTIERS ECOL. ENVIRON. 291-96 (2013), available at https://doi.org/10.1890/130045.
[45] *See* International Fisheries; Western and Central Pacific Fisheries for Highly Migratory Species; Fish Aggregating Device Design Requirements in Purse Seine Fisheries, IMO Number Requirements, and Bycatch Restrictions, 86 Fed. Reg. 55790-98 [hereinafter Proposed Rule, 86 Fed. Reg].
[46] Subsurface netting of a FAD must be made into a sausage, which means that it should be tied tightly into bundles, or any subsurface mesh size must be less than 7 centimeters, configured as a panel, and weighted to keep netting taut in the water. Proposed Rule, 86 Fed. Reg. at 55798.
[47] *Id.*
[48] Onandia, et al., *New Assessment on Accidentally Captured Silky Shark Post-Release Survival in the Indian Ocean Tuna Purse Seine Fishery* (2021), https://www.iotc.org/documents/WPEB/1701/13.
[49] A "brail" or "brailer net" is a large basket used to scoop fish out of the purse seine net and onto the fishing vessel.
[50] *See* Hutchinson, et al. (2015) *supra* note 25.
[51] Poisson. F., Filmalter. J.D., Vernet. A.L., Dagorn. L, *Mortality Rate of Silky Sharks Caught in the Tropical Tuna Purse Seine Fishery in the Indian Ocean*, Canadian Journal of Fisheries and Aquatic Sciences 71: 795–798 (2014).

and highly conducive to reducing post-release mortality: although only 21% of the encircled sharks were successfully fished out of the net, all those that were fished out managed to survive.[52] Scientists believe that this percentage could be increased with more research as well as improved shark fishing and releasing gear.

In addition, the WCPFC has put forward best handling practices for the safe release of sharks.[53] Because they are non-binding, NMFS has chosen in its proposed rule not to require any of them for U.S. fisheries.[54] NMFS should consider making these best practices binding and require that vessels have the appropriate gear on board that will allow for the implementation of best handling practices.[55]

e. *Stricter Observer Coverage Requirements*

Observer coverage is a primary means by which scientists and policymakers gain the understanding of purse seine bycatch necessary to develop good regulations. NMFS should implement regulations that observer coverage be an unequivocal requirement on all U.S. purse seine vessels. Currently, 50 C.F.R. § 300.223 requires U.S. purse seine vessels to meet 100% observer coverage in the WCPFC Convention Area. But this regulation is subject to exceptions, namely, that vessels are not required to carry observers if "the portion of the fishing trip within the Convention Area takes place entirely within areas under the jurisdiction of a single nation other than the United States."[56] Given that the vast majority of U.S. purse seine vessels fish in the EEZs of Pacific Island nations under the South Pacific Tuna Treaty, it would appear they are exempt from this observer coverage requirement. While generally it has been NMFS's practice to require observers on 100% of U.S. purse seine vessels over a certain size, it should be a codified requirement, applicable regardless of whether the vessel is fishing in U.S. waters or not.

Moreover, requiring comprehensive observer coverage going forward will be even more important given recent challenges. NMFS has waived observer requirements since the start of the COVID-19 pandemic.[57] The current waiver of observer coverage requirements in the purse seine is in effect until at least March 26, 2022.[58] This means there will be two years of observer data missing from the purse seine fishery. Ensuring observer coverage takes place going forward will be especially important to fill those gaps.

f. *Application to the Eastern Pacific Ocean*

Finally, we recognize that NMFS has only designated the WPCO portion of silky shark stock as subject to overfishing. However, NMFS manages the entire Pacific population as one stock and

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[52] *See* Restrepo, et al. (2016) *supra* note 31.
[53] Western & Central Pacific Fisheries Commission, Best handling practices for the safe release of Sharks (other than Whale Sharks and Mantas/Mobulids), available at https://www.wcpfc.int/doc/supplemm-2010-07/best-handling-practices-safe-release-sharks-other-whale-sharks-and [hereinafter WCPFC Best Handling Practices].
[54] *See* Proposed Rule, 86 Fed. Reg. at 55792.
[55] *See* WCPFC Best Handling Practices ("Knowing that any fishing operation may catch sharks, several tools can be prepared in advance (e.g.canvas or net slings or stretchers for carrying or lifting, large mesh net or grid to cover hatches/hoppers in purse seine fisheries, long handled cutters and de-hookers in longline fisheries).").
[56] 50 C.F.R. § 300.223.
[57] *See, e.g.* 86 Fed. Reg. 31178 (June 11, 2021).
[58] *Id.*

has used the criteria for the entire stock to measure its status.[59] NMFS, in creating domestic measures, should address potential overfishing occurring across the entire stock. Thus, even though there has not been a stock assessment for the Eastern Pacific Ocean ("EPO"), as a precautionary management strategy, NMFS should assume EPO silky shark are also subject to overfishing, and recommend that any domestic or international measures apply in both the EPO and the WCPO.

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NMFS has an opportunity to take some meaningful steps address the overfishing of silky shark. We appreciate your thorough consideration of these issues and look forward the additional measures that you put in place to stop the overfishing of silky sharks from interactions with the purse seine fishery.

Sincerely,

Mike Nakachi
Moana Ohana

Moana Bjur
Executive Director
Conservation Council for Hawai'i

Natalie Barefoot
Senior Attorney
Earthjustice

cc: Kitty Simonds, Executive Director, Western Pacific Fishery Management Council
Archie Taotasi Soliai, Chair, Western Pacific Management Council

[59] *See* Letter from Tosatto to Soliai re: Change in Silky Shark Status, (October 20, 2020) https://www.wpcouncil.org/wp-content/uploads/2021/02/07.D2-2020-10-20-Tosatto-to-Soliai-Change-Silky-Shark-Status.pdf