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Re: Critical habitat designation for the giant manta ay

Dear Ms. Miller:

As the National Marine Fisheries Service (NMFS) reviews potential locations to designate as critical habitat for the giant manta ray (*Mobula birostris*, previously *Manta birostris*), Defenders of Wildlife and the Center for Biological Diversity urge the agency to complete this legally required task as soon as possible and to designate all areas within U.S. jurisdiction currently occupied or unoccupied by the species that are essential to its conservation, including important aggregation sites, as critical habitat. Moreover, to help ensure the species' conservation, i.e. recovery to the point at which Endangered Species Act (ESA or Act) protections are no longer necessary, NMFS must develop a robust recovery plan as quickly as possible.

I. Introduction

Pursuant to section 4 of the ESA, 16 U.S.C. § 1533, on November 10, 2015, Defenders petitioned the U.S. Secretary of Commerce, acting through the National Oceanic and Atmospheric Administration (NOAA) and NMFS, to add the giant manta ray and two other manta ray species as endangered or threatened. Defenders of Wildlife, *A Petition to List the Giant Manta Ray (*Manta birostris*), Reef Manta Ray (*Manta alfredi*), and Caribbean Manta Ray (*Manta c.f. birostris*) as Endangered, or Alternatively as Threatened, Species Pursuant to the Endangered Species Act and for the Concurrent Designation of Critical Habitat* (Nov. 10, 2015) ("Listing Petition"). After several rounds of agency and public review required by the ESA, *see* 16 U.S.C. § 1533(b), on January 22, 2018 NMFS added the giant manta ray to the list of threatened species. Final Rule to List the Giant Manta Ray as Threatened Under the Endangered Species Act 83 Fed. Reg. 2,916 (Jan 22, 2018) ("Final Rule").[1] At that time,

[1] While we support the decision to list the giant manta ray under the ESA, the final listing rule alone does not provide the level of protection necessary to meet the requirements of the Act.

however, NMFS found that critical habitat for the giant manta ray was not determinable for lack of sufficient data. *Id.* at 2929.

The ESA requires that when NMFS adds a species to the endangered or threatened species lists, it must concurrently designate critical habitat, unless such habitat is not determinable, in which case it has one additional year to publish a final rule designating critical habitat. 16 U.S.C. § 1533(b)(6)(C)(ii). Thus, NMFS was statutorily required to publish a final rule designating critical habitat for the giant manta ray by January 22, 2019.[2] NMFS must also develop and implement a recovery plan incorporating crucial management actions to address the many threats facing the giant manta ray. *Id.* at § 1533(f).

We appreciate NMFS staff taking the time to speak with us about the status of their investigation into this species' critical habitat and their assurance that they are in the process of reviewing research on this issue. NMFS must designate critical habitat for the giant manta ray in all areas subject to U.S. jurisdiction currently or potentially inhabited by the giant manta ray, including in the Gulf of Mexico, in the Atlantic Ocean, and in the Pacific Ocean. This designation of critical habitat and the establishment of a recovery plan are necessary and required actions that will increase the likelihood of the survival and successful recovery of the species.

II. Critical Habitat is a Crucial Component of the ESA

The ESA makes clear that critical habitat is an essential element of a species' survival and recovery. Under most circumstances, NMFS must at the time of listing and "to the maximum extent prudent and determinable" designate "any habitat of such species which is then considered to be critical habitat." *Id.* § 1533(a)(3)(A), (a)(3)(A)(i).[3] Pursuant to the ESA, critical habitat for a threatened or endangered species is:

> **(i)** the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 1533 of this title, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and

[2] Although NMFS may choose not to designate critical habitat if it determines such designation is not prudent, this is a very narrow exception invokable in only two regulatorily-defined circumstances. 50 C.F.R. § 424.12(a)(1). We are aware of no evidence indicating that critical habitat designation for the giant manta ray would not be prudent because critical habitat identification would increase the threat of taking or other human activity or because designation would not benefit the species.

[3] Both NMFS and the U.S. Fish and Wildlife Service (FWS) are responsible for implementing the ESA, 16 U.S.C. § 1532(15), and have jointly promulgated regulations regarding listing species and designating critical habitat under the ESA, *see* 50 C.F.R. Part 424. However, because this letter specifically pertains to NMFS' designation of critical habitat for the giant manta ray, it will at times only reference NMFS when discussing requirements under the ESA and the accompanying listing and critical habitat regulations.

> **(ii)** specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 1533 of this title, upon a determination by the Secretary that such areas are essential for the conservation of the species.

Id. § 1532(5)(A), (5)(A)(i)–(ii).

Critical habitat serves a crucial role in the success of a species' survival and recovery. One of the primary purposes of the ESA is to "provide a means whereby the *ecosystems* upon which endangered species and threatened species depend may be conserved." *Id.* § 1531(b) (emphasis added). Conservation is statutorily defined as "the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to [listing a species as endangered or threatened] are no longer necessary." *Id.* § 1532(3).

When Congress passed the ESA in 1973, it was acutely aware that stemming the loss of biodiversity requires more than protecting individual animals and plants: it also requires protecting habitat from destruction or adverse modification. Of the many threats to America's wildlife heritage, Congress recognized that the "most significant has proven also to be the most difficult to control: the destruction of critical habitat." H.R. Rep. No. 93-412, at 4 (1973); *see also Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 179 (1973) ("Congress started from the finding that '[t]he two major causes of extinction are hunting and destruction of natural habitat.' Of these twin threats, Congress was informed that the greatest was destruction of natural habitats."). In the 1978 amendments to the ESA, Congress reemphasized that "[t]he loss of habitat for many species is universally cited as the major cause for the extinction of species worldwide." H.R. Rep. No. 95-1625, at 5 (1978). Indeed, in the lead-up to those amendments, Congress specifically stated that "if the protection of endangered and threatened species depends in large measure on the preservation of the species' habitat, then the ultimate effectiveness of the Endangered Species Act will depend on the designation of critical habitat." H.R. Rep. No. 94-887, at 3 (1976).

NMFS must take several factors into consideration when designating critical habitat. First, critical habitat can constitute geographic areas that are occupied and unoccupied by a species. 16 U.S.C. § 1532(5)(A), (5)(A)(i)–(ii); 50 C.F.R. § 424.12(b)(1)–(2). For areas that are occupied by a species, NMFS must identify geographic areas "that contain physical or biological features essential to the conservation of the species." *Id.* § 1532(5)(A)(i); 50 C.F.R. § 424.12(b)(1)(ii). According to ESA regulations, these physical and biological features are:

> [t]he features that support the life-history needs of the species, including but not limited to, water characteristics, soil type, geological features, sites, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic, or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity.

50 C.F.R. § 424.02. NMFS must also evaluate special management considerations, which

include useful methods or procedures, for protecting the physical or biological features of occupied critical habitat. 50 C.F.R. §§ 424.02, 424.12(b)(1)(iv).

When designating unoccupied critical habitat, NMFS must consider "the life history, status, and conservation needs of the species." *Id.* § 424.12(b)(2). Notably, Congress's definition of unoccupied critical habitat specifically omits the requirement that such habitat possess the "physical or biological features" essential to species conservation and, instead, requires only that the Service make a "determination . . . that such areas are essential for the conservation [i.e., recovery] of the species." Compare 16 U.S.C. § 1532(5)(A)(i) with 16 U.S.C. § 1532(5)(A)(ii). This makes biological and practical sense: when a species with a previously larger range has been reduced to a small patch of presently suitable habitat by the "destruction [or] modification . . . of its habitat," 16 U.S.C. § 1533(a)(1)(A), recovery may necessarily require the protection of both the dwindling areas where the species still occurs and other areas needed for its conservation, including historically occupied areas capable of being restored and recolonized.

NMFS must designate critical habitat "on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impact, of specifying any particular area as critical habitat." *Id.* § 1533(b)(2); *see also* 50 C.F.R.§ 424.12(a). Courts have interpreted the "best available data" standard broadly. The Service may not ignore available biological information, *Conner v. Burford*, 848 F.2d 1441, 1454 (9th Cir. 1988), and must address all such available data in its decision making, *San Luis v. Badgley*, 136 F. Supp. 2d 1136, 1147 (E.D. Cal. 2000). In any final rule designating critical habitat, the Service has a duty under 16 U.S.C. § 1533(b)(8) to summarize the data on which the rule is based and demonstrate the relationship between the data relied on and the conclusion reached. *See San Luis*, 136 F. Supp. 2d at 1149. Credible anecdotal evidence may constitute the best available scientific data and the Service cannot ignore it, even if a full-scale study might be preferable. *Ctr. for Native Ecosystems v. U.S. Fish and Wildlife Serv.*, 795 F. Supp. 2d 1199, 1208 (D. Colo. 2011) (citing *Northwest Ecosystem Alliance v. U.S. Fish and Wildlife Serv.*, 475 F.3d 1136, 1147 (9th Cir. 2007)). Where data are available but have not yet been analyzed, the Service may not lawfully fail to analyze whether that data constitutes best available data and thereafter develop appropriate projections based on such data. *Greenpeace v. Nat'l Marine Fisheries Serv.*, 80 F. Supp. 2d 1137, 1149–50 (W.D. Wash. 2000).

Courts have stressed the importance of designating critical habitat and have regularly stated that NMFS may only decline to make a designation under rare circumstances. In *Ctr. for Biological Diversity v. Kempthorne*, the court stated:

> [t]he designation of critical habitat is the principal means for conserving an endangered species, by protecting not simply the species, but also the ecosystem upon which the species depends. In fashioning the ESA, it was Congress' understanding that the preservation of species' habitat is essential to the preservation of the species itself.

607 F. Supp. 2d 1078, 1086 (D. Ariz. 2009) (internal citations and quotations omitted). Furthermore, "the purpose of establishing critical habitat is for the government to carve out territory that is not only necessary for the species' survival but also essential for the species' recovery." *Ctr. for Biological Diversity v. Kelly*, 93 F. Supp. 3d 1193, 1200 (D. Idaho 2015)

(internal citations and quotations omitted). Thus, courts have agreed that the designation of critical habitat plays a pivotal role in the administration of the ESA and is crucial to a species' survival and recovery.

The ESA provides limited exceptions to an agency's requirement to designate a species' critical habitat at the time that it is listed. First if critical habitat is not determinable at the time a species is listed, an agency may postpone the final designation for up to one year of the date of a listing decision. 16 U.S.C. § 1533(b)(6)(C)(ii). When making this post-listing designation, the Secretary must nevertheless designate critical habitat "to the *maximum* extent prudent." *Id.* (emphasis added). The ESA therefore ultimately permits an agency not to designate critical habitat only under the rare exception of that designation not being prudent. *See* 50 C.F.R. § 424.12(a)(1) (defining two circumstances in which designation is not prudent).

III. NMFS Must Designate Specific Locations for Giant Manta Ray Critical Habitat

To ensure that the giant manta ray recovers to the point that the statutory protections of the ESA are no longer necessary, we urge NMFS to designate as critical habitat all areas currently inhabited or potentially inhabitable by this species in the Gulf of Mexico, in addition to certain Atlantic and Pacific waters in the U.S. As a preliminary matter, when designating critical habitat for this species, NMFS should keep in mind physical and biological features essential to the conservation of the species. The Status Review provides a robust synthesis of such physical and biological features in the section on "Historical Range, Distribution and Habitat Use," as well as elsewhere throughout the report, which should be used for identifying the requirements for relevant variables that define critical habitat.[4] Below we summarize some key points that NMFS should also address in the designation of critical habitat, and follow with justification and additional information.

Key points to address in the designation of critical habitat:

1. The importance and geographic distribution of primary prey species, such as zooplankton and mesopelagic food sources;

2. The inclusion of known regions where the species has been observed;

3. The importance of year-round protection even though use of an area by the species may be periodic (e.g. associated with plankton blooms, migration or raising young);

4. Areas particularly susceptible to fishing pressures may warrant designation to address the threat of bycatch and overutilization; and

[4] Miller, M.H. and C. Klimovich. 2016. Endangered Species Act Status Review Report: Giant Manta Ray (*Manta birostris*) and Reef Manta Ray (*Manta alfredi*). Draft Report to National Marine Fisheries Service, Office of Protected Resources, Silver Spring, MD. December 2016. 127 pp. ("Status Review").

5. Relatively "pristine" areas may warrant designation to reduce the risk of threats increasing in these areas.

Justification and additional information related to key points

1. The importance and geographic distribution of primary prey species, such as zooplankton and mesopelagic food sources

Giant manta rays consume small and moderate sized fishes, euphausiids, myctophids, copepods, and planktonic organisms.[5] Recent research based on isotope analysis (that was not cited in the Status Review) suggests that giant manta rays may rely more heavily on deep water, mesopelagic food sources than on surface zooplankton, as previously characterized.[6] These food resources often occur in ephemeral patches influenced by oceanographic features.[7] NMFS must consider how oceanographic and biological information on, *e.g.*, prey field density and frontal systems, might affect giant manta ray habitat use over space and time.[8] In addition, mobulid researchers note that climate change, which is projected to sharply reduce zooplankton biomass in tropical waters, will affect habitat quality for the giant manta ray.[9] NMFS must consider how giant manta ray critical habitat (including areas currently occupied and unoccupied) should be defined based on the best available science, including biogeochemical and oceanographic models projecting prey distribution shifts. [10]

Giant manta rays utilize both coastal and pelagic waters and show an affinity for shelf edge habitats.[11] They also are commonly sighted near oceanic island groups and near offshore pinnacles and seamounts, and occasionally near sandy bottomed habitats and seagrass beds.[12] Giant manta rays are mostly nocturnal feeders[13] but also congregate in shallow waters to feed during the day.[14] Furthermore, giant manta rays use estuarine waters near oceanic inlets seasonally as nursery grounds.[15] While habitat use by adult and juvenile mantas may overlap

[5] Status Review at 19; Joshua D. Stewart *et al.*, *Research Priorities to Support Effective Manta and Devil Ray Conservation*, 5 FRONTIERS IN MARINE SCI. 15, 17, 20 (2018a), *available at* https://doi.org/10.3389/fmars.2018.00314.
[6] Katherine B. Burgess *et al.*, *Manta Birostris, Predator of the Deep? Insight Into the Diet of the Giant Manta Ray Through Stable Isotope Analysis*. ROYAL SOC. OPEN SCI. 3 (2016), *available at* https://www.researchgate.net/publication/311698437_Manta_birostris_predator_of_the_deep_Insight_into_the_diet_of_the_giant_manta_ray_through_stable_isotope_analysis.
[7] Stewart *et al.* (2018a) at 14-15.
[8] *Id.*
[9] *See* Stewart *et al.* (2018a) at 15, 20.
[10] *See Id.* at 14 (noting the important role of oceanographic features and patchy prey resources in driving giant manta ray behavior).
[11] Stewart *et al.* (2018a) at 13, 17.
[12] IUCN Red List of Threatened Species, *Mobula birostris,* Giant Manta Ray (2018), *available at* http://dx.doi.org/10.2305/IUCN.UK.2018-1.RLTS.T198921A126669349.en.
[13] Status Review at 19.
[14] *Id.* at 14.
[15] *Id.*

to some degree because of a shared prey base,[16] size segregation has been observed and "critical habitat use and movements likely vary among life stages in mobulid rays."[17] Although the species is known to be solitary, giant manta rays exhibit seasonal aggregations at offshore reef cleaning stations, to forage on ephemeral food sources, and to engage in courtship behavior.[18]

The giant manta ray occupies waters that are tropical, subtropical, and temperate.[19] The species can inhabit waters with temperatures as low as 19 degrees Celsius and, for waters off the U.S. east coast, documentation shows that it typically uses waters with temperatures ranging from 19 to 22 degrees Celsius.[20] The species utilizes a wide range of depths, possibly to exploit different prey species, to track vertical migrations of prey, or due to changing abundances of prey throughout the day or seasons.[21] Specifically, the giant manta ray can feed at depths of less than 10 meters during the day and conduct night descents of 200-450 meters, at times exceeding depths of 1,000 meters.[22] This ability to exploit prey at different depths "could be crucial for long-term dietary intake" depending on geography and prey availability.[23] The giant manta ray may also utilize a wide array of depths due to a need to recover body temperatures in warm surface water after long periods of foraging in cold, deep water for mesopelagic food sources.[24]

Additionally, giant manta rays are considered to be more offshore distributed than the reef manta ray, but make occasional visits to coastal areas during a productive "upwelling," an event where warmer near-shore surface water is replaced by colder water, which can increase planktonic productivity.[25]

There are likely multiple sources of data for mapping the distribution of giant manta ray prey. We direct NMFS to review Strömberg *et al.* 2009 and Fautin *et al.* 2010 as potential resources for designing critical habitat.[26]

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[16] *Id.* at 20.
[17] Stewart *et al.* (2018a) at 15; *see also id.* at 8 (discussing size segregation among mobulids generally and the giant manta specifically).
[18] *Id.* at 13; Status Review at 14.
[19] Status Review at 14.
[20] *Id.*
[21] *Id.*; Stewart *et al.* (2018a) at 15, 17; Joshua D. Stewart *et al.*, *Deep-Water Feeding and Behavioral Plasticity in* Manta Birostris *Revealed by Archival Tags and Submersible Observations* 119 ZOOLOGY 406–413 (2016a), *available at* https://doi.org/10.1016/j.zool.2016.05.010.
[22] Status Review at 14.
[23] Katherine B. Burgess *et al.*, *Novel Signature Fatty Acid Profile of the Giant Manta Ray Suggests Reliance on an Uncharacterised Mesopelagic Food Source Low in Polyunsaturated Fatty Acids*, 13 PLOS ONE (2018), *available at* https://doi.org/10.1371/journal.pone.0186464.
[24] Burgess *et al.* (2016).
[25] Listing Petition at 22.
[26] *See* Patrik Strömberg *et al.*, *Estimation of Global Zooplankton Biomass from Satellite Ocean Colour* 78 JOURNAL OF MARINE SYS. 18–27 (2009), *available at* https://doi.org/10.1016/j.jmarsys.2009.02.004; Daphne Fautin et al., *An Overview of Marine*

2. The inclusion of known regions where the species has been observed

Researchers have documented many locations around the world used by the giant manta ray, including locations in U.S. waters. The Status Review discussed a map developed by a researcher in 2016 showing the Extent of Occurrence (EOO) and Area of Occupancy (AOO) of giant manta rays.[27] According to this report:

> The EOO was defined as: "the area contained within the shortest continuous imaginary boundary which can be drawn to encompass all the known, inferred or projected sites of present occurrence of a taxon" and the AOO was defined as "the area within its 'extent of occurrence' that is occupied by a taxon for each country. The AOO measure reflects the fact that a taxon will not usually occur throughout the area of its extent of occurrence, which may, for example, contain unsuitable habitats or be beyond the maximum depth distribution." Only areas where the presence of the species has been confirmed were included in the AOO.[28]

The Status Review printed the giant manta ray AOO and EOO locations mapped in the Lawson *et al.* (2016) preprint. Since the Status Review has been finalized, this Lawson study has been published and peer-reviewed, resulting in the below map:

AOO and EOO Locations for the Giant Manta Ray[29]

Researchers and NMFS have also engaged in more detailed discussions of specific locations in U.S. waters utilized by the giant manta ray, including the waters of Flower Garden Banks National Marine Sanctuary and its surrounding area, along with waters offshore of Hawaii, Florida, California, and New Jersey. A study co-authored by a researcher at NOAA found

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Biodiversity in United States Waters PLOS ONE 5(8) (2010), *available at* https://doi.org/10.1126/science.aao5646.

[27] Status Review at 12 (citing Julia M. Lawson *et al. Sympathy for the Devil: A Conservation Strategy for Devil and Manta Rays* PEERJ PREPRINTS (Feb. 2016)).

[28] *Id.* at 13.

[29] Julia M. Lawson *et al. Sympathy for the Devil: A Conservation Strategy for Devil and Manta Rays* PEERJ (2017), *available at* https://peerj.com/articles/3027/.

that genetic evidence, sightings, and photographic records indicate that Flower Garden Banks National Marine Sanctuary and the surrounding area, located in the northwestern portion of the Gulf of Mexico, serve as crucial nursery habitat for this species.[30] Giant manta rays also use Hawaiian waters. As noted by the Status Review, "more regular sightings [of the giant manta ray] are common" in Kona, Hawaii,[31] and "a significant positive correlation was found between manta ray numbers and zooplankton abundance" at this location.[32] Moreover, according to the Status Review, "the species has been documented as far north as southern California and New Jersey on the United States west and east coasts, respectively."[33]

Also, the giant manta ray has been repeatedly documented along the Atlantic coast in the southeastern portion of the United States. The Status Review noted that recent aerial surveys conducted off of St. Augustine, Florida documented sightings of "vast schools of giant manta rays, with over 500 manta rays observed per 6-8 hour day of aerial survey."[34] One group called the Manta Ray Program has consistently documented manta rays off the coast of Florida, usually in waters shallower than 10 feet.[35] The organization has noted that South Florida could be a nursery for baby mantas because they and other researchers "often see small, immature manta rays" there.[36] The Program also found a dead manta ray in Pompano Beach, which would indicate that rays use nearby waters. On many occasions, too, the Manta Ray Program has spotted mantas in Florida injured by human interference. For example, the group documented one giant manta ray with a missing wing-tip and giant gashes, and which later was found entangled in fishing lines.[37] A photographer also recorded a video of the program's founder removing three weighted hooks attached to fishing line from a different giant manta ray.[38] Finally, the giant manta ray has been observed in a North Carolina estuary as well as within the inshore waters of the Indian River Lagoon System, Florida and Port Canaveral, Florida.[39]

3. The importance of year-round protection even though use of an area by the species may be periodic (e.g. associated with plankton blooms, migration or raising young).

The giant manta ray uses different areas (vertical and surface locations) during different times of the year as it tracks changes in prey abundance, produces offspring, occupies nursery habitat, and seeks niche habitat requirements to meet other biological requirements.

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[30] Joshua D. Stewart *et. al*, *Important Juvenile Manta Ray Habitat at Flower Garden Banks National Marine Sanctuary in the Northwestern Gulf of Mexico* MARINE BIOLOGY 1-8, 1 (2018b).
[31] Status Review at 13 (internal citations omitted).
[32] *Id.* at 18.
[33] *Id.* at 12.
[34] *Id.* at 33 (citing F. Young (pers. comm. 2017) on monitoring from 2012–2016).
[35] Beth McCrea, *Mantas in Florida* (Jan. 29, 2018), *available at* https://scubadiverlife.com/mantas-in-florida/.
[36] *Id.*
[37] *Id.*
[38] *Id.*
[39] Douglas H. Adams and Elena Amesbury, *Occurrence of the Manta Ray, Manta Birostris, in the Indian River Lagoon, Florida*, 61 FLORIDA SCI. 7–9 (1998).

Manta rays demonstrate high rates of site residency and fidelity,[40] though researchers have recorded the giant manta ray traveling distances of more than 1,500 kilometers.[41] However, more recent data have raised questions about whether the species is as highly migratory as previous findings would suggest.[42] Therefore, critical habitat should include year-round designation of areas used by the giant manta ray during different times of the year so as to protect these areas from threats to habitat, prey availability or other important resources that fulfill essential requirements for the giant manta ray. This is particularly important for the giant manta ray as a migratory species, as manta rays may be poorly nourished after the long migration journey and thus especially susceptible to starvation, disease, predation, and other threats if they are not able to access required resources.

4. Areas particularly susceptible to fishing pressures may warrant designation to address the threat of bycatch and overutilization

NMFS should consider locations in U.S. waters where manta rays, including giant manta rays, have been observed as bycatch. Not only will identification of bycatch hotspots help NMFS determine areas of critical habitat, it will also assist the agency in fishery management strategies to reduce mobulid bycatch rates.

First, giant manta rays have been recorded as bycatch in waters in the southeastern portion of the United States. The NMFS shark bottom longline observer program recorded giant manta rays as bycatch by bottom longline vessels in the Gulf of Mexico and South Atlantic.[43] Giant manta rays have also been recorded in gillnet fisheries operating in the Western Atlantic.[44] As noted in Defenders' listing petition for the giant manta ray, the species has also been recorded as bycatch in the shark drift net fishery off the east coast of Florida and Georgia.[45] Moreover, manta rays have been observed caught in the pelagic longline fishery off the southeastern United States.[46]

Giant manta rays have also been recorded as bycatch in U.S. waters in the Pacific Ocean. According to NMFS,

> [m]anta rays have been identified in U.S. bycatch data from fisheries operating primarily in the Central and Western Pacific Ocean, including the U.S. tuna purse seine fisheries, the Hawaii-based deep-set longline fisheries for tuna, and the American Samoa pelagic longline fisheries.[47]

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[40] Stewart *et al.* (2018a) at 13.
[41] Status Review at 15.
[42] *Id.*
[43] Status Review at 59.
[44] Status Review at 59 (citing to observer data of manta rays from the NMFS Southeast Gillnet Observer Program, which monitors waters from Florida to North Carolina and the Gulf of Mexico); Listing Petition at 84 (citing to bycatch of giant manta rays from the directed shark drift gillnet fishery off the east coast of Florida and Georgia).
[45] Listing Petition at 84.
[46] *Id.*
[47] Status Review at 67.

More specifically, giant manta rays were recorded as bycatch in the U.S. tuna purse seine fishery in the central-western Pacific, the Hawaii deep-set longline fishery, the American Samoa pelagic longline fishery, and the California drift gillnet fishery targeting swordfish and threshers.[48] The Final Rule also cited to data of bycatch in the Hawaii shallow-set longline fishery.[49] These bycatch locations provide evidence of locations used by giant manta rays. NMFS should therefore consider the species' use of those areas when designating critical habitat.

There are multiple sources of data showing threats to marine ecosystems, including fishing. We encourage NMFS to review Global Fishing Watch (https://globalfishingwatch.org), Halpern *et al.* 2008 and Kroodsma *et al.* 2018 as potential data sources.[50] These resources identify areas that are and are not heavily fished, which may provide insight regarding areas to designate to address both overutilization that has occurred in the past and areas that could be targeted for heightened threats in the future if not protected. This information may be directly helpful for designating critical habitat in areas that "may require special management consideration or protection." *See* 16 U.S.C. § 1532(5)(A)(i).

5. Relatively "pristine" areas may warrant designation to reduce the risk of threats increasing in these areas

We encourage NMFS to designate all areas in the giant manta ray's geographic distribution within U.S. waters that are utilized by the species, regardless of the current level of threats in these areas. While it is important to designate areas with high threat levels as critical habitat, it is equally as important to include "pristine" areas with low current threat levels so that critical habitat can achieve its purpose of preventing the increase of threats to the species. Given the giant manta ray's threatened status and high level of threats across its range, we encourage NMFS to include as critical habitat areas with current low levels of threats to ensure that these essential areas continue to serve as strongholds for the species. See above section (#4) for potential data sources.

IV. NMFS Must Develop a Recovery Plan for the Giant Manta Ray

In addition to designating critical habitat, NMFS must create a recovery plan for the giant manta ray. Pursuant to the ESA, an agency "shall develop and implement [recovery plans] for the conservation and survival" of listed species "unless [the agency] finds that such a plan will not promote the conservation of the species." 16 U.S.C. § 1533(f)(1). These plans must incorporate (1) site-specific management actions, (2) objective and measurable criteria that can be used to determine when a species is no longer threatened or endangered, and (3) estimates of the time that it will take to meet the recovery plan's goals and the intermediate steps to those goals. *Id.* at § 1533(f)(B)(i)–(iii). NMFS should create a recovery plan for the

[48] *Id.* at 67, 70.
[49] Final Rule at 2919.
[50] Benjamin S. Halpern *et al.*, *A Global Map of Human Impact on Marine Ecosystems* 319 SCIENCE 948-952 (2009), *available at* https://doi.org/10.1126/science.1149345; David A. Kroodsma *et al.*, *Tracking the Global Footprint of Fisheries* 359 SCIENCE 904-908 (2018), *available at* https://doi.org/10.1126/science.aao5646.

giant manta ray as soon as possible. Some of the many threats facing the species include bycatch, plastics and marine debris, targeted fisheries, overutilization, and tourism impacts. Status Review at 95. Further, the recovery plan must address the threats faced by the giant manta ray by climate change, including oceanographic shifts and concomitant shifts in the biomass and distribution of its preferred giant prey species.[51] When developing the recovery plan, NMFS must consider management actions that would address these threats, among others.

V. Conclusion

To help ensure of the survival and recovery of the threatened giant manta ray, NMFS must designate critical habit and develop a recovery plan for this species as soon as possible. Given the ESA's focus on critical habitat as an essential means of promoting the survival and recovery of a species, NMFS must designate critical habitat for the giant manta ray in all areas under U.S. jurisdiction currently or potentially inhabited by these species including areas in the Gulf of Mexico, in the Atlantic Ocean, and in the Pacific Ocean. Moreover, NMFS should create a recovery plan that would promote the conservation and survival of the species. It must do so in part by implementing management actions that would address the many threats to the species. We appreciate NMFS' current efforts to review relevant research and designate critical habitat and urge the agency to develop a recovery plan as soon as possible. We are happy to assist the agency with these matters.

Sincerely,

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[51] *See* Stewart *et al.* (2018a) at 15, 16, 20.

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