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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Parts 223 and 224

[Docket No. 130910793-3793-01]

RIN 0648-XC867

Endangered and Threatened Wildlife; 90-Day Finding on a Petition to List Multiple Species of Hagfish and Sea Snakes as Threatened or Endangered Under the Endangered Species Act

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce.

ACTION: Notice of 90-day petition finding; request for information.

SUMMARY: We (NMFS) announce a 90-day finding on a petition to list three species of hagfish and three species of sea snakes as threatened or endangered under the Endangered Species Act (ESA). We find that the petition presents substantial information indicating that the petitioned action may be warranted for the sea snake, A. fuscus. We will conduct a status review of this species to determine if the petitioned action is warranted. To ensure that the status review is comprehensive, we are soliciting scientific and commercial information pertaining to this sea snake from any interested party. We find that the petition does not present substantial scientific or commercial information indicating that the petitioned action may be warranted for the remaining five species: Eptatretus octatrema, Myxine paucidens, Paramyxine taiwanae, Aipysurus apraefrontalis, and A. foliosquama.

DATES: Information and comments on the subject action must be received by [insert date 60 days after date of publication in the FEDERAL REGISTER].

ADDRESSES: You may submit comments, information, or data on this document, identified by the code NOAA-NMFS-2013-0150, by any of the following methods:

- Electronic Submissions: Submit all electronic comments via the Federal eRulemaking Portal. Go to www.regulations.gov/#!docketDetail;D=NOAA-NMFS-2013-0150, click the “Comment Now!” icon, complete the required fields, and enter or attach your comments.
- Mail: Submit written comments to Office of Protected Resources, NMFS, 1315 East-West Highway, Silver Spring, MD 20910.
- Fax: 301-713-4060, Attn: Lisa Manning.

Instructions: Comments sent by any other method, to any other address or individual, or received after the end of the comment period, may not be considered by NMFS. All comments received are a part of the public record and will generally be posted for public viewing on www.regulations.gov without change. All personal identifying information (e.g., name, address, etc.), confidential business information, or otherwise sensitive information submitted voluntarily by the sender will be publicly accessible. We will accept anonymous comments (enter "N/A" in the required fields if you wish to remain anonymous), although submitting comments anonymously will prevent us from contacting you if we have difficulty retrieving your submission. Attachments to electronic comments will be accepted in Microsoft Word, Excel, or Adobe PDF file formats only.

Copies of the petition and related materials are available upon request from the Director, Office of Protected Resources, 1315 East West Highway, Silver Spring, MD 20910, or online at: www.nmfs.noaa.gov/pr/species/petition81.htm.

FOR FURTHER INFORMATION CONTACT: Lisa Manning, Office of Protected Resources, 301-427-8466.

SUPPLEMENTARY INFORMATION:

Background

On July 15, 2013, we received a petition from the WildEarth Guardians to list 81 marine species as threatened or endangered under the ESA and to designate critical habitat under the ESA. Copies of this petition are available from us (see ADDRESSES). This notice addresses the three hagfishes (*Eptatretus octatrema*, *Myxine paucidens*, and *Paramyxine taiwanae*) and the three sea snakes (*Aipysurus apraefrontalis*, *A. foliosquama*, and *A. fuscus*) petitioned for listing.

Section 4(b)(3)(A) of the ESA of 1973, as amended (U.S.C. 1531 et seq.), requires, to the maximum extent practicable, that within 90 days of receipt of a petition to list a species as threatened or endangered, the Secretary of Commerce make a finding on whether that petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted, and to promptly publish the finding in the Federal Register (16 U.S.C. 1533(b)(3)(A)). When we find that substantial scientific or commercial information in a petition indicates the petitioned action may be warranted (a “positive 90-day finding”), we are required to promptly commence a review of the status of the species concerned, which includes conducting a comprehensive review of the best available scientific and commercial information. Within 12 months of receiving the petition, we must conclude the review with a finding as to whether, in

fact, the petitioned action is warranted. Because the finding at the 12-month stage is based on a significantly more thorough review of the available information, a “may be warranted” finding at the 90-day stage does not prejudge the outcome of the status review.

Under the ESA, a listing determination may address a “species,” which is defined to also include subspecies and, for any vertebrate species, any distinct population segment (DPS) that interbreeds when mature (16 U.S.C. 1532(16)). A joint NOAA-U.S. Fish and Wildlife Service (USFWS) policy clarifies the agencies’ interpretation of the phrase “distinct population segment” for the purposes of listing, delisting, and reclassifying a species under the ESA (“DPS Policy”; 61 FR 4722; February 7, 1996). A species, subspecies, or DPS is “endangered” if it is in danger of extinction throughout all or a significant portion of its range, and “threatened” if it is likely to become endangered within the foreseeable future throughout all or a significant portion of its range (ESA sections 3(6) and 3(20), respectively; 16 U.S.C. 1532(6) and (20)). Pursuant to the ESA and our implementing regulations, the determination of whether a species is threatened or endangered shall be based on any one or a combination of the following five section 4(a)(1) factors: the present or threatened destruction, modification, or curtailment of habitat or range; overutilization for commercial, recreational, scientific, or educational purposes; disease or predation; inadequacy of existing regulatory mechanisms; and any other natural or manmade factors affecting the species’ existence (16 U.S.C. 1533(a)(1), 50 CFR 424.11(c)).

ESA-implementing regulations issued jointly by NMFS and the USFWS (50 CFR 424.14(b)) define “substantial information” in the context of reviewing a petition to list, delist, or reclassify a species as the amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted. When evaluating whether

substantial information is contained in a petition, we must consider whether the petition: (1) clearly indicates the administrative measure recommended and gives the scientific and any common name of the species involved; (2) contains detailed narrative justification for the recommended measure, describing, based on available information, past and present numbers and distribution of the species involved and any threats faced by the species; (3) provides information regarding the status of the species over all or a significant portion of its range; and (4) is accompanied by the appropriate supporting documentation in the form of bibliographic references, reprints of pertinent publications, copies of reports or letters from authorities, and maps (50 CFR 424.14(b)(2)).

At the 90-day stage, we evaluate the petitioner's request based upon the information in the petition including its references, and the information readily available in our files. We do not conduct additional research, and we do not solicit information from parties outside the agency to help us in evaluating the petition. We will accept the petitioner's sources and characterizations of the information presented, if they appear to be based on accepted scientific principles, unless we have specific information in our files that indicates the petition's information is incorrect, unreliable, obsolete, or otherwise irrelevant to the requested action. Information that is susceptible to more than one interpretation or that is contradicted by other available information will not be dismissed at the 90-day finding stage, so long as it is reliable and a reasonable person would conclude that it supports the petitioner's assertions. Conclusive information indicating the species may meet the ESA's requirements for listing is not required to make a positive 90-day finding. We will not conclude that a lack of specific information alone negates a positive 90-day

finding, if a reasonable person would conclude that the unknown information itself suggests an extinction risk of concern for the species at issue.

To make a 90-day finding on a petition to list a species, we evaluate whether the petition presents substantial scientific or commercial information indicating the subject species may be either threatened or endangered, as defined by the ESA. First, we evaluate whether the information presented in the petition, along with the information readily available in our files, indicates that the petitioned entity constitutes a “species” eligible for listing under the ESA. Next, we evaluate whether the information indicates that the species at issue faces extinction risk that is cause for concern; this may be indicated in information expressly discussing the species’ status and trends, or in information describing impacts and threats to the species. We evaluate any information on specific demographic factors pertinent to evaluating extinction risk for the species at issue (e.g., population abundance and trends, productivity, spatial structure, age structure, sex ratio, diversity, current and historical range, habitat integrity or fragmentation), and the potential contribution of identified demographic risks to extinction risk for the species. We then evaluate the potential links between these demographic risks and the causative impacts and threats identified in section 4(a)(1).

Information presented on impacts or threats should be specific to the species and should reasonably suggest that one or more of these factors may be operative threats that act or have acted on the species to the point that it may warrant protection under the ESA. Broad statements about generalized threats to the species, or identification of factors that could negatively impact a species, do not constitute substantial information that listing may be warranted. We look for information indicating that not only is the particular species exposed to a factor, but that the

species may be responding in a negative fashion; then we assess the potential significance of that negative response.

Many petitions identify risk classifications made by non-governmental organizations, such as the International Union for Conservation of Nature (IUCN), the American Fisheries Society, or NatureServe, as evidence of extinction risk for a species. Risk classifications by other organizations or made under other Federal or state statutes may be informative, but such classification alone may not provide the rationale for a positive 90-day finding under the ESA. For example, as explained by NatureServe, their assessments of a species' conservation status do “not constitute a recommendation by NatureServe for listing under the U.S. Endangered Species Act” because NatureServe assessments “have different criteria, evidence requirements, purposes and taxonomic coverage than government lists of endangered and threatened species, and therefore these two types of lists should not be expected to coincide” (<http://www.natureserve.org/prodServices/statusAssessment.jsp>). Thus, when a petition cites such classifications, we will evaluate the source of information that the classification is based upon in light of the standards of the ESA and our policies as described above.

With respect to the six species discussed in this finding, the petitioner relies almost exclusively on the risk classifications of the IUCN as the source of information on the status of each petitioned species. All of the petitioned species are listed as “endangered” or “critically endangered” on the IUCN Redlist, and the petitioner notes this as an explicit consideration in offering petitions on these species. Species classifications under the IUCN and the ESA are not equivalent, and the data standards, evaluation criteria, and treatment of uncertainty are also not necessarily the same.

Species Descriptions

Hagfishes

Hagfish are marine, jawless, scaleless, worm-like fishes found mainly in temperate seas. They are typically found in association with soft bottom (mud and sand) habitats, but some species also occur in hard bottom or rocky habitats. Designed more for burrowing than swimming, they lack paired fins or appendages, have degenerate eyes, and probably spend much of their time within the bottom substrate (Moyle and Cech, 2000). One notable, external feature is their three pairs of barbels or tentacles around their mouth and nostril that serve a tactile function. Along their sides are 1- 15 gill openings and a series of pores that serve as openings for mucus glands. These glands secrete large amounts of mucus, or slime, that hagfish use to coat their body as a means of deterring predators. Hagfish can also “slime” their food items, thereby making them unpalatable to other scavengers. Hagfish feed on soft-bodied invertebrates within or at the surface of the bottom sediments, but are also quick to scavenge dead fish and whales. Females lay a small number (20-30) of large (2 cm – 3 cm) leathery eggs that are attached to each other and the bottom (Moyle and Cech, 2000). Little else is known about their reproduction (Moyle and Cech, 2000). Small morphological differences between populations do suggest that they tend to breed locally (Pough et al., 1996). There are over 40 extant species in six genera around the world (Pough et al., 1996).

Sea Snakes

Sea snakes occur throughout the warm regions of the Pacific and Indian Oceans but are absent from the Atlantic. There are more than 60 described species, but the taxonomy of sea snakes remains controversial (Davenport, 2011). The three petitioned sea snake species are all

within the genus Aipysurus and, according to the petition, occur within narrow ranges off the northern coast of Australia. More than 30 species of sea snakes, roughly half of which are endemic, occur in northern Australia (Marsh et al., 1994). Within the wider Indo-Pacific region, there is considerable overlap in the ranges of sea snake species and a high degree of niche separation based on diet (Davenport, 2011; citing Voris and Voris, 1983).

Visually, sea snakes are easily distinguished from terrestrial snakes by their laterally compressed, paddle-like tail. However, identification of sea snakes to species can be challenging due to variable coloration and pattern (Miller and Abdulquader, 2009). Multiple physical characteristics (e.g., number of mid-body scale rows) and the capture locations are required to make a positive species identification (Miller and Abdulquader, 2009).

Aipysurid sea snakes are entirely aquatic, shallow-water species typically associated with coral reefs. Aipysurids are also viviparous (i.e., give birth to live young), unlike the amphibious sea kraits, which lay their eggs on land. Sea snakes, in general, tend to carry smaller clutches of eggs than terrestrial snakes of the same size, and this is especially true of the aipysurids (Marsh et al., 1994). There is no parental care of young, which must surface to breathe and forage for food just as adults do (Miller and Abdulquadar, 2009). The petitioned sea snakes prey on various fishes, such as wrasses, gobies and eels, subduing their prey with venom before consuming them. Based on sonic tracking, mapping, and mark-recapture studies, a relatively widely distributed congener, A. laevis, was shown to have a very small home range – on the order of 0.15 to 0.18 hectares (Marsh et al., 1994); presumably the three petitioned aipysurids have similarly small home ranges. The petition indicates that the lifespan of the three petitioned sea snakes is about 8 to 10 years, and age at first maturity ranges from about 2 to 5 years.

Analysis of the Petition

The petition clearly indicates the administrative measure recommended and gives the scientific and common names of the species involved. Based on the information presented in the petition, along with the information readily available in our files, we find that each of the 6 petitioned species constitutes a valid “species” eligible for listing under the ESA as each is considered a valid taxonomic species. The petition also contains a narrative justification for the recommended measures and provides limited information on the species’ geographic distribution, habitat, and threats. For the hagfishes, no information is provided regarding the three species’ past or present numbers, or population status and trends for all or a significant portion of the species’ ranges. For the sea snakes, some past and present relative abundance data and provisional abundance data are provided. Supporting documentation was provided, mainly in the form of IUCN species assessments. We had no information in our files for any of the petitioned hagfish, but did have some limited information on the sea snake genus. A synopsis of our analysis of the information provided in the petition and readily available in our files is provided below. Following the format of the petition, we first discuss the introductory information presented for each group of species and then discuss the species-specific information.

Threats to the Hagfishes

The three hagfish species petitioned for listing (Eptatretus octatrema, Myxine paucidens, and Paramyxine taiwanae) are currently listed as either “endangered” or “critically endangered” on the IUCN Red List. The petition asserts that these species are being threatened with

extinction by four of the five ESA section 4(a)(1) factors - habitat destruction, overutilization, inadequacy of regulatory mechanisms, and natural factors – which we discuss in turn below.

In terms of habitat destruction, the petition focuses on human population growth and associated consequences (e.g., pollution, tourism, development) as the main drivers of the destruction of hagfish habitat. The petition states that “Increased economic growth in coastal cities is a major cause of ocean habitat destruction” and that “...human population growth represents a serious threat to the petitioned species.” Some of the associated consequences of human population growth are discussed further; however, specific information to link these general threats to hagfish habitats or impacts to hagfish habitat is lacking. For example, the petition discusses the increase in the number and size of “dead zones” (i.e., areas of very low levels of dissolved oxygen) worldwide, but no information is provided to indicate whether and to what extent any dead zones overlap with or affect the habitats of the petitioned species.

The petition also discusses the particular threat of trawling and asserts that it threatens the habitat of all three hagfish species. We agree with the statements in the petition that trawling results in disturbance of benthic substrates, can lead to changes in community composition, and can increase some species’ vulnerability to predation. However, these are general statements, and no additional information is provided in the petition or references to indicate the mechanism by which hagfish may be impacted by trawling activities. Hagfish apparently occur mainly within the sediments and are opportunistic feeders that may even benefit from commercial fisheries’ discards and the resulting increase in food availability (Moyle and Cech, 2000). It is unclear given the information available on the diet, habitat, and behavior of hagfishes, whether

hagfish experience negative impacts, positive impacts, or both, as a result of trawling and other commercial fishing activities.

In terms of overutilization, the petition asserts that both bycatch of hagfish and commercial harvest present threats to the three petitioned hagfishes. No data or information, however, are presented on whether or to what extent bycatch of any of the three hagfish species is occurring or has occurred. The fate of by-caught hagfish is also not discussed. The petition presents commercial harvest of hagfish as a future threat that will arise as other fish stocks decline and new species are targeted to meet the rising demand for fish by a growing human population. However, this is a general statement that could apply to many marine fishes, and there is no additional information with which to substantiate the alleged likelihood of this potential, future threat to any of the petitioned hagfish species.

The petition states that no conservation measures are in place for any of the petitioned hagfishes and that ESA listings are needed to prevent their extinction. Information regarding any related regulatory measures being implemented within the ranges of any of the three hagfishes is not provided. We do not necessarily consider a lack of species-specific protections a threat to the particular species. For example, management measures that regulate other species, activities (e.g., commercial fisheries), or areas may indirectly function to minimize threats to the petitioned species. As stated previously, we look for substantial information indicating that not only is the particular species exposed to a factor, but that the species may be responding in a negative fashion; then we assess the potential significance of that negative response.

The petition specifically points to the lack of a listing under CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) as a threat to the petitioned

hagfishes. We agree with the statement in the petition that the absence of a CITES listing for a given species is not evidence that the same species does not warrant the protections of the ESA. However, we find nothing to substantiate the statement in the petition that "...the absence of CITES listing is problematic" for the three hagfish species. CITES is a tool to manage and regulate international trade in situations where trade has been identified as a threat to the particular species' survival in the wild. No information on international trade of any of the petitioned hagfishes is presented in the petition or available to us, and we do not have any information regarding direct harvest of these hagfish species.

Lastly, the petition asserts that the three hagfish species are threatened as a result of their rarity, in particular because it reduces their chances of finding mates. This statement is not substantiated with any additional information regarding hagfish mating behavior, reproduction, or natural densities. Very little is known about hagfish mating (Pough *et al.*, 1996). Hagfish are relatively mobile, however, and may be able to travel to locate mates within a certain range. The petitioned hagfishes also possess both male and female gonads and may function as hermaphrodites (Mincarone, 2011a, 2011b; Mincarone and Mok, 2011); however, whether and the extent to which the petitioned species reproduce through self-fertilization is not known.

The condition of being rare is an important factor to consider when evaluating a species' risk of extinction; however, it does not by itself indicate the likelihood of extinction of that species, nor does the condition of being rare constitute substantial information that listing under the ESA may be warranted. For example, some species naturally occur in small numbers but are not considered threatened or endangered. To determine whether listing of a rare species may be warranted, there must also be substantial information indicating the rare species is both exposed

to and responding in a negative fashion to a threat such that the species may be threatened with extinction.

Overall, we find that the general threats discussed for the hagfishes are not clearly or causally linked to the petitioned species or their ranges or habitat (e.g., discussion of trawling impacts to sea floor habitat in Australia). While some of the information in this introductory section suggests concern for the status of many marine species generally, its broadness, generality, and/or speculative nature, and the failure of the petitioner to make reasonable connections between the threats and the status of the individual petitioned species means that we cannot find that this information reasonably suggests that one or more of these threat factors may be operative threats that act or have acted on any of the petitioned species to the point that they may warrant protection under the ESA. There is little information in this introductory section indicating that particular petitioned species may be responding in a negative fashion to any of the discussed threats. Therefore, we find that the information in this section does not constitute substantial information that listing may be warranted for any of the petitioned species.

Eptatretus octatrema

This hagfish is known from two type specimens – one collected in 1899 and the other in 1900 (Mincarone, 2011a). Both specimens were collected off Cape Saint Blaize, South Africa. Despite “extensive surveys” within the range of this species, no other specimens have been recorded (Mincarone, 2011a). No information is provided in the petition or available to us regarding the past or present numbers or status of this species. Given that no confirmed specimens have been documented in over 100 years despite what appears to be heavy sampling efforts, it is likely this species is no longer extant in the wild. The IUCN assessment notes that

further research is needed “to determine if this species still maintains a viable population” (Mincarone, 2011a). The purpose of the ESA is to conserve species that are in danger of or threatened with extinction. Section 3(6) of the ESA defines an endangered species as “any species which is in danger of extinction throughout all or a significant portion of its range” (emphasis added). Species that are already extinct are not protected by the ESA. Given this information and the discussion above regarding general threats to hagfish, we conclude that the petition does not present substantial information indicating that E. octatrema may warrant listing as threatened or endangered under the ESA.

Myxine paucidens

This species is known from only five museum specimens collected from Sagami Bay and just south of Tokyo Bay, Japan. No specimens have been collected since 1972 despite “extensive scientific surveying in the area,” and the species “may possibly be already extinct” (Mincarone, 2011b). The petition provides no information on past or present numbers or population trends, nor is any information available in our files. The most recent IUCN assessment states that “there are no known direct threats to this species” but that habitat quality is declining as a result of extensive trawling in the area where the specimens were found. No additional information is provided or available to evaluate the effect trawling has on this hagfish or its habitat. Given this information as well as the previous discussion about general threats to hagfish, we conclude that the petition does not present substantial information indicating that M. paucidens may warrant listing as threatened or endangered under the ESA.

Paramyxine taiwanae

Population trends, abundance data and status information are not available for this species. This species is known from approximately 150 specimens collected over an unknown or unspecified time period. The species apparently has a very small range of 3,750 sq km off northeastern Taiwan (see Mincarone and Mok, 2011). The most recent IUCN assessment states that heavy surveying has “...confirmed that it [*P. taiwanae*] is not found in southwestern Taiwan nor along the east coast;” however, in a later section, the assessment discusses a study of “...specimens from the southwestern Taiwan examined by Kuo *et al.* (1994) ...” (Mincarone and Mok, 2011). Thus, the actual extent of occurrence of this species is unclear.

This species occurs at depths of 120-427 m on the continental shelf and upper slope (Mincarone and Mok, 2011). The petition states this species is vulnerable to habitat loss as a result of deep sea trawling and trapping; however, no additional information, references or statements are provided indicating the habitat requirements of this hagfish or how its particular habitat is being damaged or curtailed by trawling and trapping within its range.

The petition also states that this species is vulnerable to bycatch and that, due to its relatively large body size, faces an increased risk that “it will be intentionally exploited in the future for food and the leather industry.” The petition states that these “pressures threaten the species’ continued survival.” However, no information on past or present bycatch rates or fisheries interactions is provided, nor is any available in our files. Also, as mentioned previously, no additional information is available with which to substantiate the potential future threat of direct harvest of this hagfish. The IUCN assessment recommends that more research is needed to understand this species’ biology, population size, and the impact of trapping and trawling (Mincarone and Mok, 2011).

Overall, the species-specific information provided in the petition for P. taiwanae is general and/or speculative in nature, and we cannot find that this information reasonably suggests that one or more of the threat factors may be operative threats that act or have acted on the petitioned species to the point that it may warrant protection under the ESA. We conclude that the petition and the single, available reference do not present substantial information indicating this species may warrant listing as threatened or endangered.

Threats to the Sea Snakes

The three sea snake species petitioned for listing (Aipysurus apraefrontalis, A. foliosquama, and A. fuscus) are currently listed as either “endangered” or “critically endangered” on the IUCN Red List. The petition asserts that these species are being threatened with extinction by three of the five ESA section 4(a)(1) factors - habitat destruction, inadequacy of regulatory mechanisms, and natural factors – which we discuss in turn below.

The petition asserts that “drastic declines and possible extinction” of the petitioned sea snakes have occurred as a result of anthropogenic climate change and the consequent destruction of their habitat. The petition states that climate change can increase sea surface temperatures to levels that are fatal to the sea snakes and can cause “massive damage” to the coral reefs that these species require as habitat. The petition specifically refers to coral bleaching as the mechanism by which climate change destroys the habitat of the petitioned sea snakes. The petition claims that when severe bleaching events occur, the sea snakes’ “only available habitat is destroyed.” However, it is unclear, given the available information, whether and to what extent the petitioned sea snakes are actually unable to continue to use the coral structure as habitat should a bleaching event occur.

Increased sea surface temperatures and coral bleaching are plausible causes of sea snake habitat degradation, but the petitioner's conclusion that these factors are causing the decline of the sea snakes is overstated. References provided by the petitioner state that climate change may be a threat to some sea snake species (Lukoschek and Guinea, 2010; Lukoschek et al., 2010a; Lukoschek et al., 2010b). In addition, the IUCN assessment for A. apraefrontalis states: "There are no specific, clearly identified or quantified past, current or future threats to A. apraefrontalis or any other reef-associated sea snake species..." (Lukoschek et al., 2010a).

The petition asserts that the three sea snake species are also declining as a result of inadequate regulatory mechanisms. Information on the existing regulatory protections that directly or may indirectly benefit these species, however, is not provided beyond a discussion of the Ashmore Reef Nature Reserve. This nature reserve, located off the coast of northwestern Australia, was established in 1983 and contains a portion of all three species' known habitat. Given that the threats to the sea snakes are unknown, it is unclear what level of protection the reserve may be providing them. The petition also asserts that the absence of a CITES listing for the petitioned sea snakes is "problematic" because they "may be subject to international trade presently or in the future." Information in our files indicates that sea snakes are consumed and/or valued for their leather in some parts of the world, and sea snake products have been traded internationally since the 1930's (Marsh et al., 1994). However, no information is provided to substantiate the statement in the petition that any the three sea snake species may potentially or presently be subject to international trade. In fact, the references provided by the petitioner indicate that none of the petitioned sea snakes are targeted by fisheries and there is no

evidence of illegal fishing (Lukoschek and Guinea, 2010; Lukoschek et al., 2010a; Lukoschek et al., 2010b).

The petition discusses how all three of the petitioned sea snakes have very small geographic ranges and limited dispersal ability. A very small range increases the extinction risk of the species because the entire species could be affected by local events. Also, limited dispersal ability can decrease the potential for recolonization following the loss of a subpopulation or area of habitat. Thus, these natural factors can influence the species' risk of extinction. Despite this, we do not consider these natural factors alone to constitute substantial information that listing under the ESA may be warranted. There must be additional information to indicate that the species may be exposed to and respond in a negative fashion to a threat. However, in the case of A. fuscus, which we discuss further below, information is presented to suggest that the petitioned species may have been extirpated from some areas, and restricted dispersal among remaining subpopulations may be contributing to the extinction risk of this species.

Overall, we find that the three major threats discussed for sea snakes are not well supported and/or substantiated and do not constitute substantial information that listing of any of the three species may be warranted.

A. apraefrontalis

This sea snake has been recorded from only Ashmore and Hibernia Reefs off northwestern Australia, and so its area of occurrence is estimated to be only about 10 sq km (Lukoschek et al., 2010a). The IUCN assessment for this species, indicates that, despite extensive surveys, no individual of this species has been recorded on either Ashmore or Hibernia

reef since 2000 (Lukoschek et al., 2010a; citing Guinea 2006, 2007 and Lukoschek, pers. comm., 2009). The IUCN assessment refers to this species as “locally extinct” and notes it has not been seen at any other location (Lukoschek et al., 2010a). As stated previously, species that are not known to exist in the wild are not protected by the ESA. Given this information as well as the deficiencies of the threats information discussed above, we conclude that the petition and the available references do not present substantial information indicating that A. apraefrontalis may warrant listing as threatened or endangered under the ESA.

A. foliosquama

Similar to A. apraefrontalis, this species has been found only on Ashmore and Hibernia Reefs off northwestern Australia in an area of about 10 sq km (Lukoschek and Guinea, 2010). Citing Guinea (2006; 2007) and Lukoschek (pers. comm. 2009), the IUCN assessment for this species states that no single individual of this species has been seen over the past 9 years, or approximately 2 generations, despite extensive surveys of both Ashmore and Hibernia Reefs (Lukoschek and Guinea, 2010). The IUCN assessment also refers to the “local extinction” of this species and notes that it also has not been sighted at any other location (Lukoschek and Guinea, 2010). Thus, the best available information suggests this species may no longer be extant in the wild. As stated previously, species that are not known to exist in the wild are not protected by the ESA. Considering this information as well as the deficiencies of the threats information discussed above, we conclude that the petition and the available references do not present substantial information indicating that A. apraefrontalis may warrant listing as threatened or endangered under the ESA.

A. fuscus

This species occurs on Ashmore, Hibernia, Cartier, Scott and Serangipatan Reefs in the Timor Sea between northwestern Australia and Timor (Lukoschek et al., 2010b). Very little movement of A. fuscus is thought to occur among these reefs (Lukoschek et al., 2010b). This species has a relatively shallow depth range of up to 25-30 m deep and a total estimated area of occurrence of only 500 sq km (Lukoschek et al., 2010b). No threats have been clearly identified for this species, but based on surveys on some of the reefs, the species appears to have declined by at least 70% since 1998 (Lukoschek et al., 2010b). Surveys indicate that sightings rates of A. fuscus are variable over time, but an overall declining trend in sightings rates has been observed since 1998 at Ashmore reef (Lukoschek et al., 2010b). It is unclear what the trends in sightings rates of A. fuscus are at the other reefs. The IUCN assessment mentions “local extinctions,” but it is also unclear where these “local extinctions” have occurred. However, the available information does suggest that some subpopulations or areas of the range have experienced significant declines or may have been lost. Given the likelihood that dispersal is fairly restricted for this species, the loss of certain reef subpopulations increases the extinction risk for this species. We find the significant decline in abundance and potential loss of subpopulations cause for concern and substantial information that listing of A. fuscus under the ESA may be warranted.

Petition Finding

After reviewing the information contained in the petition, as well as information readily available in our files, we conclude the petition does not present substantial scientific or commercial information indicating the petitioned action may be warranted for Eptatretus octatrema, Myxine paucidens, Paramyxine taiwanae, A. apraefrontalis and A. foliosquama. In

contrast, as described above, we find that there is substantial scientific information indicating the petitioned action may be warranted for A. fuscus, and we hereby announce the initiation of a status review for this species to determine whether the petition action is warranted.

Information Solicited

To ensure that the status review is based on the best available scientific and commercial data, we are soliciting information relevant to whether the sea snake, A. fuscus, may warrant listing as threatened or endangered. Specifically, we are soliciting data and information, including unpublished data and information, in the following areas: (1) historical and current distribution and abundance of this species throughout its range; (2) historical and current population trends; (3) life history and habitat requirements (4) genetics of subpopulations; (5) past, current and future threats to the species, including any current or planned activities that may adversely impact the species; (6) ongoing or planned efforts to protect and restore the species and its habitat; and (7) management, regulatory, and enforcement information. We request that all information be accompanied by: (a) supporting documentation such as maps, bibliographic references, or reprints of pertinent publications; and (b) the submitter's name, address, and any association, institution, or business that the person represents.

References Cited

A complete list of references is available upon request to the Office of Protected Resources (see ADDRESSES).

Authority

The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.).

Dated: October 30, 2013

Alan D. Risenhoover,
Director, Office of Sustainable Fisheries,
performing the functions and duties of the
Deputy Assistant Administrator for Regulatory Programs,
National Marine Fisheries Service.

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