



DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Parts 223 and 224

[Docket No. 160413329-6329-01]

RIN 0648-XE571

Endangered and Threatened Wildlife; 90-Day Finding on a Petition to List the Taiwanese Humpback Dolphin 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: 90-day petition finding, request for information.

SUMMARY: We, NMFS, announce a 90-day finding on a petition to list the Taiwanese humpback dolphin (*Sousa chinensis taiwanensis*) range-wide as threatened or endangered under the Endangered Species Act (ESA). We find that the petition and information in our files present substantial scientific or commercial information indicating that the petitioned action may be warranted for the Taiwanese humpback dolphin. We will conduct a status review of the 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 the species from any interested party.

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-2016-0041*, by either of the following methods:

- *Electronic Submissions:* Submit all electronic public comments via the Federal eRulemaking Portal. Go to www.regulations.gov/#!docketDetail;D=NOAA-NMFS-2016-0041. Click the “Comment Now” icon, complete the required fields, and enter or attach your comments.
- *Mail:* Submit written comments to Chelsey Young, NMFS Office of Protected Resources (F/PR3), 1315 East West Highway, Silver Spring, MD 20910, USA.

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. NMFS will accept anonymous comments (enter "N/A" in the required fields if you wish to remain anonymous).

Copies of the petition and related materials are available on our website at

<http://www.fisheries.noaa.gov/pr/species/mammals/dolphins/indo-pacific-humpback-dolphin.html>

FOR FURTHER INFORMATION CONTACT: Chelsey Young, Office of Protected Resources, 301-427-8403.

SUPPLEMENTARY INFORMATION:

Background

On March 9, 2016, we received a petition from the Animal Welfare Institute, Center for Biological Diversity and WildEarth Guardians to list the Taiwanese humpback dolphin (*S. chinensis taiwanensis*) as threatened or endangered under the ESA throughout its range. This

population of humpback dolphin was previously considered for ESA listing as the Eastern Taiwan Strait distinct population segment (DPS) of the Indo-Pacific humpback dolphin (*Sousa chinensis*); however, we determined that the population was not eligible for listing as a DPS in our 12-month finding (79 FR 74954; December 16, 2014) because it did not meet all the necessary criteria under the DPS Policy (61 FR 4722; February 7, 1996). Specifically, we determined that while the Eastern Taiwan Strait population was “discrete,” the population did not qualify as “significant.” The petition asserts that new scientific and taxonomic information demonstrates that the Taiwanese humpback dolphin is actually a subspecies, and states that NMFS must reconsider the subspecies for ESA listing. Copies of the petition are available upon request (see **ADDRESSES**).

ESA Statutory, Regulatory, and Policy Provisions and Evaluation Framework

Section 4(b)(3)(A) of the ESA of 1973, as amended (16 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 such finding in the **Federal Register** (16 U.S.C. 1533(b)(3)(A)). When it is found 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, during which we will conduct a comprehensive review of the best available scientific and commercial information. In such cases, we conclude the review with a finding as to whether, in fact, the petitioned action is warranted within 12 months of receipt of the petition. Because the finding at the 12-month stage is based on a more thorough review of the available information, as

compared to the narrow scope of review at the 90-day stage, a “may be warranted” finding 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 DPS that interbreeds when mature (16 U.S.C. 1532(16)). A joint NMFS–U.S. Fish and Wildlife Service (USFWS) (jointly, “the Services”) policy clarifies the agencies’ interpretation of the phrase “distinct population segment” for the purposes of listing, delisting, and reclassifying a species under the ESA (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, we determine whether a species is threatened or endangered based on any of the following five section 4(a)(1) factors: the present or threatened destruction, modification, or curtailment of its habitat or range; overutilization for commercial, recreational, scientific, or educational purposes; disease or predation; the inadequacy of existing regulatory mechanisms; and any other natural or manmade factors affecting the species’ continued existence (16 U.S.C. 1533(a)(1), 50 CFR 424.11(c)).

ESA implementing regulations issued jointly by NMFS and 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. In evaluating whether substantial information is contained in a petition, the Secretary 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 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 finding stage, we evaluate the petitioners' 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 petitioners' 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 it supports the petitioners' assertions. In other words, 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 faces an 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 (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 indicating 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 nongovernmental organizations, such as the International Union on the 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/pdf/NatureServeStatusAssessmentsListing-Dec%202008.pdf>). Additionally, species classifications under IUCN and the ESA are not equivalent; data standards, criteria used to evaluate species, and treatment of uncertainty are also not necessarily the same. 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 on extinction risk and impacts or threats discussed above.

Species Description and Taxonomy

The petitioned population of dolphin (*Sousa chinensis taiwanensis*) is thought to be a subspecies of the Indo-Pacific humpback dolphin, *Sousa chinensis*. The Indo-Pacific humpback dolphin is a broadly distributed species within the genus *Sousa*, family Delphinidae, and order Cetacea. It is easy to distinguish from other dolphin species in its range, as it is characterized by a robust body, long distinct beak, short dorsal fin atop a wide dorsal hump, and round-tipped broad flippers and flukes (Jefferson and Karczmarski, 2001). The Taiwanese population also has a short dorsal fin with a wide base. However, the base of the fin measures 5-10 percent of the body length, and slopes gradually into the surface of the body; this differs from individuals in the

western portion of the range, which have a larger hump that comprises ca. 30 percent of body width and forms the base of an even smaller dorsal fin.

In general, the Indo-Pacific humpback dolphin is medium-sized, with lengths up to 2.8 m, and weighs approximately 250-280 kg (Ross *et al.*, 1994). They form social groups of about 10 animals, but groups of up to 30 animals have been documented (Jefferson *et al.*, 1993).

The petition identifies the Taiwanese humpback dolphin (*Sousa chinensis taiwanensis*) as eligible for listing under the ESA as a “subspecies” of the Indo-Pacific humpback dolphin (*Sousa chinensis*). The taxonomy of the genus *Sousa* is unresolved and has historically been based on morphology, but genetic analyses have recently been used. Current taxonomic hypotheses identify *Sousa chinensis* as one of two (Jefferson *et al.*, 2001), three (Rice, 1998), or four (Mendez *et al.*, 2013) species within the genus. Each species is associated with a unique geographic range, though the species' defined ranges vary depending on how many species are recognized. Rice (1998) recognizes *Sousa teuzii* in the eastern Atlantic, *Sousa plumbea* in the western Indo-Pacific, and *Sousa chinensis* in the eastern Indo-Pacific. Mendez *et al.* (2013) recently identified an as-yet unnamed potential new species in waters off of northern Australia. Currently, the International Union for Conservation of Nature (IUCN) and International Whaling Commission (IWC) Scientific Committee recognize only two species, *Sousa chinensis* in the Indo-Pacific, and *Sousa teuzii* in the eastern Atlantic. Most recently, Wang *et al.* (2015) revised the taxonomy of *Sousa chinensis* and concluded that the Taiwanese humpback dolphin (*S. chinensis taiwanensis*) is a valid subspecies. Specifically, Wang *et al.* (2015) expanded upon a previous study (Wang *et al.*, 2008) regarding the pigmentation differences between the Taiwanese humpback dolphin and Indo-Pacific humpback dolphin populations inhabiting the Jiulong River and Pearl River estuaries from Hong Kong and Fujian in China. In the 2008 study,

Wang *et al.* showed that the pigmentation of the Taiwanese population is significantly different from that of other populations within the taxon (Wang *et al.*, 2008); however, the study did not examine the degree of differentiation for purposes of determining whether subspecies recognition was warranted. Thus, to remedy this oversight, Wang *et al.* (2015) examined the taxonomy of the Indo-Pacific humpback dolphin by comparing spotting densities on the bodies and dorsal fins of these adjacent populations and performing a discriminant analysis. The study determined that the differentiation in pigmentation patterns revealed nearly non-overlapping distributions between the dolphins from Taiwanese waters and those from the Jiulong River and Pearl River estuaries of mainland China (i.e., the nearest known populations). The study stated that the Taiwanese dolphins were clearly diagnosable from those of mainland China under the most commonly accepted 75 percent rule for subspecies delimitation, with 94 percent of one group being separable from 99 percent of the other. Based on this information, as well as additional evidence of geographical isolation and behavioral differences, the authors concluded that the Taiwanese humpback dolphin qualifies as a subspecies, and revised the taxonomy of *Sousa chinensis* to include two subspecies: the Taiwanese humpback dolphin (*S. chinensis taiwanensis*) and the Chinese humpback dolphin (*S. chinensis chinensis*). As a result of this new information, the Taxonomy Committee of the Society for Marine Mammalogy officially revised its list of marine mammal taxonomy to include the Taiwanese humpback dolphin as a subspecies.

While pigmentation of the Taiwanese population is significantly different from other populations within the taxon (Wang *et al.*, 2008; Wang *et al.*, 2015), whether the pattern is adaptive or has genetic underpinnings is still uncertain. In other cetacean species, differences in pigmentation have been hypothesized to relate to several adaptive responses, allowing

individuals to hide from predators, communicate with conspecifics (promoting group cohesion), and disorient and corral prey (Caro *et al.*, 2011). However, the differences in Taiwanese humpback dolphin pigmentation may be a result of a genetic bottleneck from the small size of this population (less than 100 individuals) and it's possible that the Taiwanese humpback dolphin represents a single social and/or family group. Such small populations are more heavily influenced by genetic drift than large populations (Frankham, 1996). However, Wang *et al.* (2015) concluded that the differences between the Taiwanese dolphins and their nearest neighbors are not clinal, but are diagnosably different; the characters examined are not those that may be environmentally induced, but instead are likely a reflection of genetic and developmental differences. Thus, based on the information presented in the petition, which provides evidence that the Taiwanese humpback dolphin is indeed a subspecies (i.e., a listable entity under the ESA), we will proceed with our evaluation of the information in the petition to determine whether *S. chinensis taiwanensis* (referred henceforth as the Taiwanese humpback dolphin) may be warranted for listing throughout all or a significant portion of its range under the ESA.

Range, Distribution and Movement

The Taiwanese humpback dolphin has an extremely small, restricted range, and is distributed throughout only 512 square km of coastal waters off western Taiwan, from estuarine waters of the Houlong and Jhonggang rivers in the north, to waters of Waishanding Jhou to the South (about 170 km linear distance), with the main concentration of the population between the Tongsaio River estuary and Taisi, which encompasses the estuaries of the Dadu and Jhushuei rivers, the two largest river systems in western Taiwan (Wang *et al.*, 2007b). Overall, confirmed present habitat constitutes a narrow region along the coast, which is affected by high human population density and extensive industrial development (Ross *et al.*, 2010). Rarely, individuals

have been sighted and strandings have occurred in near-shore habitat to the north and south of its current confirmed habitat; some of these incidents are viewed as evidence that the historical range of the population extended farther than its current range (Dungan *et al.*, 2011).

The Taiwanese humpback dolphin is thought to be geographically isolated from mainland Chinese populations, with water depth being the primary factor dictating their separation. The Taiwan Strait is 140-200 km wide, and consists of large expanses of water 50-70 m deep (the Wuchi and Kuanyin depressions). Despite extensive surveys, Taiwanese humpback dolphins have never been observed in water deeper than 25-30 meters, and thus deep water is thought to be the specific barrier limiting exchange with Chinese mainland populations (Jefferson and Karczmarski, 2001). The species as a whole experiences limited mobility and its restriction to shallow, near-shore estuarine habitats is a significant barrier to movement (Karczmarski *et al.*, 1997; Hung and Jefferson, 2004).

Life History

Little is known about the life history and reproduction of the Indo-Pacific humpback dolphin as a species, let alone the Taiwanese humpback dolphin as a subspecies. In some cases, comparison of the Taiwanese humpback dolphin with other populations may be appropriate, but one needs to be cautious about making these comparisons, as environmental factors such as food availability and habitat status may affect important rates of reproduction and generation time in different populations. A recent analysis of life history patterns for individuals in the Pearl River Estuary (PRE) population of mainland China may offer an appropriate proxy for understanding life history of the Taiwanese humpback dolphin population. Life history traits of the PRE population are similar to those of the South African population, suggesting that some general assumptions of productivity can be gathered, even on the genus-level (Jefferson and

Karczmarski, 2001; Jefferson *et al.*, 2012). Maximum longevity for the PRE and South African populations are 38 and 40 years, respectively; thus, it can be assumed that the Taiwanese humpback dolphin experiences a similar life expectancy. In general, it is assumed that the population experiences long calving intervals, between 3 and 5 years (Jefferson *et al.*, 2012), with gestation lasting approximately 10-12 months. It has been suggested that weaning may take up to 2 years, and strong female-calf association may last 3-4 years (Karczmarski *et al.*, 1997; Karczmarski, 1999). Peak calving activity most likely occurs in the warmer months, but exact peak calving time may vary geographically (Jefferson *et al.*, 2012). Age at sexual maturity is late, estimated between 12 and 14 years.

Analysis of Petition and Information Readily Available in NMFS Files

The petition contains information on the Taiwanese humpback dolphin, including its taxonomy, description, geographic distribution, habitat, population status and trends, and factors contributing to the species' decline. According to the petition, all five causal factors in section 4(a)(1) of the ESA are adversely affecting the continued existence of the Taiwanese humpback dolphin: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) inadequacy of existing regulatory mechanisms; and (E) other natural or manmade factors.

In the following sections, we summarize and evaluate the information presented in the petition and in our files on the status of *S. chinensis taiwanensis* and the ESA section 4(a)(1) factors that may be affecting this species' risk of global extinction. Based on this evaluation, we determine whether a reasonable person would conclude that an endangered or threatened listing may be warranted for the species.

Status and Population Trends

There have been two formal estimates of abundance for the Taiwanese humpback dolphin. The first is based on surveys conducted between 2002 and 2004 using line transects to track and count animals, which resulted in an estimated population size of 99 individuals (coefficient of variation (CV) =52 percent, 95 percent confidence interval = 37-266) (Wang *et al.*, 2007a). However, the 2007 international workshop on the conservation and research needs of the Taiwanese humpback dolphin population suggested that the true number of individuals may actually be lower than this estimate (Wang *et al.*, 2007b). A re-analysis of population abundance conducted on data collected between 2007 and 2010 used mark-recapture methods of photo identification, permitting higher-precision measurements. Yearly population estimates from this study ranged from 54 to 74 individuals (CV varied from 4 percent to 13 percent); these estimates were 25 percent to 45 percent lower than those from 2002-2004 (Wang *et al.*, 2012). Jefferson (2000) estimated that mature individuals comprise 60 percent of the population. Based on this proportion, and the largest estimate of population size from the most recent study (74 individuals), the Taiwanese humpback dolphin is most likely comprised of less than 45 mature individuals.

Given the extremely small and isolated nature of the population, even a small number of mortalities could potentially have significant negative population-level effects. For the Taiwanese humpback dolphin, Wang *et al.* (2012) measured survivorship for the population, which was used to determine a mortality rate of 1.5 percent (± 0.022) (Wang *et al.*, 2012; Araújo *et al.*, 2014). Carrying capacity for the Taiwanese humpback dolphin has been estimated at 250 individuals (a conservative estimate, higher than the highest point estimate of abundance from Wang (Wang *et al.*, 2012)), as extrapolated from the mean density estimate for the population

(Araújo *et al.*, 2014); this estimate suggests that the population abundance has been reduced from historical levels. Additionally, a recent population viability analysis (PVA) suggests that the population is declining due to the synergistic effects of habitat degradation and detrimental fishing interactions (Araújo *et al.*, 2014). Araújo *et al.*, (2014) modeled population trajectory over 100 years using demographic factors combined with different levels of mortality attributed to bycatch, and loss of carrying capacity due to habitat loss/degradation. The model predicted a high probability of ongoing population decline under all scenarios. Ultimately, strong evidence suggests that the population is small, and rates of decline are high, unsustainable, and potentially even underestimated. Further, it is clear that loss of only a single individual within the population per year would substantially reduce population growth rate (Dungan *et al.*, 2011).

Analysis of ESA Section 4(a)(1) Factors

While the petition presents information on each of the ESA section 4(a)(1) factors, we find that the information presented, including information within our files, regarding habitat destruction and overutilization of the species as a result of fisheries interactions is substantial enough to make a determination that a reasonable person would conclude that this species may warrant listing as endangered or threatened based on these two factors alone. As such, we focus our discussion below on the evidence of habitat destruction and overutilization of the species, and present our evaluation of the information regarding these factors and their impact on the extinction risk of the Taiwanese humpback dolphin. The remaining factors discussed in the petition will be thoroughly evaluated in a comprehensive status review of the species.

Destruction, Modification, or Curtailment of the Species' Habitat or Range

The Taiwanese humpback dolphin habitat best compares with that of populations located off the coast of mainland China. Taiwanese humpback dolphins are thought to be restricted to

water <30 m deep, and most observed sightings have occurred in estuarine habitat with significant freshwater input (Wang *et al.*, 2007a). The input of freshwater to *S. chinensis taiwanensis* habitat is thought to be important in sustaining estuarine productivity, and thus supporting the availability of prey for the dolphin (Jefferson, 2000). Across the Taiwanese humpback dolphin habitat, bottom substrate consists of soft sloping muddy sediment with elevated nutrient inputs primarily influenced by river deposition (Sheehy, 2010). These nutrient inputs support high primary production, which fuels upper trophic levels contributing to the dolphin's source of food.

The petition states that the Taiwanese humpback dolphin is threatened by habitat destruction and modification and lists multiple causes, including reduction of freshwater outflows to estuaries, seabed reclamation, coastal development, and pollution (including chemical, biological, and noise pollution). Information in our files indicates that much of the preferred habitat of the Taiwanese humpback dolphin has been altered or may become altered. The near-shore marine and estuarine environment in Taiwan is intensively used by humans for fishing, sand extraction, land reclamation, transportation, and recreation, and is a recipient of massive quantities of effluent and runoff (Wang *et al.*, 2007b). However, we do not have sufficient information to evaluate what effects many of the activities discussed in the petition (e.g., reduced freshwater flows, seabed reclamation) are having on the species' status. For example, while several of the rivers in western Taiwan have already been dammed or diverted for agricultural, municipal, or other purposes (Ross *et al.*, 2010), there are no data or information in the petition or our files to indicate how reduced water flows to the estuaries are specifically impacting the Taiwanese humpback dolphins or their prey.

In terms of pollution, we do have some information in our files indicating that these dolphins are exposed to toxic PCBs and are likely negatively affected through ingestion of contaminated prey. The Taiwanese humpback dolphin's exposure to land-based pollution and other threats is relatively high all along the central western coast of Taiwan, because these dolphins are thought to inhabit only a narrow strip of coastal habitat. Further, these dolphins have not been observed in waters deeper than 25-30 m and are typically sighted in waters 15 m deep and within 3 km from shore (Reeves *et al.*, 2008). Given the restricted coastal range of the Taiwanese humpback dolphin and the extensive industrial and agricultural development in the region, food web contamination is likely, with sub-lethal and/or cumulative toxic effects having the potential to adversely impact small populations (Sheehy, 2010). By measuring PCB concentrations of known prey species, Riehl *et al.* (2011) constructed a bioaccumulation model to assess the risk PCBs may be posing to the Taiwanese humpback dolphins. Their results indicated that the Taiwanese humpback dolphins are at risk of immunotoxic effects of PCBs over their lifetime (Riehl *et al.*, 2011). In addition, surveys of 97 Taiwanese humpback dolphins conducted from 2006 to 2010 showed that 73 percent had at least one type of skin lesion and that 49 percent of the surveyed dolphins were diseased (Yang *et al.*, 2011). In another recent study documenting skin conditions of the Taiwanese humpback dolphin, 37 percent of individuals showed evidence of fungal disease, various lesions, ulcers, and nodules. The authors suggest that the high prevalence of compromised skin condition may be linked to high levels of environmental contamination (Yang *et al.*, 2013). These data suggest the dolphins may have weakened immune systems and are consequently more susceptible to disease. Overall, evidence suggests that widespread habitat contamination may be leading to the bioaccumulation of toxins within Taiwanese humpback dolphin individuals; these toxins are known to compromise marine

mammal reproduction and immune response, and may be negatively impacting the health and viability of the population.

Overall, while we have insufficient information to evaluate some of the claims in the petition, we do have sufficient information to indicate that pollution is likely having a negative impact on the status of the Taiwanese humpback dolphin. Thus, we conclude that the information in the petition and in our files presents substantial information that the Taiwanese humpback dolphin may warrant listing as threatened or endangered because of threats to its habitat.

Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Information from the petition and in our files suggests that the primary threat to the Taiwanese humpback dolphin is overutilization as a result of commercial fisheries interactions and bycatch-related mortality. Bycatch poses a significant threat to small cetaceans in general, where entanglement in fishing gear results in widespread injury and mortality (Read *et al.*, 2006). The two fishing gear types most hazardous to small cetaceans are gillnets and trammel nets, thousands of which are set in coastal waters off western Taiwan (Dungan *et al.*, 2011). Injury due to entanglement is evident in the Taiwanese humpback dolphin population, identified by characteristic markings on the body, including constrictive line wraps, and direct observation of gear wrapped around the dolphin (Ross *et al.*, 2010; Slooten *et al.*, 2013). In a study exploring the impact of fisheries on the Taiwanese humpback dolphin, 59.2 percent of injuries (lethal and non-lethal) observed were confirmed to have originated from fisheries interactions (Slooten *et al.*, 2013). Even in non-lethal interactions, injuries sustained due to encounters with fishing gear may lead to mortality via immunosuppression, stress, and malnutrition, although these effects are not easily measured (Dungan *et al.*, 2011). In total, one third of 32 photo-identified Taiwanese humpback dolphins had scars thought to have been caused by either collisions with ships or

interactions with fishing gear (Wang *et al.*, 2004). Further, while over 30 percent of the Taiwanese humpback dolphin population exhibits evidence of fisheries interactions, including wounds, scars, and entanglement (Wang *et al.*, 2007b; Slooten *et al.*, 2013), this measurement likely underestimates the full extent of the threat, and the prevalence of internal damage from ingestion of fishing gear cannot be determined using current survey methods (Slooten *et al.*, 2013). There are also two unpublished reports of dead, stranded Taiwanese humpback dolphins suspected to have died as a result of a fisheries interaction (Ross *et al.*, 2010). Thousands of vessels fish with gillnets and trammel nets in waters used by humpback dolphins along the west coast of Taiwan. In fact, as of 2009, a total of 6,318 motorized fishing vessels were operating inside the dolphins' habitat, corresponding to 32 vessels per km of coastline (Slooten *et al.*, 2013). A recent progress report by Wang (2013) reports survey data from 2012 that documents individuals observed to have new injuries since last surveyed. Further, in an analysis of stranded individuals in the waters off Hong Kong, where coastal fishing activity is comparable to that off the west coast of Taiwan, the most commonly diagnosed causes of death were entanglement in fishing nets and vessel collision (Jefferson *et al.*, 2006).

In addition to direct mortality as a result of entanglement in fisheries gear, indirect effects of fishing activities may also be negatively impacting the Taiwanese humpback dolphin. Indirect effects of fishing include: depletion of prey resources, pollution, noise disturbance, altered behavioral responses to prey aggregation in fishing gear, and potential changes to social structure arising from the deaths of individuals caused by fisheries activity. In fact, individual Taiwanese humpback dolphins have shown evidence of disturbance from all of these effects (Slooten *et al.*, 2013), and injuries from fishing gear and boat collisions can compromise the health of individuals and their capacity to adjust to other stressors, or cause death (Dungan *et al.*, 2011).

While the petition provides insufficient evidence to quantify the impact of fishing activities on the population of Taiwanese humpback dolphin, the annual removal of even a few individuals from such a small population due to fisheries interactions can disproportionately reduce population viability and could eventually lead to the extinction of the subspecies (Ross *et al.*, 2010; Dungan *et al.*, 2011; Slooten *et al.*, 2013). In fact, studies show that to ensure viability of the Taiwanese humpback dolphin population, mortality caused by fishing gear must be reduced to less than one individual every 7 years (Slooten *et al.*, 2013). Therefore, based on the information presented in the petition and in our files, we conclude that overutilization may be a threat negatively impacting the Taiwanese humpback dolphin, such that it is cause for concern and warrants further investigation to see if the species warrants listing as threatened or endangered under the ESA.

While the petition identifies numerous other threats to the species, including diseases, the inadequacy of existing regulatory mechanisms, and other natural or manmade factors (e.g., climate change and ocean acidification), we find that the petition and information in our files suggests that impacts from habitat destruction and overutilization, in and of themselves, may be threats impacting the Taiwanese humpback dolphin to such a degree that raises concern that this species may be in danger of extinction throughout all or a significant portion of its range, or likely to become so in the foreseeable future. Thus, when we consider the Taiwanese humpback dolphin across its restricted range, based on the available information in the petition and in our files, its status is likely in decline, it continues to face numerous impacts to its habitat as well as pressure from fisheries interactions, and it has significant biological vulnerabilities and demographic risks (i.e., extremely low productivity; declining abundance; small, isolated population). Therefore, we find that the information in the petition and in our files would lead a

reasonable person to conclude that *S. chinensis taiwanensis* may warrant listing as a threatened or endangered species throughout all or a significant portion of its range.

Petition Finding

After reviewing the information contained in the petition, as well as information readily available in our files, and based on the above analysis, we conclude the petition presents substantial scientific information indicating the petitioned action of listing the Taiwanese humpback dolphin (*S. chinensis taiwanensis*) as a threatened or endangered species may be warranted. Therefore, in accordance with section 4(b)(3)(B) of the ESA and NMFS' implementing regulations (50 CFR 424.14(b)(3)), we will commence a status review of the species. During the status review, we will determine whether the Taiwanese humpback dolphin is in danger of extinction (endangered) or likely to become so (threatened) throughout all or a significant portion of its range. We now initiate this review, and thus, *S. chinensis taiwanensis* is considered to be a candidate species (69 FR 19975; April 15, 2004). Within 12 months of the receipt of the petition (March 9, 2017), we will make a finding as to whether listing the Taiwanese humpback dolphin as an endangered or threatened species is warranted as required by section 4(b)(3)(B) of the ESA. If listing is found to be warranted, we will publish a proposed rule and solicit public comments before developing and publishing a final rule.

Information Solicited

To ensure that the status review is based on the best available scientific and commercial data, we are soliciting information on whether the Taiwanese humpback dolphin is endangered or threatened. Specifically, we are soliciting information in the following areas: (1) Historical and current distribution and abundance of the species throughout its range; (2) historical and current population trends; (3) life history and habitat requirements; (4) population structure

information, such as genetics analyses of the species; (5) past, current and future threats, 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: (1) Supporting documentation such as maps, bibliographic references, or reprints of pertinent publications; and (2) 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: May 4, 2016.

Samuel D. Rauch III,
Deputy Assistant Administrator for Regulatory Programs,
National Marine Fisheries Service.

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