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Endangered and Threatened Wildlife and Plants; Threatened and Endangered Status for Distinct Population Segments of Scalloped Hammerhead Sharks; Final Rule

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Parts 223 and 224

[Docket No. 111025652–4523–03]

RIN 0648–XA798

Endangered and Threatened Wildlife and Plants; Threatened and Endangered Status for Distinct Population Segments of Scalloped Hammerhead Sharks

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

ACTION: Final rule.

SUMMARY: In response to a petition submitted by WildEarth Guardians and Friends of Animals, we, NMFS, are issuing a final determination to list the Central and Southwest (SW) Atlantic Distinct Population Segment (DPS) and the Indo-West Pacific DPS of scalloped hammerhead shark (*Sphyrna lewini*) as threatened species under the Endangered Species Act (ESA). We are also issuing a final determination to list the Eastern Atlantic DPS and Eastern Pacific DPS of scalloped hammerhead sharks as endangered species under the ESA. We intend to consider critical habitat for the Central & SW Atlantic, Indo-West Pacific, and Eastern Pacific DPSs in a separate rulemaking.

DATES: This final rule is effective on September 2, 2014.

ADDRESSES: Information concerning this final rule may be obtained by contacting NMFS, Office of Protected Resources, 1315 East-West Highway, Silver Spring, MD 20910. The final rule, list of references and other materials relating to this determination can be found on our Web site at *http://www.nmfs.noaa.gov/pr/species/fish/scallopedhammerheadshark.htm.*

FOR FURTHER INFORMATION CONTACT: Maggie Miller, NMFS, Office of Protected Resources, (301) 427–8403.

SUPPLEMENTARY INFORMATION:

Background

On August 14, 2011, we received a petition from WildEarth Guardians and Friends of Animals to list the scalloped hammerhead shark (*Sphyrna lewini*) as threatened or endangered under the ESA throughout its entire range, or, as an alternative, to delineate the species into five DPSs (Eastern Central and Southeast Pacific, Eastern Central Atlantic, Northwest and Western Central Atlantic, Southwest Atlantic, and Western Indian Ocean) and list any or all of these DPSs as threatened or endangered. The petitioners also requested that critical habitat be designated for the scalloped hammerhead under the ESA. On November 28, 2011, we published a positive 90-day finding (76 FR 72891) announcing that the petition presented substantial scientific or commercial information indicating the petitioned action of listing the species may be warranted and explained the basis for that finding. On April 5, 2013, after completing a comprehensive status review of the species (Miller *et al.* 2013; hereafter referred to as the ''Status Review Report'' available at *http://www.nmfs.noaa.gov/pr/species/fish/scallopedhammerheadshark.htm*), we identified six DPSs of scalloped hammerhead sharks: Northwest Atlantic and Gulf of Mexico (NW Atlantic & GOM) DPS, Central and Southwest (SW) Atlantic DPS, Eastern Atlantic DPS, Indo-West Pacific DPS, Central Pacific DPS, and Eastern Pacific DPS. On April 5, 2013, we published a 12-month determination in the **Federal Register** announcing that listing was not warranted at this time for the NW Atlantic & GOM DPS and the Central Pacific DPS (see 78 FR 20718, conclusion that listing is not warranted in Proposed Determinations). As part of the same action, we proposed a rule to list the Central & SW Atlantic DPS and Indo-West Pacific DPS as threatened species under the ESA, and the Eastern Atlantic DPS and Eastern Pacific DPS as endangered species under the ESA (see 78 FR 20718, proposal to list DPSs in Proposed Determinations). We solicited comments from all interested parties including the public, other governmental agencies, the scientific community, industry, and environmental groups on the Proposed Rule. Specifically, we requested information regarding: (1) The proposed scalloped hammerhead DPS delineations; (2) the population structure of scalloped hammerhead sharks; (3) habitat within the range of the DPSs proposed for listing that was present in the past, but may have been lost over time; (4) biological or other relevant data concerning any threats to the scalloped hammerhead shark DPSs we proposed for listing; (5) the range, distribution, and abundance of these scalloped hammerhead shark DPSs; (6) current or planned activities within the range of the scalloped hammerhead shark DPSs we proposed for listing and their possible impact on these DPSs; (7) recent observations or sampling of the scalloped hammerhead shark DPSs we proposed for listing; (8) efforts being made to protect the scalloped hammerhead shark DPSs we proposed to list; and (9) information regarding the Indo-West Pacific DPS, mainly the population structure, range, distribution, and recent observations or sampling of scalloped hammerhead sharks around the Western Pacific Islands. We received 670 comments in response to the Proposed Rule during the public comment period. Summaries of these comments are included below.

Listing Species Under the Endangered Species Act

We are responsible for determining whether scalloped hammerhead sharks are threatened or endangered under the ESA (16 U.S.C. 1531 *et seq.*) To make this determination, we first consider whether a group of organisms constitutes a ''species'' under Section 3 of the ESA, then whether the status of the species qualifies it for listing as either threatened or endangered under Section 4 of the Act. Section 3 of the ESA defines species to include ''any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature.'' On February 7, 1996, NMFS and the U.S. Fish and Wildlife Service (USFWS; together, the Services) adopted a policy describing what constitutes a DPS of a taxonomic species (61 FR 4722). The joint DPS policy identified two elements that must be considered when identifying a DPS: (1) The discreteness of the population segment in relation to the remainder of the species (or subspecies) to which it belongs; and (2) the significance of the population segment to the remainder of the species (or subspecies) to which it belongs. As stated in the joint DPS policy, Congress expressed its expectation that the Services would exercise authority with regard to DPSs sparingly and only when the biological evidence indicates such action is warranted. We evaluated whether scalloped hammerhead population segments met the DPS Policy criteria and described the delineations of six scalloped hammerhead DPSs in detail in the 12-month ''not warranted'' determination and Proposed Rule. Comments regarding the delineation are addressed in the section ''Summary of Peer Review and Public Comments Received'' below.

Section 3 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'' and a threatened species as one ''which is likely to become an

endangered species within the foreseeable future throughout all or a significant portion of its range.'' Thus, in the context of the ESA, the Services interpret an ''endangered species'' to be one that is presently at risk of extinction. A ''threatened species,'' on the other hand, is not currently at risk of extinction, but is likely to become so in the foreseeable future. In other words, a key statutory difference between a threatened and endangered species is the timing of when a species may be in danger of extinction, either now (endangered) or in the foreseeable future (threatened). The statute also requires us to determine whether any species is endangered or threatened as a result of any one or a combination of the following five 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; or other natural or manmade factors affecting its continued existence (ESA, section 4(a)(1)(A)–(E)). Section 4(b)(1)(A) of the ESA requires us to make listing determinations based solely on the best scientific and commercial data available after conducting a review of the status of the species and after taking into account efforts being made by any State or foreign nation or political subdivision thereof to protect the species. In evaluating the efficacy of existing protective efforts, we rely on the Services' joint *Policy on Evaluation of Conservation Efforts When Making Listing Decisions* (''PECE''; 68 FR 15100; March 28, 2003). The PECE provides direction for consideration of conservation efforts that have not been implemented, or have been implemented but not yet demonstrated effectiveness.

Summary of Peer Review and Public Comments Received

On July 1, 1994, the NMFS and USFWS published a series of policies regarding listings under the ESA, including a policy for peer review of scientific data (59 FR 34270). The intent of the peer review policy is to ensure that listings are based on the best scientific and commercial data available. Pursuant to our 1994 policy on peer review, we solicited technical review of the 12-month ''not warranted'' determination and the Proposed Rule from six qualified specialists. Comments were received from two of the independent experts and those substantive comments are addressed below.

In addition, on April 5, 2013, we solicited public comments on the Proposed Rule for a total of 90 days (78 FR 20718). We received comments on the 12-month ''not warranted'' determination and the Proposed Rule from 3,618 commenters; 2,948 commenters were in the form of signatures on a form letter. We also received over 190 comments that were variations of another form letter. Summaries of only the substantive public comments received, and our responses, are provided below, organized by topic.

Peer Reviewer Comments

Comment 1: A peer reviewer noted that, in general, the 5-factor threats assessment was accurately done, but expressed concern over the proposed ''threatened'' listing for the population found off southern Brazil, believing that this population may be ''endangered.'' The peer reviewer referenced studies that reported increases in catches and decreases in hammerhead populations off Brazil that were cited and considered in the Proposed Rule and Status Review Report (including Amorim *et al.,* 1998; Kotas *et al.,* 2008; and CITES, 2010). The peer reviewer also noted that embryonic development of *S. lewini* occurs in the oceanic area off southern Brazil. For 296 embryos collected during 1988–93, average lengths were 24.3 cm in May, 29.7 cm in June, 32.9 cm in July, 42.0 cm in September, 46.5 cm in October, and 47.4 cm in November. The peer reviewer noted that birth occurs probably inshore from October to December.

Response: We accept the additional information about embryonic development of *S. lewini* specifically in Brazilian waters and have updated the Status Review Report accordingly (see Miller *et al.* 2014). It is important to note that the ''threatened'' listing status was proposed for the Central & SW Atlantic DPS, which includes scalloped hammerhead populations found in the Caribbean as well as off the coast of Brazil. The Extinction Risk Analysis (ERA) team, a team of biologists and shark experts that were tasked with conducting the extinction risk analysis for the scalloped hammerhead shark DPSs, considered the references that were mentioned by the peer reviewer, in addition to a number of other studies within this DPS' range, when it evaluated the extinction risk of the Central and SW Atlantic DPS (see Status Review Report). With no new information to indicate an increase in extinction risk for this DPS, we do not find reason to reevaluate the analysis in the Status Review Report or reconsider the listing status of the Central & SW Atlantic DPS.

Comment 2: A peer reviewer commented that gene flow likely occurs between the Atlantic west and east populations. On the African coast, only a few samples were used (N = 6) to differentiate populations (Duncan *et al.,* 2006). This does not prove that there is a strong population differentiation between the east and west coast of the Atlantic Ocean. Furthermore, Daly-Engel *et al.* (2012) found no difference between the samples from the African coast and the samples from South Carolina; there was differentiation only between the samples from the Gulf of Mexico and African coast. In addition, only one study (Duncan *et al.,* 2006) had samples from the southwestern Atlantic, but the number of these samples (N=3) used for comparison to samples from the west African coast was likely insufficient. Therefore, the genetic differentiation between the African coast compared to the American coast may require further study. Additionally, there is probably no barrier to overcome for the scalloped hammerhead sharks in the Atlantic Ocean and so there must be genetic exchange across the ocean. The scalloped hammerhead is considered a circumtropical species and is capable of traveling long distances (1,941 km, Bessudo *et al.,* 2011). Scalloped hammerhead sharks found in larger areas, such as the Pacific and Indian Oceans, have been considered as one population. Also, evidence suggests *S. lewini* travels from the Atlantic to the Indo-Pacific, via southern Africa (Duncan *et al.,* 2006).

Response: Although scalloped hammerhead sharks are highly mobile, this species rarely conducts trans-oceanic migrations (Kohler and Turner, 2001; Duncan and Holland, 2006; Duncan *et al.,* 2006; Chapman *et al.,* 2009; Diemer *et al.,* 2011). Genetics analyses for scalloped hammerhead sharks using mitochondrial DNA (mtDNA), which is maternally inherited, and microsatellite loci data, which reflects the genetics of both parents, have consistently shown that scalloped hammerhead subpopulations are genetically diverse and that individual subpopulations can be differentiated, especially those populations separated by ocean basins (Duncan *et al.,* 2006; Chapman *et al.,* 2009; Ovenden *et al.,* 2011; Daly-Engel *et al.,* 2012). In the Atlantic, both mitochondrial and microsatellite data indicate genetic discontinuity within this ocean basin, with distinct populations of scalloped hammerhead sharks defined by their respective coasts. Although only a few samples (N=6) were taken from the coast

of west Africa in the Dudley *et al.* (2006) study, in the Daly-Engel *et al.* (2012) study, the authors analyzed 28 samples from the coast of west Africa and corroborated the finding of genetic structure between the western and eastern Atlantic *S. lewini* populations. Using biparentally-inherited DNA, Daly-Engel *et al.* (2012) found scalloped hammerhead samples from West Africa were weakly differentiated from South Carolina samples (which is not the same as ''no difference''; in fact, $0.01 \leq P \leq 0.05$, indicating statistical significance) and significantly differentiated from Gulf of Mexico samples ($P \leq 0.001$). Additionally, the Daly-Engel *et al.* (2012) study found the West African scalloped hammerhead samples to be significantly differentiated from the South African samples ($P \leq 0.01$). Since differences in genetic composition can sometimes be explained by the behavior of a species, we also reviewed tagging data to learn more about the movements of the scalloped hammerhead populations. We found that the available data corroborate the genetic findings that populations of scalloped hammerhead sharks rarely travel long distances over oceanic barriers, such as deep water (see discussion in Status Review Report and the Proposed Rule). While we acknowledge that further genetic study is likely warranted, we must rely on the best available information at the time of listing in order to make our determinations. As such, with no new data provided or available to suggest otherwise, we rely on these genetic and behavioral studies which support the finding that there is isolation between the eastern and western Atlantic scalloped hammerhead populations, and conclude that these populations should be treated as separate and discrete.

Comment 3: A peer reviewer commented that aside from the NW Atlantic & GOM DPS, there was no quantitative data supporting the listing status determinations. Neither was there data that represented the status of the species throughout an entire DPS. Thus, for some of the more extensive and complex DPSs (e.g., Indo-West Pacific) there are likely to be multiple patterns of decline occurring. For example, in Australia, where there is adequate management of sharks, there are likely to be smaller declines in these populations than in the more heavily fished parts of the DPS. However, the information on scalloped hammerhead sharks in Australian waters was missing from the ''threat of overutilization'' section for the Indo-West Pacific DPS. There has been a significant amount of work on scalloped hammerhead sharks in Australia, and the lack of this information in the decision means that this variability has been under-estimated. This is particularly important because Australia has some of the best shark management practices in the world, and so scalloped hammerhead sharks likely have a much higher probability of not going extinct in this part of the DPS.

Response: While we acknowledge that, with the exception of the NW Atlantic & GOM DPS, there is a limited amount of quantitative data available on the other DPSs, we are required to use the best scientific and commercial data available to determine whether the DPSs should be listed under the ESA because of any of the following five factors: (1) The present or threatened destruction, modification, or curtailment of its habitat or range; (2) overutilization for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) inadequacy of existing regulatory mechanisms; or (5) other natural or man-made factors affecting its continued existence. The best available information, including both qualitative and quantitative data, indicates that the Indo-West Pacific and Central & SW Atlantic DPSs are likely to become in danger of extinction in the foreseeable future and that the Eastern Atlantic and Eastern Pacific DPSs are currently in danger of extinction based on threats that are ongoing and not being adequately addressed. While it may be true that there are differing levels of population decline and adequacy of management regulations throughout the range of a specific DPS, we must evaluate threats to the entire DPS when making a listing determination.

We disagree with the peer reviewer that the information on scalloped hammerhead sharks in Australian waters was not considered in our decision. The proposed determination was largely based on the Status Review Report, which included substantial information on the status of scalloped hammerhead sharks found in Australian waters. In fact, much of the quantitative data on abundance trends that were considered in the demographic risks section for the Indo-West Pacific DPS came from studies conducted in Australian waters (which were also referenced by the peer reviewer, including Harry *et al.,* 2011a; Harry *et al.,* 2011b; and Reid and Krogh, 1992). As the Proposed Rule notes (see 78 FR 20718, discussion of Evaluation of Demographic Risks, Indo-West Pacific DPS), estimates of the decline in Australian hammerhead abundance range from 58–85 percent (Heupel and McAuley, 2007; CITES, 2010). Catch per unit effort (CPUE) data from the northern Australian shark fishery indicate declines of 58–76 percent in hammerhead abundance in Australia's northwest marine region from 1996–2005 (Heupel and McAuley, 2007). Data from protective shark meshing programs off beaches in New South Wales (NSW) and Queensland also suggest significant declines in hammerhead populations off the east coast of Australia. From 1973 to 2008, the number of hammerheads caught per year in NSW beach nets decreased by more than 90 percent, from over 300 individuals to fewer than 30 (Reid and Krogh, 1992; Williamson, 2011). Similarly, data from the Queensland shark control program indicate declines of around 82 percent in hammerhead shark abundance between the years of 1985 and 2012, with *S. lewini* abundance fluctuating over the years but showing a steady decline since 2004. Between 2004 and 2012, the number of *S. lewini* shark caught in the Queensland shark control program nets has decreased by 80 percent (QLD DEEDI, 2013). These shark control programs were assessed to have at least a medium causative impact on the localized depletions of scalloped hammerhead sharks (Reid and Krogh, 1992).

We also agree with the reviewer that Australia has adequate fisheries management regulations in place that would minimize the risk of overutilization of scalloped hammerhead sharks found in Australian waters. As the Proposed Rule and Status Review Report documents, Australia has a number of measures to sustainably manage shark populations, prevent the waste of shark parts, and discourage finning (see 78 FR 20718, discussion of Inadequacy of Existing Regulatory Mechanisms, Indo-West Pacific DPS). For example, sharks must be landed with fins naturally attached in Commonwealth, NSW and Victorian waters, and must be landed with corresponding fins in a set fin to carcass ratio in Tasmanian, Western Australian, Northern Territory and Queensland waters. In May 2012, the state of New South Wales (NSW) listed *S. lewini* as an endangered species, thus protecting the shark form recreational and commercial fisheries in NSW state waters. In Australia's northern shark fisheries (Joint Authority Northern Shark Fishery (JANSF) and Western Australia North Coast Shark Fishery (WANCSF)), hammerhead catches saw a significant decline from their peak in 2004/05 following the implementation of stricter management regulations in

2005 (including area closures and longline and gillnet restrictions in WANCSF). In 2008, the JANSF's export approval was revoked over concerns about the ecological sustainability of the fishery. In 2009, the WANCSF export approval expired. As such, no product from either fishery can currently be legally exported. As the northern shark fisheries rely upon shark fin exports for the majority of their income, these export losses have effectively shut down the fisheries, and, consequently, from 2009–2011 there was no reported activity in the northern shark fisheries (McAuley and Rowland, 2012).

The adequacy of these numerous fisheries management and shark conservation regulations in Australia is reflected by the fact that scalloped hammerhead sharks are still fairly abundant off the east coast of Australia. For example, in a 3-year study of commercial gillnet catch of the Queensland East Coast Inshore Finfish Fishery, *S. lewini* was the 4th most abundant elasmobranch (making up 8.8 percent of the total catch) (Harry *et al.,* 2011b). Similarly, data from a Queensland banana prawn trawl fishery revealed that *S. lewini* was the most frequently caught shark species (based on 184 net trawls) but only represented 0.055 percent of the total bycatch (Shark Advisory Group, 2004). Given the available information, we did not find overutilization by Australian fisheries, or the inadequacy of Australian fisheries management regulations, as significant threats to the Indo-West Pacific DPS, which is why they were not discussed at length in the threats sections of the Proposed Rule.

However, in addition to waters off Australia's coast, the Indo-West Pacific DPS range extends throughout the entire Indian Ocean and western Pacific. As described in the DPS analysis section of the Proposed Rule (see 78 FR 20718, discussion of the Identification of Distinct Populations Segments), genetic and tagging data suggest that the scalloped hammerhead sharks in the Indo-West Pacific frequently mix with one another (Daly-Engel *et al.,* 2012). For example, one study found there to be no genetic subdivision of S. *lewini* between Indonesia and the eastern or northern coasts of Australia, indicating this species moves widely between the connecting habitats of Australia and Indonesia (Ovenden *et al.,* 2009; Ovenden *et al.,* 2011). In other words, the sharks found in Australian waters are not discrete or separate from other sharks found in the DPS range and thus are affected by threats outside of the Australian exclusive economic zone (EEZ). As such, although management regulations may be adequate within Australian waters, in other parts of its range the Indo-West Pacific DPS still faces threats of overutilization by fisheries, is subject to high levels of illegal fishing (although this occurs in Australia's EEZ as well), and lacks adequate regulatory protection. Using the best available scientific and commercial information, as found in the Status Review Report and discussed in the Proposed Rule, we determined that these threats warrant listing the Indo-West Pacific DPS as threatened, as it is likely to become in danger of extinction in the foreseeable future throughout its entire range.

Comment 4: A peer reviewer commented that the designated DPSs were largely in line with what would be expected but was a little surprised from a biological stand-point by the separation between the NW Atlantic & GOM DPS and the Central & SW Atlantic DPS. Given the agency's DPS policy that takes account of not only the biological evidence, but also the management arrangements, this conforms to the DPS policy. However, the peer reviewer expressed concern regarding the inclusion of the entire Gulf of Mexico range within this DPS. Specifically, the peer reviewer noted that there is likely to be greater pressure on the NW Atlantic & GOM DPS as the sharks swim across U.S. jurisdictional boundaries within the Gulf of Mexico (but also noted the boundaries by Cuba and Bahamas), and may be at an elevated risk of capture in these less regulated fisheries, a risk that was not fully accounted for in the listing decision.

Response: As the peer reviewer notes, the DPS designations conform to the DPS Policy. As discussed in the Proposed Rule, we used evidence of genetic diversity, geographic isolation, and differences in international regulatory mechanisms for identifying the NW Atlantic & GOM DPS as discrete from the other scalloped hammerhead shark DPSs (see 78 FR 20718, discussion of the Identification of Distinct Populations Segments). Significance is evaluated in terms of the importance of the population segment to the overall welfare of the species. We used evidence that loss of the NW Atlantic & GOM population segment would result in a significant gap in the range of the taxon, as *S. lewini* from other DPSs are unlikely to repopulate the NW Atlantic & GOM DPS. Available data show that gene flow is low between this DPS and neighboring population segments (Duncan *et al.,* 2006; Chapman *et al.,* 2009; Daly-Engel *et al.,* 2012) and tagging studies show limited distance movements by individuals (Duncan and Holland, 2006; Bessudo *et al.,* 2011; Diemer *et al.,* 2011), including along the western Atlantic coast (Kohler and Turner, 2001).

Although the peer reviewer did not present any new information on the risk of capture in fisheries outside of U.S. jurisdiction, we acknowledge in the Proposed Rule that the ERA team had concerns about the level of illegal fishing of the NW Atlantic & GOM DPS by Mexican fishing vessels (see 78 FR 20718, discussion of Inadequacy of Existing Regulatory Mechanisms, NW Atlantic & GOM DPS). Based on data from 2000–2005, Brewster-Geisz and Eytcheson (2005) estimated that Mexican fishers are illegally catching anywhere from 3 to 56 percent of the total U.S. Atlantic commercial shark quota, and between 6 and 108 percent of the Gulf of Mexico regional commercial quota. However, the large range of these estimates indicates a high degree of uncertainty, indicating that the extent of illegal fishing on the scalloped hammerhead sharks in the Gulf of Mexico is largely unknown. Updated data that include years 2006 through 2009 also suggest that the risk of this threat may be diminishing. In fact, since 2005, there has been a 46 percent decrease in the number of detected incursions (Brewster-Geisz *et al.,* 2010). Also, in 2012, Mexico established an annual shark fishing prohibition in its jurisdictional Gulf of Mexico waters (from May 1 to June 30) (DOF, 2012), which will help protect *S. lewini* from capture during parturition and also deter future illegal fishing by its fishers, at least during the prohibitive period. We disagree that the increased risk of capture from fisheries operating in Mexican waters was not fully accounted for in the listing decision as the above information, as well as the analysis of it and other threats by the ERA team, was taken into consideration when we made our listing determination that the NW Atlantic & GOM DPS is not in danger of extinction now or in the foreseeable future.

Public Comments

Below we summarize and address the substantive public comments that were received during the public comment period for the Proposed Rule. Many of the commenters presented general information on threats or provided data that were already cited, discussed, and considered in the Status Review Report or the 12-month ''not warranted'' determination and Proposed Rule (78 FR 20718). We briefly summarize these comments and respond below with references to our prior documents where

relevant. Substantive comments and our responses are organized by relevant topic.

''Not Warranted'' Final Determination for the NW Atlantic & GOM DPS and Central Pacific DPS

The **Federal Register** notice solicited public comments on the Proposed Rule to list the Eastern Atlantic DPS and Eastern Pacific DPS as endangered species and to list the Central & SW Atlantic DPS and the Indo-West Pacific DPS as threatened species. However, the vast majority of the comments concerned the 12-month ''not warranted'' determination for the NW Atlantic & GOM DPS and the Central Pacific DPS. Although not presented for public comment, we reviewed the comments on the 12-month ''not warranted'' determination and provide the following responses:

A few commenters expressed concern that Draft Amendment 5 to the 2006 Consolidated Highly Migratory Species (HMS) Fishery Management Plan (FMP) is not yet implemented (proposed on November 26, 2012; 77 FR 70552) or likely to be effective in addressing threats, such as bycatch mortality, illegal fishing, recreational catch data quality, and species identification problems, to the NW Atlantic & GOM DPS. Amendment 5 proposed measures that were designed to reduce fishing mortality and effort in order to rebuild various overfished Atlantic shark species, including scalloped hammerhead sharks, while ensuring that a limited sustainable shark fishery for certain species could be maintained. In the 12-month ''not warranted'' determination, we addressed these concerns in our assessment of threats to the NW Atlantic & GOM DPS (78 FR 20718, discussion of Summary of Factors Affecting the Six DPSs of Scalloped Hammerhead Sharks) and evaluated the likelihood of implementation and effectiveness of the proposed Draft Amendment 5 in our discussion of ''Efforts Being Made to Protect Scalloped Hammerhead Sharks'' (78 FR 20718, discussion of U.S. Fishery Management: Amendment 5 to the Consolidated HMS FMP) pursuant to the joint USFWS and NMFS *Policy on Evaluation of Conservation Efforts When Making Listing Decisions* (''PECE'', 68 FR 15100; March 28, 2003). In addition, since publication of the 12-month ''not warranted'' determination, these conservation efforts have been implemented. These measures were finalized in July 2013 with publication of Amendment 5a to the Consolidated HMS FMP (78 FR 40318; July 3, 2013). After considering the public comments on Draft Amendment 5, the HMS Management Division split Amendment 5 into two rulemakings: Amendment 5a (which addressed scalloped hammerhead, sandbar, blacknose, and Gulf of Mexico blacktip sharks) and Amendment 5b (which addressed dusky sharks). The implemented management measures include separating the commercial hammerhead shark quotas from the aggregated large coastal shark (LCS) management group quotas, linking the Atlantic hammerhead shark quota to the Atlantic aggregated LCS quotas, and linking the Gulf of Mexico hammerhead shark quota to the Gulf of Mexico aggregated LCS quotas. In other words, if either the aggregated LCS or hammerhead shark quota is reached, then both the aggregated LCS and hammerhead shark management groups will close. These quota linkages were implemented as an added conservation benefit for the hammerhead shark complex due to the concern of hammerhead shark bycatch and additional mortality from fishermen targeting other sharks within the LCS complex. The separation of the hammerhead species for quota monitoring purposes from other sharks within the LCS management unit will allow us to better manage the specific utilization of the hammerhead shark complex, which includes scalloped hammerhead sharks, thus further minimizing the threat of overutilization and promoting sustainable fishing.

For the recreational fisheries, Amendment 5a increased the minimum size limit for hammerheads from 54 inches fork length (FL) (4.5 feet; 137 cm) to 78 inches FL (6.5 feet; 198 cm) to ensure that primarily mature individuals are retained, which will help with rebuilding efforts. Furthermore, since January 1, 2007, the HMS Management Division has required all U.S. Atlantic pelagic longline, bottom longline, and gillnet vessel owners who hold shark permits and operators of those vessels to attend a Protected Species Safe Handling, Release, and Identification Workshop; and all Federally permitted shark dealers are required to attend Atlantic Shark Identification workshops. In addition, to help with increased accuracy in reporting shark catches down to the species level, many RFMOs and national and international fishery managers have started distributing shark and fin guides to fishermen.

To address the concern regarding illegal fishing, see the discussion in the 12-month ''not warranted'' determination (78 FR 20718, discussion of Inadequacy of Existing Regulatory Mechanisms, NW Atlantic & GOM DPS). As that action notes, the extent of illegal fishing on the NW Atlantic & GOM DPS remains unknown. There is a high degree of uncertainty surrounding the available estimates of illegal catch of the NW Atlantic & GOM DPS, and we have not received any new data since publication of the 12-month ''not warranted'' determination. However, as mentioned in that action, updated data since 2005 show a decrease in the number of detected incursions by Mexican fishers into U.S. waters (Brewster-Geisz *et al.,* 2010), indicating a possible decline in illegal fishing on the NW Atlantic & GOM DPS.

Bycatch from vessels targeting tuna and swordfish was also suggested as a threat to the NW Atlantic & GOM DPS during the public comment period. In 2010, the International Commission for the Conservation of Atlantic Tunas (ICCAT) adopted Recommendation 10–08 prohibiting the retention of hammerheads caught in association with ICCAT-managed fisheries. In 2011, the NMFS HMS Management Division implemented this recommendation, prohibiting the retention, transshipping, landing, storing, or selling of hammerhead sharks in the family *Sphyrnidae* (except for *Sphyrna tiburo*) caught in association with ICCAT fisheries (76 FR 53652; August 29, 2011). This rule affects the commercial HMS pelagic longline (PLL) fishery and recreational fisheries for tunas, swordfish, and billfish in the Atlantic Ocean, including the Caribbean Sea and Gulf of Mexico (76 FR 53652; August 29, 2011). In addition, based on new data that we received and reviewed since publication of the 12-month ''not warranted'' determination, it appears that scalloped hammerhead sharks have a low risk of vulnerability to overexploitation by these PLL fisheries (Cortés *et al.,* 2012).

Using an Ecological Risk Assessment, Cortés et al. (2012) assessed 20 shark stocks caught in association with ICCAT fisheries. Ecological Risk Assessments are popular modeling tools that take into account a stock's biological productivity (evaluated based on life history characteristics) and susceptibility to a fishery (evaluated based on availability of the species within the fishery's area or operation, encounterability, post capture mortality and selectivity of the gear) in order to determine its overall vulnerability to overexploitation (Cortés *et al.,* 2012; Kiska, 2012). For the assessment, scalloped hammerhead sharks were separated into two Atlantic stocks, a northern *S. lewini* stock and a southern *S. lewini* stock. Out of the 20 shark stocks, the northern *S. lewini* stock

ranked 15th in terms of its susceptibility to PLL fisheries in the Atlantic Ocean, and the southern stock ranked 19th (indicating low susceptibility, which the authors attribute to reduced interactions with PLL gear) (Cortés *et al.,* 2012). In terms of productivity, the southern stock ranked 7th in highest productivity values (r = 0.121) and the northern stock ranked 9th (r = 0.096). The authors then calculated overall vulnerability scores using three methods: the Euclidean distance, a multiplicative index, and the arithmetic mean of the productivity and susceptibility ranks. Using the Euclidean distance method, the northern Atlantic *S. lewini* stock ranked 16th in terms of its overall vulnerability to the PLL fisheries in the Atlantic Ocean, and the southern Atlantic *S. lewini* stock ranked 19th (note: higher numerical rankings indicate lower vulnerability). For the multiplicative method, their vulnerability rankings were a little lower (with a rank of 12 for northern stock and 15 for the southern stock). Using the arithmetic mean to calculate vulnerability scores resulted in the same scores as the Euclidean distance method. Overall, the authors concluded that the northern and southern Atlantic scalloped hammerhead sharks, along with the smooth hammerhead (*Sphyrna zygaena*) and pelagic sting ray (*Pteroplatytrygon violacea*), have the lowest vulnerabilities to ICCAT fisheries. In other words, out of the 20 assessed shark stocks, these species are the least vulnerable to overfishing by ICCAT fisheries.

One commenter noted that human-made threats, such as sport-fishing and commercial catch or bycatch mortality, should have been considered under Factor E (''Other natural or manmade factors affecting its continued existence'') of Section (4)(a)(1) of the ESA. We did consider at-vessel fishing mortality under this factor; however, we assessed the other threats of recreational and commercial fishing morality under Factor B ''Overutilization for commercial, recreational, scientific, or educational purposes.'' Information regarding the threats assessment can be found in the Status Review Report and also discussed in the 12-month ''not warranted'' determination and Proposed Rule (78 FR 20718, discussion of Summary of Factors Affecting the Six DPSs of Scalloped Hammerhead Sharks).

Another commenter noted that significant weight for the delineation of the NW Atlantic & GOM DPS from the Central & SW Atlantic DPS was based on a personal communication (''Kohler personal communication, 2012'') made to the ERA team that is not available for the public to review. In this personal communication, discussed in the 12-month ''not warranted'' determination and Proposed Rule (78 FR 20718, discussion of Identification of Distinct Population Segments, Discreteness, Atlantic Ocean Population Segments), Kohler noted that no tagged scalloped hammerhead sharks from the northwest Atlantic have been tracked moving south to Brazil or even Central America. We referenced this personal communication as evidence of a potential separation of the northwest Atlantic and Gulf of Mexico population from the Central and South American population based on movement behavior. The information within the personal communication is based on results from the NMFS Cooperative Shark Tagging Program, which has tagged scalloped hammerhead sharks off the east coast of the United States and within the Gulf of Mexico. Kohler *et al.* (1998) presents results from this program during the years of 1962 to 1993. Out of the 2,131 tagged scalloped hammerhead sharks, 34 were recaptured with no shark recaptured south of Cuba (Kohler *et al.,* 1998). Although these findings support our delineation; we wanted to check if more recent data were available. We contacted the primary author, Dr. Nancy Kohler (who is still associated with the NMFS Cooperative Shark Tagging Program), to find out if any scalloped hammerhead sharks have been recaptured further south since publication of the Kohler *et al.* (1998) paper. As this data from the program is currently unpublished, we had to rely on personal communication from the primary author. This discussion should have cited to the 1998 publication and we now direct the public to that document, Kohler *et al.* (1998), for more information.

Finally, many commenters provided additional suggestions for how to conserve the species, such as funding more research on at-vessel mortality, improving monitoring, developing stock assessments, closing fisheries, and adopting precautionary management measures. While we appreciate public input on these issues, these suggestions are beyond the scope of our 12-month ''not warranted'' determination and the Proposed Rule.

Global Listing

Comment 5: Several commenters requested a global listing of the species, rather than splitting the species into DPSs, or requested that all DPSs should be listed. For support, the commenters provided general statements regarding threats to the species, such as overfishing and inadequate regulatory measures. The commenters state that the shark is overfished because it is targeted in fisheries, caught as bycatch, its fins are traded in the shark fin trade, there is poor species identification by fishermen, and there are current enforcement issues, particularly on the international scale, which have contributed directly to overfishing.

Response: The threats mentioned above have already been discussed at length in the Status Review Report and 12-month ''not warranted'' determination and Proposed Rule (see 78 FR 20718, discussion of Summary of Factors Affecting the Six DPSs of Scalloped Hammerhead Sharks). In fact, the commenters use the 12-month ''not warranted'' determination and Proposed Rule as a reference of support for many of their statements. We agree that overutilization, inadequate regulatory measures, and other natural or manmade factors are threats to the Central & SW Atlantic DPS, Eastern Pacific DPS, Eastern Atlantic DPS, and Indo-West Pacific DPS, and have discussed their effects on the extinction risk of these four DPSs in the Proposed Rule and Status Review Report.

Comment 6: One commenter stated that the species is under severe stress from climate change, but did not provide a reference or data to support this statement.

Response: Although the Status Review Report did not find evidence of global climate change as a current threat to the scalloped hammerhead shark, we received new information since publication of the Proposed Rule that specifically investigated this threat for scalloped hammerhead sharks on Australia's Great Barrier Reef (GBR) (Chin *et al.,* 2010). Chin *et al.* (2010) conducted an integrated risk assessment for climate change to assess the vulnerability of scalloped hammerhead sharks, as well as a number of other chondrichthyan species, to climate change on the GBR. The assessment examined individual species but also lumped species together in ecological groups (such as freshwater and estuarine, coastal and inshore, reef, shelf, etc.) to determine which groups may be most vulnerable to climate change. The assessment took into account the *in situ* changes and effects that are predicted to occur over the next 100 years in the GBR and assessed each species' exposure, sensitivity, and adaptive capacity to a number of climate change factors including: water and air temperature, ocean acidification, freshwater input, ocean circulation, sea level rise, severe weather, light, and ultraviolet radiation. Of the 133 GBR

shark and ray species, the assessment identified 30 as being moderately or highly vulnerable to climate change. The scalloped hammerhead shark, however, was not one of these species. In fact, the scalloped hammerhead shark was ranked as having a low overall vulnerability to climate change, with low vulnerability to each of the assessed climate change factors. Given the available information, we do not find evidence that global climate change is a current threat to the scalloped hammerhead shark.

Threats to the Four Listed DPSs

Comment 7: The commenters agreed with the proposed listing status of the Eastern Atlantic DPS and Eastern Pacific DPS as endangered, noting the threats of juvenile mortality from artisanal fisheries, overutilization by artisanal fisheries, poorly regulated fisheries, and evidence of significant declines in abundance. The commenters frequently cited to the Proposed Rule as support for their statements.

Response: We agree that the Eastern Atlantic DPS and Eastern Pacific DPS are currently in danger of extinction from threats of overutilization, inadequacy of existing regulatory mechanisms, and other natural and manmade factors, and thus are listing these two DPSs as endangered under the ESA.

Comment 8: Several commenters agreed with our findings for, and proposal to list, the Central & SW Atlantic DPS as threatened; however, they urged NMFS to closely monitor fishing trends and encourage gear research and mitigation.

Response: We agree that the Central & SW Atlantic DPS warrants listing as threatened. We will monitor the status of the Central & SW Atlantic DPS during our periodic reviews of listed species. Under Section 4(c)(2) of the ESA, we are required to conduct a review of the status of listed species at least once every five years to determine whether the species should be removed from the list or requires a change in its status. We have no response to conducting further research on gear effects as that is beyond the scope of the Proposed Rule.

Proposed Boundaries of the Indo-West Pacific DPS and Inclusion of U.S. Flag Pacific Islands

Comment 9: One commenter mentioned that NMFS may need to further consider the differing regional management capabilities and challenges to recovery and suggested further sub-dividing the Indo-West Pacific DPS to assure adequate protection to the most vulnerable areas.

Response: DPS identifications are based on the best available information relevant to the discreteness and significance criteria of the DPS policy. Although policy considerations are important when determining whether a population is discrete from other conspecific populations and significant to the taxon to which it belongs, we also rely on the available science to support these determinations. In terms of the Indo-West Pacific DPS, the best available scientific data, which included both genetic data and tagging studies, indicated a population where males of the species readily mix within the connecting habitats of the Indo-West Pacific range. While we agree that there are differing regional management capabilities and challenges within the Indo-West Pacific, the species is highly migratory within the region (with indications of long-shore dispersal and panmixia; Ovenden *et al.*, 2011) and, as such, we do not see a conservation benefit that will be gained from further dividing the DPS into smaller units.

Comment 10: Several commenters stated that the Indo-West Pacific DPS encompasses an extremely large area, with geographic boundary lines that have been drawn based on relatively little supporting biological information. The genetic study cited as support for the DPS only includes samples from Taiwan, the Philippines, and Hawaii, but none from any locations in between the Western and Central Pacific range. The referenced tagging studies are similarly limited in scope.

Response: As the comment mentions, the tagging information and genetic studies are limited in scope; however, in identifying DPSs, we must work with the best available scientific information relevant to the discreteness and significance criteria of the DPS policy. We are not aware of any study comparing genetics from locations between the Western and Central Pacific regions, nor did the commenter provide such information. In addition, we are not aware of any tagging information for scalloped hammerhead sharks offshore around the Hawaiian Archipelago, surrounding high seas, or other U.S. possessions in the Pacific, nor has this information been provided. As such, we must work with the best available information, and we used tagging studies in combination with DNA studies to come to the determination that scalloped hammerhead sharks do not commonly make oceanic migrations, are a coastal pelagic species with evidence of regional residential populations, and can be delineated into DPSs based on their behavior, geophysical boundaries, and genetic characteristics (see discussion in 12-month ''not warranted'' determination at 78 FR 20718, discussion of Identification of Distinct Population Segments, and the Status Review Report for more information).

We disagree that the geographic boundary lines were drawn with little supporting biological information. In fact, we based the coordinates of the boundary lines on the conclusions from the DPS analysis discussed within the Status Review Report but acknowledge that this may not have been fully explained in the 12-month ''not warranted'' determination and Proposed Rule. The Indo-West Pacific DPS is bounded to the south by 36° S. latitude (lat) and to the north by 40° N. lat. These boundary lines are based on the known geographic range of the species (Compagno, 1984; Baum *et al.*, 2007; Bester, 2011). The Indo-West Pacific DPS is bounded to the west by 20° E. longitude (long). This boundary line provides the separation from the Eastern Atlantic DPS as evidenced by the available genetic information that suggests that members of the Eastern Atlantic DPS rarely conduct long distance southern migrations into the Indo-West Pacific to mix with other *S. lewini* individuals (Daly-Engel *et al.,* 2012). In the east, the southern Indo-West Pacific boundary line extends to 130° W. long, then moves due north to 4° S. lat., then due west to 150° W. long., then due north to 10° N. lat. These boundary lines coincide with the Western and Central Pacific Fisheries Commission (WCPFC) convention area boundaries within the Eastern Pacific.

As differences in *S. lewini* exploitation coinciding with international boundary lines were cited as support for the DPS delineation, we determined that the most effective way to conserve the DPS was to delineate it by relevant Regional Fishery Management Organization (RFMO) boundary lines, the implication being that any conservation measures passed by the RFMO (in this case, the WCPFC) would be applicable to the entire DPS, not just a portion of it. From the 10° N. lat., the boundary for the Indo-West Pacific DPS extends due west to 175° E. long. and then due north to 40° N. lat. These boundary lines were primarily a consequence of the Central Pacific DPS delineation, in order to encompass all open ocean areas (and, hence, extending to the border of the Central Pacific DPS boundary line). More information on the delineation of the Central Pacific DPS boundary lines can be found in our responses to the comments below.

Comment 11: A commenter noted that NMFS has included Johnston Atoll in

the Central Pacific DPS due to its proximity to the Hawaiian archipelago, but has not provided sufficient evidence to show why the remaining areas of the Pacific Remote Island Areas (PRIA) are not sufficiently close to the Hawaiian Archipelago. In other words, it is unclear why other areas of the PRIA are not included in the Central Pacific DPS.

Response: The PRIA includes seven islands, atolls, and reefs located in the Central Pacific that are under the jurisdiction of the United States: Baker, Howland, Wake and Jarvis Islands, Johnston Atoll, Kingman Reef, and Palmyra Atoll (Rose Atoll and Midway Atoll are also sometimes included among the PRIAs). There is deep water separating the Hawaiian Archipelago and Johnson Atoll in the Central Pacific from the other PRIAs, including Kingman Reef (the closest PRIA) and Palmyra Atoll. In addition, the distance between Johnston Atoll and Kingman reef is approximately 1,350 to 1,400 km. As stated in the 12-month ''not warranted'' determination, the bathymetric barrier and the long distance between Johnston Atoll and the adjacent PRIAs are the primary reasons for the delineation between these areas (see 78 FR 20718, discussion of Identification of Distinct Population Segments, Discreteness, Pacific Ocean Population Segments and discussion of Proposed Determinations). Although the 12-month ''not warranted'' determination references the scalloped hammerhead's ability to travel long distances (1,941 km, Bessudo *et al.*, 2011; 1,671 km, Kohler and Turner, 2001; Hearn *et al.*, 2010; see 78 FR 20718, discussion of Life History, Biology, and Status of the Petitioned Species, Movement and Habitat Use), it is important to note that these migrations occurred along continental margins or coastlines (Northwest Atlantic coast: 1,671 km), or between islands with similar oceanographic conditions (1,941 km—however this was not a direct migration. The scalloped hammerhead shark migrated to and around islands, separated by distances of up to 710 km, and the total trip was estimated at 1,941 km). This species has been known to disperse into pelagic waters off seamounts and islands, usually for limited durations (at night; Klimley and Nelson 1984; Hearn *et al.*, 2010; Bessudo *et al.*, 2011) and distances (<10 km; Klimley and Nelson 1984; Hearn *et al.*, 2010). The assumption is that they are foraging in the open waters at night and returning to the seamounts during the day, with evidence of seasonal site residence and fidelity. There is currently no tagging evidence of adult scalloped hammerhead sharks that would suggest they traverse long distances (>1000 km) over open water where no submarine features exist to interrupt the migration. Thus, based on the best available information above and presented in the Status Review Report, we decided on a 10° N. lat. southern boundary line for the Central Pacific DPS, which coincides with the discreteness and significance findings from the DPS analysis.

Comment 12: A few commenters state that the U.S. Flag Pacific Islands (American Samoa, Guam, and Commonwealth of the Northern Mariana Islands (CNMI)) and the PRIA should either be included in the Central Pacific DPS or constitute a separate DPS. They argue that these islands satisfy the discreteness criteria under the DPS policy because they are delimited by international governmental boundaries within which significant differences in control of exploitation and regulatory mechanisms exist compared to the surrounding areas in the Indo-West Pacific DPS.

Response: As previously stated, some of the PRIAs were not included in the Central Pacific DPS due to the significant bathymetric barriers and distance between the islands. The U.S. Flag Pacific Islands are located even farther away from the Central Pacific DPS, and thus the same rationale would apply to these territories. There is currently no tagging evidence that shows or would suggest frequent migrations between the scalloped hammerhead sharks around the U.S. Flag Pacific Islands and the Central Pacific DPS. The best available data indicate these two populations are separate. As such, we identify the scalloped hammerhead sharks around the U.S. Flag Pacific Islands as part of the Indo-West Pacific and not as part of the Central Pacific DPS.

We also do not agree that the scalloped hammerhead sharks found in the U.S. Flag Pacific Islands and other PRIAs should be a separate DPS. The joint DPS policy identifies two elements that must be considered when identifying a DPS: (1) The discreteness of the population segment in relation to the remainder of the species (or subspecies) to which it belongs; and (2) the significance of the population segment to the remainder of the species (or subspecies) to which it belongs. When the discreteness criterion is met for a potential DPS, as the commenter contends, then we must consider the significance criterion next. Significance is evaluated in terms of the importance of the population segment to the overall welfare of the species. Some of the considerations that can be used to determine a discrete population segment's significance to the taxon as a whole include: (1) Persistence of the population segment in an unusual or unique ecological setting; (2) evidence that loss of the population segment would result in a significant gap in the range of the taxon; and (3) evidence that the population segment differs markedly from other populations of the species in its genetic characteristics.

The scalloped hammerhead sharks found around the U.S. Pacific Flag Islands are not in an unusual or unique ecological setting. Scalloped hammerhead sharks are found in coastal warm temperate and tropical seas worldwide, frequently observed in aggregations over seamounts and near islands. Similar ecological conditions as those found around the U.S. Pacific Flag Islands are also observed within the Central Pacific DPS (e.g., Johnston Atoll, Hawaiian archipelago) and other neighboring islands of the Indo-West Pacific DPS (e.g., Palau, Micronesia, Fiji, Philippines, New Caledonia). We do not have any information, nor was any provided, that would suggest the ecological conditions surrounding the U.S. Pacific Flag Islands are unusual or unique compared to the other areas where scalloped hammerhead sharks have been observed.

Currently, we do not have any evidence that would suggest that loss of the scalloped hammerhead sharks around the U.S. Pacific Flag Islands and other PRIAs would result in a significant gap in the range of the taxon. The waters surrounding the U.S. Pacific Flag Islands and PRIAs constitute only a very small portion of the range of the scalloped hammerhead within the Indo-West Pacific. In the event of a loss, these areas would likely be repopulated by scalloped hammerhead sharks from neighboring locations, such as the Marshall Islands, Micronesia, Palau, the Philippines, Indonesia, Papua New Guinea, New Caledonia, and Tokelau. The data support this assumption as this species commonly disperses along continuous coastlines, continental margins, and submarine features, such as chains of seamounts, commonly associated with scalloped hammerhead shark ''hotspots'' (Holland *et al.*, 1993; Kohler and Turner, 2001; Duncan and Holland, 2006; Hearn *et al.*, 2010; Bessudo *et al.*, 2011; Diemer *et al.*, 2011). This is true even for island populations, with tagged *S. lewini* individuals frequently migrating to nearby islands and mainlands with similar oceanographic conditions and no bathymetric barriers (Duncan and

Holland, 2006; Hearn *et al.*, 2010; Bessudo *et al.*, 2011). In other words, loss of scalloped hammerhead sharks from the U.S. Flag Pacific Islands and other PRIAs would not result in a significant gap in the range of the taxon.

Finally, there is no evidence, nor has the commenter provided any new information, that would suggest that the population segment around the U.S. Pacific Flag Islands or PRIAs differs markedly in its genetic characteristics (such as exhibiting unique haplotypes) from the other scalloped hammerhead sharks of the Indo-West DPS. Thus, using the best available scientific data, we do not find that the U.S. Pacific Flag Islands and PRIA population satisfy the significance criterion of the DPS policy. These scalloped hammerhead sharks will remain included in the Indo-West Pacific DPS.

Comment 13: Several commenters argue that the U.S. Flag Pacific Islands have management measures and regulatory mechanisms comparable to Hawaii that provide equivalent protections for scalloped hammerhead sharks. The commenters proceed to discuss the various management and regulatory mechanisms in the U.S. Flag Pacific Islands as support for their statement that these mechanisms protect the scalloped hammerhead shark from becoming threatened or endangered in the foreseeable future. Therefore, similar to the Central Pacific DPS, the commenters propose that these populations do not warrant listing.

Response: We are responsible for determining whether scalloped hammerhead sharks are threatened or endangered under the ESA (16 U.S.C. 1531 *et seq.*). To make this determination, we first consider whether a group of organisms constitutes a ''species'' under Section 3 of the ESA, then whether the status of the species qualifies it for listing as either threatened or endangered. Section 3 of the ESA defines species to include ''any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature.'' The scalloped hammerhead sharks found around the U.S. Pacific Flag islands are considered to be part of the larger Indo-West Pacific DPS. The DPS is the ''species'' that qualifies for listing under the ESA; we cannot make a ''not warranted'' finding on a portion of the DPS.

While we agree that the U.S. Flag Pacific Islands have management measures and regulatory mechanisms comparable to Hawaii, including gear, logbook, observer, and protected species workshop requirements, and longline exclusion zones, which afford some protection to scalloped hammerhead sharks within those waters, we must evaluate the adequacy of these regulations in terms of the protections they afford to the entire Indo-West Pacific DPS. As the Proposed Rule (78 FR 20718; April 5, 2013) notes, threats to the Indo-West Pacific DPS include overutilization by industrial/commercial and artisanal fisheries and inadequacy of existing regulatory mechanisms in many areas of the Indo-West Pacific DPS range (78 FR 20718, discussion of Proposed Determinations). Few countries within the Indian Ocean have regulations aimed at controlling the exploitation of shark species. In addition, while many of the small Pacific Island countries have created shark sanctuaries in their respective waters, including Tokelau, Palau, Marshall Islands, Cook Islands, and French Polynesia, enforcement has proven difficult, leading to reports of vessels illegally fishing thousands of pounds of shark products from these waters (Paul, 2009; AFP, 2012; Turagabeci, 2012). As discussed in the Status Review Report and Proposed Rule, the ERA team considered the current regulatory mechanisms, including those within the U.S. Pacific Flag Islands and elsewhere within the DPS, and evaluated the demographic risks and threats to the Indo-Pacific DPS and concluded that the Indo-West Pacific DPS is not currently in danger of extinction, but is likely to become so in the foreseeable future. We have reviewed the best available information and have determined that the Indo-West Pacific DPS warrants listing as a threatened species.

Comment 14: One commenter stated that NMFS should re-locate the northern boundary of the Indo-West Pacific DPS farther south (e.g., to the equator) so that more U.S. jurisdictional waters and high seas waters fished by U.S. fisheries are included within the Central Pacific DPS.

Response: The southern boundary line of the Central Pacific DPS (which is also the northern boundary line of the Indo-West Pacific mentioned in the comment) was not chosen based on catch rates or fishing effort by U.S. fisheries. The boundary lines of each DPS were chosen based on behavioral and biological data from tagging and genetic studies and consideration of the physical features of the habitats. As previously mentioned, given the long distance between Johnston Atoll and Kingman Reef and Palmyra Atoll, coupled with the presence of deep water barriers between these locations, a boundary line of 10° N was chosen to separate these locations and divide the Indo-West Pacific DPS from the Central Pacific DPS. These boundary lines are meant to reflect the conclusions from the DPS analysis regarding the discreteness and significance of each DPS.

Comment 15: A few commenters stated that NMFS did not provide any information regarding the presence of scalloped hammerhead sharks in nearshore areas of American Samoa and CNMI and only limited information for Guam, and that they are unaware of any evidence to suggest localized population declines of scalloped hammerhead sharks in the U.S. Flag Pacific Islands.

Response: We do not have any quantitative information regarding the abundance of scalloped hammerhead sharks in nearshore areas of American Samoa and CNMI. During the public comment period, the American Samoa Government provided us with information on observed catches of scalloped hammerhead sharks in the American Samoa longline fishery. The American Samoa longline fishery has had an observer program since 2006, with coverage ranging between 6 and 8 percent from 2006–2009, and between 20 and 33 percent since 2010. Only eight scalloped hammerhead sharks have been observed caught during this period in the American Samoa longline fishery.

We do not presume localized population declines of scalloped hammerhead sharks in the U.S. Flag Pacific Islands. In the 12-month ''not warranted'' determination, we state that decreases in CPUE of sharks off the coasts of South Africa and Australia, and in longline catch in Papua New Guinea and Indonesian waters, suggest localized population declines (78 FR 20718, discussion of Evaluation of Demographic Risks, Indo-West Pacific DPS and discussion of Overutilization for Commercial, Recreational, Scientific or Educational Purposes factor, Indo-West Pacific DPS). We considered these population declines, as well as information regarding other threats, such as the inadequacy of existing regulatory measures to protect the entire DPS (not just individuals found off American Samoa) and the species' life history characteristics that present demographic risks to its continued viability, when we concluded that the Indo-West Pacific DPS is approaching a level of abundance and productivity that places its future persistence in question throughout its entire range.

Comment 16: One commenter mentioned that American Samoa already has an existing regulation banning the take of all sharks and

therefore the proposal to list the species under the ESA is redundant.

Response: The scalloped hammerhead sharks found in waters of American Samoa are part of the Indo-West Pacific DPS. Although American Samoa currently bans the taking of all sharks, this is not a consistent regulation throughout the range of the Indo-West Pacific DPS. As mentioned in a previous response (and discussed in the Status Review Report and 12-month ''not warranted'' determination), threats to the Indo-West Pacific DPS include overutilization by industrial/commercial and artisanal fisheries (in countries that, for example, do not ban the taking of sharks) and inadequacy of existing regulatory mechanisms or weak enforcement of current regulations in many areas, resulting in frequent reports of illegal fishing of the species. Based on an evaluation of these threats, the Indo-West Pacific DPS was found to warrant listing as threatened.

Threats to the Species

Comment 17: One commenter noted that large-scale impacts (e.g., global climate change) are the greatest threats to this mainly oceanic shark. The commenter concludes that it is therefore highly unlikely that proposing to list this shark species under the ESA will eliminate this threat.

Response: We disagree that the greatest threat to the species is global climate change. This statement, which is found in the 12-month ''not warranted'' determination and Proposed Rule (see 78 FR 20718, discussion of the Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range), was made with regard to the evaluation of the threat of habitat modification or destruction. We found no evidence that would suggest the scalloped hammerhead was in danger of extinction due to habitat destruction or modification and instead posited that large-scale impacts, such as global climate change, could potentially alter habitat conditions and become a threat to the species. However, based on the Chin et al. (2010) study discussed previously, as well as the information in the Status Review Report, we have not found evidence to indicate that any large-scale impacts affecting habitat conditions are currently significant threats to the species. As discussed in the Status Review Report and 12-month ''not warranted'' determination, the threats of overutilization, inadequacy of existing regulatory mechanisms, and other natural or manmade factors warrant listing of the Eastern Atlantic and Eastern Pacific DPSs as endangered and the Indo-West Pacific and Central & SW Atlantic DPSs as threatened (see 78 FR 20718, discussion of Proposed Determinations).

Regardless of whether a threat can be eliminated, under the ESA, a species must be listed if it is endangered or threatened as a result of any one or a combination of the following five factors: the present or threatened destruction, modification, or curtailment of its habitat or range (which may include effects from global climate change); overutilization for commercial, recreational, scientific, or educational purposes; disease or predation; the inadequacy of existing regulatory mechanisms; or other natural or manmade factors affecting its continued existence (ESA, section 4(a)(1)(A)–(E)). While listing a species does not automatically remove all threats, the ESA does provide tools for greater protection of listed species. When this final rule takes effect, the prohibition on ''take'' in section 9 of the ESA will apply to the Eastern Pacific and Eastern Atlantic DPSs. Also, any action funded, authorized, or undertaken by a Federal agency that may affect any of the listed DPSs will require consultation between that Federal agency and NMFS under section 7 of the ESA. Once listed, section 4 of the ESA also requires that we develop and implement recovery plans that must, in part, identify objective, measurable criteria which, when met, would result in a determination that the species may be removed from the list; this standard inherently requires that recovery plans propose methods to address impacts and threats to the species.

Factual Errors Within Status Review Report and 12-Month ''Not Warranted'' Determination

Comment 18: Several commenters pointed out some factual errors regarding the description of the Hawaii-based longline fishery. For example, the shallow-set fishery is subject to periodic closures if sea turtle ''hard caps'' are reached, but the fishery has only closed twice since 2004 due to sea turtle interactions. The shallow-set fishery also operates in higher latitudes than the deep-set fishery and, as a result, only two scalloped hammerhead sharks have been caught in the shallow-set fishery since 2004. It is therefore incorrect to imply that shallow-set management measures are beneficial to scalloped hammerhead sharks when in reality there are fewer takes due to the nature of the fishery.

Response: We have updated the Status Review Report accordingly and reviewed the incorrect implication within the report (included in the DPS analysis section). We do not find that the removal of the statement regarding the benefits of the shallow-set management measures changes the conclusions of the DPS analysis.

Comment 19: A commenter noted that the observer program for the Hawaii-based longline fishery was initiated in 1994, not 1995. Observer coverage rate from 1994 to 2000 ranged between 3 and 10 percent and increased to a minimum of 20 percent in 2001. The deep-set fishery is currently observed at a minimum of 20 percent.

Response: We have updated the Status Review Report accordingly.

Comment 20: A commenter stated that the description of the longline prohibited area around the Main Hawaiian Islands is not accurate. A recently implemented False Killer Whale Take Reduction Plan (77 FR 71260; November 29, 2012) under the Marine Mammal Protection Act eliminated the seasonal contraction of the exclusion zone, establishing a permanent longline prohibited area ranging from 50–75 nautical miles (93–139 km) around the Main Hawaiian Islands. As a result, there is now a year-round longline fishery closure around the Main Hawaiian Islands.

Response: We accept this correction and have concluded that this new information regarding new fishery management measures that will protect scalloped hammerhead sharks from being incidentally caught in longline gear within the closure further supports our ''not warranted'' determination for the Central Pacific DPS.

Comment 21: One commenter noted that NMFS incorrectly attributes threats to the Central Pacific DPS from the purse seine fishery. Purse seine effort in the Western and Central Pacific Ocean occurs south of 10° N. lat., with little to no effort in the Central Pacific DPS range. It is worth nothing that higher velocity wind speeds are encountered in higher latitudes north and south of 10° N. lat. And 10° S. lat., respectively, which makes it difficult to operate large purse seine vessels that may bycatch schools of scalloped hammerhead sharks.

Response: We have updated the Status Review Report accordingly. The impact of this correction on our evaluation of threats to the Central Pacific DPS has not changed our determination that listing the Central Pacific DPS is not warranted at this time.

Comment 22: One commenter mentioned that NMFS incorrectly states that American Samoa has a shark sanctuary. Rather, American Samoa has

an Executive Order prohibiting the possession and take of marine species that includes all shark species.

Response: We have updated the Status Review Report accordingly.

Additional Information for Status Review Report and 12-Month ''Not Warranted'' Determination

Comment 23: One commenter noted that NMFS failed to mention that the U.S. Territories of American Samoa, Guam, and CNMI also have measures to prohibit shark finning or possession of shark fins when it discussed U.S. legislation in the 12-month ''not warranted'' determination and Proposed Rule.

Response: Although we did not specifically discuss the shark finning and possession bans of the U.S. Flag Pacific Islands within the text of the 12-month ''not warranted'' determination and Proposed Rule, this information was included in the Status Review Report. We considered the Status Review Report, upon which the 12-month ''not warranted'' determination and Proposed Rule was based, as providing the best available scientific and commercial information on the scalloped hammerhead shark, and used it to inform our determination. Thus, the information on shark finning and possession bans of the U.S. Flag Pacific Islands included in the Status Review Report was considered in our 12-month ''not warranted'' determination and Proposed Rule.

Comment 24: Several commenters provided detailed descriptions of the American Samoa longline fishery and information regarding Guam and CNMI longline fisheries.

Response: We appreciate the additional information and have updated the Status Review Report accordingly.

Comment 25: One commenter provided further information on the decline of landings from Brazil and the Eastern Atlantic, catch records from India, and information on juveniles and landings from the Eastern Pacific. The commenter supported the proposed endangered and threatened listing statuses for the DPSs.

Response: We reviewed the information provided by the commenter and determined that these data provide further support for our designations. We have updated the Status Review Report to include this new information.

ESA Section 9 Take Prohibitions

Comment 26: One commenter requested that if NMFS issues a Section 4(d) rule for the Indo-West Pacific DPS, Section 9 take prohibitions should not apply to licensed Hawaii-based commercial longline vessels. The commenter stated that the two primary threats that NMFS identified as contributing to the extinction risk of the Indo-West Pacific DPS were (1) lack of regulatory controls over certain fisheries and (2) overutilization caused by bycatch and the targeting of hammerhead sharks for fins or meat. According to the commenter, the Hawaii-based longline fisheries do not contribute to either of these threats. The commenter argues that existing regulatory structures applicable to the Hawaii-based longline fisheries support the conservation of the Indo-West Pacific DPS, and the effects, if any, of the Hawaii-based longline fisheries on scalloped hammerhead sharks are negligible, discountable, and insignificant. Thus, the commenter argues that the Hawaii-based longline fisheries should not be subjected to Section 9 take prohibitions as it is not necessary or advisable for the conservation of the Indo-West Pacific DPS.

Response: Once a species is listed as endangered, the ESA section 9 take prohibitions of the ESA automatically apply and any 'take' of the species is illegal unless that take is authorized under an incidental take statement following ESA section 7 consultation or under an ESA section 10 permit authorizing directed take (e.g., for scientific research or enhancement of the species) or incidental take during an otherwise lawful activity. In the case of a species listed as threatened, section 4(d) of the ESA requires the implementation of measures deemed necessary and advisable for the conservation of species. Therefore, for any species listed as threatened, we can impose any or all of the section 9 prohibitions if such measures are necessary and advisable for the conservation of the species. However, after a review of the threats and needs of the Central & SW Atlantic DPS and the Indo-West Pacific DPS, we have decided not to propose protective regulations for either of these threatened DPSs (see the *Section 9 Take Prohibitions* section below for more information).

Comment 27: A commenter requested that if NMFS pursues a threatened status for the Indo-West Pacific DPS, without modifications to the boundaries of the DPS, then NMFS should recognize the significant shark management and conservation measures in place for the U.S. Flag Pacific Islands. NMFS should exempt any federally authorized or permitted activity in the U.S. Flag Pacific Islands that may occasionally operate within the Indo-West Pacific DPS from ESA Section 4(d) take prohibitions.

Response: As mentioned above and as explained further below, we have determined that additional regulations prohibiting take are not necessary or advisable for either of the threatened DPSs at this time.

Critical Habitat

Comment 28: One commenter stated that NMFS should not designate critical habitat within any of the U.S. Flag Pacific Islands because existing measures negate the need for any special management consideration or protections, and the U.S. Flag Pacific Islands are on the margins of the Indo-West Pacific distribution.

Response: The fact that the location of the U.S. Flag Pacific Islands are on the margins of the Indo-West Pacific DPS distribution does not necessarily have any bearing on the designation of critical habitat. Critical habitat is defined in section 3 of the ESA (16 U.S.C. 1532(3)) as: (1) The specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the ESA, on which are found those physical or biological features (a) essential to the conservation of the species and (b) that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by a species at the time it is listed upon a determination that such areas are essential for the conservation of the species. ''Conservation'' means the use of all methods and procedures needed to bring the species to the point at which listing under the ESA is no longer necessary.

Section 4(a)(3)(a) of the ESA (16 U.S.C. 1533(a)(3)(A)) requires that, to the extent prudent and determinable, critical habitat be designated concurrently with the listing of a species. Designations of critical habitat must be based on the best scientific data available and must take into consideration the economic, national security, and other relevant impacts of specifying any particular area as critical habitat. If we determine that it is prudent and determinable, we will publish a proposed designation of critical habitat for scalloped hammerhead sharks in a separate rule. In making that determination, we would consider input from government agencies, the scientific community, industry and any other interested party on features and areas that may meet the definition of critical habitat for the DPSs to be listed that occur in U.S. waters or its territories; the Central & SW Atlantic,

Indo-West Pacific, and Eastern Pacific DPSs. Input may be sent to the Office of Protected Resources in Silver Spring, Maryland (see **ADDRESSES**). Please note that we are not required to respond to any input provided on this matter.

Summary of Changes From the Proposed Listing Rule

Based on the comments received and our review of the Proposed Rule, we made the changes listed below.

1. We added information on the delineation of the DPS boundary lines to clarify why these specific boundary lines were chosen.

2. We made minor revisions or added information on management measures and regulatory mechanisms found within the U.S. Flag Pacific Islands based on information from the American Samoa Government and the WCPFC.

3. We changed many of the references of ''IUU'' fishing to ''illegal'' fishing based on comments received from our internal review of the proposed listing rule and discussions with the ERA team. The ERA team had defined ''IUU'' fishing as any instance of illegal fishing within either the jurisdiction of a coastal state or upon the high seas that is essentially not being regulated (as it is done without the authorization of the nation or organization governing that fishing area or species) and ultimately goes unreported. However, the definition of ''IUU'' fishing for the purposes of the U.S. High Seas Driftnet Fishing Moratorium Protection Act (16 U.S.C. 1826d–1826g) is provided under regulations at 50 CFR 300.201, which defines ''IUU'' fishing as:

(1) Fishing activities that violate conservation and management measures required under an international fishery management agreement to which the United States is a party, including but not limited to catch limits or quotas, capacity restrictions, and bycatch reduction requirements;

(2) Overfishing of fish stocks shared by the United States, for which there are no applicable international conservation or management measures or in areas with no applicable international fishery management organization or agreement, that has adverse impacts on such stocks; or,

(3) Fishing activity that has a significant adverse impact on seamounts, hydrothermal vents, cold water corals and other vulnerable marine ecosystems located beyond any national jurisdiction, for which there are no applicable conservation or management measures, including those in areas with no applicable international fishery management organization or agreement.

Because the ERA team was not using this regulatory definition of ''IUU'' fishing when referring to ''IUU'' fishing in the Status Review Report, we have changed some of the text that previously referred to ''IUU'' fishing to read as ''illegal'' fishing in order to reduce confusion and more accurately reflect the term as understood and defined by the ERA team.

4. We made minor updates or added information in the listing rule based on recommendations from peer reviewers, commenters, new information we received or reviewed since publication of the Proposed Rule, and our own internal review of the proposed listing rule.

We have also updated our Status Review Report based on new information that we received or reviewed since March 2013, as well as information provided by peer reviewers and commenters mentioned above. From hereafter, mention of the ''Status Review Report'' refers to the updated version (see Miller *et al.* 2014, available at *http://www.nmfs.noaa.gov/pr/species/fish/scallopedhammerheadshark.htm*). Our listing determination and summary of the data on which it is based, with the incorporated changes, are presented in the remainder of this document.

Identification of Distinct Population Segments

As described above, the ESA's definition of ''species'' includes ''any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature.'' The genetic diversity among subpopulations, geographic isolation, and differences in international regulatory mechanisms provide evidence that several populations of scalloped hammerhead sharks meet the DPS Policy criteria. Therefore, prior to evaluating the conservation status for scalloped hammerhead sharks, and in accordance with the joint DPS policy, we considered: (1) The discreteness of any scalloped hammerhead shark population segment in relation to the remainder of the species to which it belongs; and (2) the significance of any scalloped hammerhead shark population segment to the remainder of the species to which it belongs.

Discreteness

The Services' joint DPS policy states that a population of a vertebrate species may be considered discrete if it satisfies either one of the following conditions: (1) It is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors (quantitative measures of genetic or morphological discontinuity may provide evidence of this separation) or (2) it is delimited by international governmental boundaries within which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of Section 4(a)(1)(D) of the ESA. To inform its decisions with respect to possible scalloped hammerhead DPSs, the ERA team mainly relied on genetic data, tagging studies, and evidence of differences in the control of exploitation and management by international governmental bodies.

Although scalloped hammerhead sharks are highly mobile, this species rarely conducts trans-oceanic migrations (Kohler and Turner, 2001; Duncan and Holland, 2006; Duncan *et al.,* 2006; Chapman *et al.,* 2009; Diemer *et al.,* 2011). Female scalloped hammerhead sharks may even display a level of site fidelity for reproduction purposes (Duncan *et al.,* 2006; Chapman *et al.,* 2009) that likely contributes to the apparent genetic discontinuity in the global scalloped hammerhead shark population (Duncan *et al.,* 2006; Chapman *et al.,* 2009; Daly-Engel *et al.,* 2012). Genetics analyses for scalloped hammerhead sharks using mitochondrial DNA (mtDNA), which is maternally inherited, and microsatellite loci data, which reflects the genetics of both parents, have consistently shown that scalloped hammerhead subpopulations are genetically diverse and that individual subpopulations can be differentiated (Duncan *et al.,* 2006; Chapman *et al.,* 2009; Ovenden *et al.,* 2011; Daly-Engel *et al.,* 2012). As discussed in the 12-month ''not warranted'' determination and Proposed Rule (see 78 FR 20718, discussion of Identification of Distinct Population Segments), genetic studies indicate that populations of *S. lewini* in the Atlantic are differentiated from those found in the Pacific or Indian Oceans (Duncan *et al.,* 2006; Chapman *et al.,* 2009; Ovenden *et al.,* 2011; Daly-Engel *et al.,* 2012). There is also evidence of further genetic isolation between the eastern and western Atlantic scalloped hammerhead populations, and finer scale delineation within the western Atlantic population (Duncan *et al.,* 2006; Chapman *et al.,* 2009; Daly-Engel *et al.,* 2012). With regards to the *S. lewini* sharks in the Central Pacific and Eastern Pacific, both microsatellite loci

and mtDNA data indicate significant genetic differentiation between these two populations (Daly-Engel *et al.,* 2012). However, within the Indo-West Pacific region a lack of genetic structure suggests frequent mixing of scalloped hammerhead populations found in these waters (Daly-Engel *et al.,* 2012). A comparison of microsatellite loci samples from the Indian Ocean, specifically samples from the Seychelles and West Australia, as well as from South Africa and West Australia, indicated either no or weak population differentiation (Daly-Engel *et al.,* 2012). Additionally, there was no evidence of genetic structure between the Pacific and Indian Oceans, as samples from Taiwan, Philippines, and East Australia in the western Pacific showed no population differentiation from samples in the Indian Ocean ($F_{ST} = -0.018$, $P = 0.470$) (Daly-Engel *et al.,* 2012).

Although these genetic data may imply that males of the species move widely within the Indo-West Pacific region, potentially across ocean basins, tagging studies suggest otherwise. Along the east coast of South Africa, for example, *S. lewini* moved an average distance of only 147.8 km (data from 641 tagged scalloped hammerhead sharks; Diemer *et al.,* 2011). Tagging studies in other regions also suggest limited distance movements, and only along continental margins, coastlines, and submarine features, such as chains of seamounts, commonly associated with scalloped hammerhead shark ''hotspots'' (Holland *et al.,* 1993; Kohler and Turner, 2001; Duncan and Holland, 2006; Hearn *et al.,* 2010; Bessudo *et al.,* 2011; Diemer *et al.,* 2011). This is true even for island populations, with tagged *S. lewini* individuals frequently migrating to nearby islands and mainlands (Duncan and Holland, 2006; Hearn *et al.,* 2010; Bessudo *et al.,* 2011), but no evidence or data to support oceanic migration behavior. Thus, it seems more likely that the high connectivity of the habitats found along the Indian and western Pacific coasts have provided a means for this shark population to mix and reproduce without having to traverse deep ocean basins. Further explanation of the other discreteness factors can be found in the 12-month ''not warranted'' determination and Proposed Rule (78 FR 20718).

Significance

When the discreteness criterion is met for a potential DPS, as it is for the Northwest Atlantic & Gulf of Mexico, Central & Southwest Atlantic, Eastern Atlantic, Indo-West Pacific, Central Pacific, and Eastern Pacific population segments identified above, the second element that must be considered under the DPS policy is significance of each DPS to the taxon as a whole. Significance is evaluated in terms of the importance of the population segment to the overall welfare of the species. Some of the considerations that can be used to determine a discrete population segment's significance to the taxon as a whole include: (1) Persistence of the population segment in an unusual or unique ecological setting; (2) evidence that loss of the population segment would result in a significant gap in the range of the taxon; and (3) evidence that the population segment differs markedly from other populations of the species in its genetic characteristics.

Based on the results from the genetic and tagging analyses mentioned previously, we believe that there is evidence that loss of any of the population segments would result in a significant gap in the range of the taxon. For example, the Indo-West Pacific region, which is hypothesized as the center of origin for *S. lewini,* with the oldest extant scalloped hammerhead species found in this region (Duncan *et al.,* 2006; Daly-Engel *et al.,* 2012), covers a wide swath of the scalloped hammerhead sharks' range (extending from South Africa to Japan, and south to Australia and New Caledonia and neighboring Island countries). However, as Daly-Engel *et al.* (2012) note, the migration rate of *S. lewini* individuals from West Africa into South Africa is very low (0.06 individuals per generation), suggesting that in the case of an Indo-West Pacific extirpation, re-colonization from the Eastern Atlantic to the Western Indian Ocean is very unlikely. In addition, re-colonization from the Central Pacific DPS would also occur rather slowly (on an evolutionary timescale), as those individuals would have to conduct trans-oceanic migrations, a behavior that has yet to be documented in this species. The Central Pacific region, itself (extending from Kure Atoll to Johnston Atoll, and including the Hawaiian Archipelago), encompasses a vast portion of the scalloped hammerhead sharks' range in the Pacific Ocean and is isolated from the neighboring Indo-West Pacific and eastern Pacific regions by deep expanses of water. Loss of this DPS would result in a decline in the number of suitable and productive nursery habitats and create a significant gap in the range of this taxon across the Pacific Ocean. From an evolutionary standpoint, the Central Pacific population is thought to be the ''stepping stone'' for colonization to the isolated eastern Pacific, as Duncan *et al.* (2006) observed two shared haplotypes between Hawaii and the otherwise isolated Eastern Pacific population. In other words, in the case of an Eastern Pacific population extirpation and loss of the Central Pacific population, it would require two separate and rare colonization events to repopulate the Eastern Pacific population: one for the re-colonization of the central Pacific and another for the re-colonization of the eastern Pacific. Thus, on an evolutionary timescale, loss of the Central Pacific population would result in a significant truncation in the range of the taxon.

Even those discrete population segments that share a connecting coastline, like the Northwest Atlantic & Gulf of Mexico and Central & Southwest Atlantic population segments, will not likely see individuals re-colonizing the range of the other population segment, given that gene flow is low between these areas and tagging studies show limited distance movements by individuals along the western Atlantic coast. In addition, repopulation by individuals from the eastern Pacific to the western Atlantic, or vice versa, is highly unlikely as these animals would have to migrate through suboptimal oceanographic conditions, such as very cold waters, that are detrimental to this species' survival. Therefore, the display of weak philopatry and constrained migratory movements provides evidence that loss of any of the discrete population segments would result in a significant gap in the range of the scalloped hammerhead shark, negatively impacting the species as a whole.

Boundary Lines

In summary, the scalloped hammerhead shark population segments considered by the ERA team meet both the discreteness and significance criteria of the DPS policy. We concur with the ERA team's conclusion that there are six scalloped hammerhead shark DPSs, which comprise the global population, and are hereafter referred to as: (1) NW Atlantic & GOM DPS, (2) Central & SW Atlantic DPS, (3) Eastern Atlantic DPS, (4) Indo-West Pacific DPS, (5) Central Pacific DPS, and (6) Eastern Pacific DPS. The boundaries for each of these DPSs, and brief explanations of specific boundary lines based on the DPS analysis, are as follows (see Figure 1):

(1) NW Atlantic & GOM DPS—Bounded to the north by 40° N. lat., includes all U.S. EEZ waters in the Northwest Atlantic off the U.S. mainland and extends due east along 28° N. lat. off the coast of Florida to 30° W. long. In the Gulf of Mexico, the

boundary line includes all waters of the Gulf of Mexico, with the eastern portion bounded by the U.S. and Mexico EEZ borders.

Explanation: The NW Atlantic & GOM DPS was identified as being discrete from other DPSs as a consequence of genetic, behavioral, and physical factors. Tagging studies, for example, showed that scalloped hammerhead sharks in the northwest Atlantic and Gulf of Mexico frequently mixed but there was no evidence of this mixing occurring farther south with scalloped hammerhead sharks in Central and South America, or with any of the other DPSs. Additionally, differences in the control of exploitation and regulatory mechanisms between the United States and Mexico and the other countries in the Atlantic were also identified as a factor that could influence the conservation status of Atlantic populations and provided support for the separation of the NW Atlantic & GOM DPS from the Central & SW Atlantic DPS. For example, the United States has implemented its own strict regulations aimed at controlling the exploitation of scalloped hammerhead sharks in the northwest Atlantic and Gulf of Mexico in an effort to rebuild the population (78 FR 40317; July 3, 2013). Mexico has also prohibited shark finning in its EEZ and recently banned shark fishing from May 1 to June 30 in the Gulf of Mexico. Based on the above information and that which was discussed in further detail in the DPS analysis, the boundary lines for the NW Atlantic & GOM DPS specifically around the Gulf of Mexico and Caribbean Sea were chosen to coincide with the U.S. and Mexico EEZ borders. The northern boundary line was based on the known geographic range of the species (Compagno, 1984; Baum *et al.,* 2007; Bester, 2011), and the eastern boundary line was chosen as a mid-point of the Atlantic Ocean to separate the Eastern from the Western Atlantic Ocean. Although scalloped hammerhead sharks are coastal species and would not likely be encountered in this open ocean area (near the Eastern/Western Atlantic boundary line), we wanted to ensure that all waters within the scalloped hammerhead range were included within the range of a DPS.

(2) Central & SW Atlantic DPS—Bounded to the north by 28° N. lat., to the east by 30° W. long., and to the south by 36° S. lat. All waters of the Caribbean Sea are within this DPS boundary, including the Bahamas' EEZ off the coast of Florida, the U.S. EEZ off Puerto Rico and the U.S. Virgin Islands, and Cuba's EEZ.

Explanation: Although the U.S. regulations extend to the U.S. EEZ in the Caribbean (i.e., surrounding U.S. territories) and to U.S. fishermen fishing on the high seas in the Caribbean Sea, the vast majority of the Caribbean Sea nations, as well as nations farther south, lack regulatory measures controlling the exploitation of scalloped hammerhead sharks. Additionally, the Central & SW Atlantic DPS was identified as being discrete from other DPSs as a consequence of genetic, behavioral, and physical factors (78 FR 20718). As such, the boundary lines were drawn to incorporate all waters of the Caribbean Sea, including the U.S. EEZ surrounding the U.S. territories in the Caribbean, and the South Atlantic. The southern boundary line was based on the known geographic range of the species (Compagno, 1984; Baum *et al.,* 2007; Bester, 2011), and the eastern boundary line was chosen as a mid-point of the Atlantic Ocean to separate the Eastern from the Western Atlantic Ocean.

(3) Eastern Atlantic DPS—Bounded to the west by 30° W. long., to the north by 40° N. lat., to the south by 36° S. lat., and to the east by 20° E. long., but includes all waters of the Mediterranean Sea.

Explanation: The Eastern Atlantic population of scalloped hammerhead sharks was identified as being discrete from other DPSs as a consequence of genetic, behavioral, and physical factors (78 FR 20718). In addition, scalloped hammerhead sharks have recently been observed around southern Italy (Sperone *et al.,* 2012) within the Mediterranean Sea. Therefore, based on geography, genetics, and behavioral information, the Eastern Atlantic DPS boundary includes those scalloped hammerhead sharks found within the Eastern Atlantic and the Mediterranean Sea. The northern and southern boundary lines were based on the known geographic range of the species (Compagno, 1984; Baum *et al.,* 2007; Bester, 2011) and the western boundary line was chosen as a mid-point of the Atlantic Ocean to separate the Eastern from the Western Atlantic Ocean. The eastern boundary line shows the division between the Eastern Atlantic DPS and those scalloped hammerhead sharks in the Indian Ocean, as supported by available genetic information (Daly-Engel *et al.,* 2012).

(4) Indo-West Pacific DPS—Bounded to the south by 36° S. lat., to the west by 20° E. long., and to the north by 40° N. lat. In the east, the boundary line extends from 175° E. long. due south to 10° N. lat., then due east along 10° N. lat. to 150° W. long., then due south to 4° S. lat., then due east along 4° S. lat. to 130° W. long, and then extends due south along 130° W. long.

Explanation: The Indo-West Pacific population of scalloped hammerhead sharks was identified as being discrete from other DPSs as a consequence of genetic, behavioral, and physical factors, as well as differences in the control of exploitation of the species across international boundaries (78 FR 20718). The southern and northern boundary lines are based on the known geographic range of the species (Compagno, 1984; Baum *et al.,* 2007; Bester, 2011), and the western boundary provides the separation from the Eastern Atlantic DPS as supported by available genetic information (Daly-Engel *et al.,* 2012). In the east, the boundaries that form the lines south of 10° N lat. coincide with the WCPFC convention area boundaries within the Eastern Pacific. As differences in *S. lewini* exploitation coinciding with international boundary lines were cited as support for the DPS delineation (78 FR 20718), we determined that the most effective way to conserve the DPS was to delineate it by relevant RFMO boundary lines. The remaining boundary lines are drawn based on the boundaries of the Central Pacific DPS delineation in order to encompass all open ocean areas (and, hence, extending to the border of the Central Pacific DPS boundary line).

(5) Central Pacific DPS—Bounded to the north by 40° N lat., to the east by 140° W. long., to the south by 10° N. lat., and to the west by 175° E. long.

Explanation: The Central Pacific population of scalloped hammerhead sharks was identified as being discrete from other DPSs as a consequence of physical factors (bathymetric barriers), behavioral factors (unlikely to make long-distance oceanic migrations but rather disperses along continuous coastlines, continental margins, and submarine features), and genetic differences (which support separating this population from the neighboring Eastern Pacific and Atlantic DPSs). In addition, the Central Pacific was identified as having many management controls in place that protect important scalloped hammerhead habitats and nursery grounds, as well as adequately enforced fishing regulations that control the exploitation of the species and provide conservation benefits to the species which are lacking in neighboring DPSs. For example, the fisheries of the Hawaiian Islands are managed by both Federal law, such as the Magnuson-Stevens Fishery Conservation and Management Act (MSA), and State of Hawaii marine conservation law. Currently, there are

no directed shark fisheries in Hawaii; however, scalloped hammerhead sharks are sometimes caught as bycatch on Hawaiian longline gear. The Hawaii pelagic longline (PLL) fishery, which operates mainly in the Northern Central Pacific Ocean, is managed through a Fishery Ecosystem Plan (FEP) developed by the Western Pacific Regional Fishery Management Council (WPFMC) and approved by NMFS under the authority of the MSA. In an effort to reduce bycatch in this fishery, a number of gear regulations and fishery management measures have been implemented. A recently implemented False Killer Whale Take Reduction Plan (77 FR 71260; November 29, 2012) under the Marine Mammal Protection Act has also established a permanent longline prohibited area ranging from 50–75 nautical miles (93–139 km) around the Main Hawaiian Islands. In addition, mandatory fishery observers have been monitoring both sectors (shallow and deep) of the limited-entry Hawaii-based PLL fishery since 1994, with observer coverage increasing in recent years to provide a more comprehensive bycatch dataset. Shark finning has also been banned since 2000 for the Hawaii-based longline fishery. Although these significant and effectively enforced fishery management measures in the Central Pacific (and the lack thereof in neighboring DPSs) were identified as support for the discreteness of this DPS, we relied mainly on the biological and physical factors that separated this DPS from other DPSs when delineating the boundary lines of the DPS.

The northern boundary line of Central Pacific DPS is based on the known geographic range of the species (Compagno, 1984; Baum *et al.,* 2007; Bester, 2011). The southern boundary line was chosen based on bathymetric barriers and distance to the neighboring PRIAs. Between Johnston Atoll and the nearest PRIA (Kingman reef), the distance is approximately 1,350 to 1,400 km. Although scalloped hammerhead sharks have the ability to travel long distances (1,941 km, Bessudo *et al.,* 2011; 1,671 km, Kohler and Turner, 2001; Hearn *et al.,* 2010), it is important to note that these migrations occur along continental margins or coastlines or between islands with similar oceanographic conditions. This species has been known to disperse into pelagic waters off seamounts and islands, usually for limited durations (at night; Klimley and Nelson 1984; Hearn *et al.,* 2010; Bessudo *et al.,* 2011) and distances (<10 km; Klimley and Nelson 1984; Hearn *et al.,* 2010). The assumption is that they are foraging in the open waters at night and returning to the seamounts during the day, with evidence of seasonal site residence and fidelity. A study conducted in a nursery ground in Hawaii revealed that sharks travelled as far as 5.1 km in the same day, but the mean distance between capture points was only 1.6 km (Duncan and Holland, 2006). Another tagging study in Hawaii indicates that adult males remain ''coastal'' within the archipelago (Holland personal communication, 2012). There is currently no tagging evidence of adult scalloped hammerhead sharks that would suggest they traverse long distances (>1000 km) over deep open water. As such, the southern boundary line at 10° N. lat. represents the separation of the Central Pacific DPS from the Indo-West Pacific DPS as a result of bathymetric and distance barriers. The western boundary line was delineated based on the deep water barrier adjacent to the Papahānaumokuākea Marine National Monument to the northwest of the range of the Central Pacific DPS in order to separate these islands from the neighboring Indo-West Pacific islands and their respective EEZs. The eastern boundary line captures the eastern extent of the U.S. EEZ of the Hawaiian Archipelago and falls within the longitudinal area regarded as the Eastern Pacific Barrier (EPB), a deep water barrier to routine passage by this species and many insular species, based on their zoogeographic patterns (Baums *et al.,* 2012). As the scalloped hammerhead is unlikely to cross this deep EPB, as supported by the genetic and behavioral data (78 FR 20718), it was determined that the boundary line between the Eastern Pacific DPS and Central Pacific DPS should be approximately the midpoint of this geophysical barrier.

(6) Eastern Pacific DPS—bounded to the north by 40° N lat. and to the south by 36° S lat. The western boundary line extends from 140° W. long. due south to 10° N., then due west along 10° N. lat. to 150° W. long., then due south to 4° S. lat., then due east along 4° S. lat. to 130° W. long, and then extends due south along 130° W. long.

Explanation: The Eastern Pacific population of scalloped hammerhead sharks was identified as being discrete from other DPSs as a consequence of genetic, behavioral, and physical factors as well as differences in the control of exploitation of the species across international boundary lines (78 FR 20718). The northern and southern boundary lines are based on the known geographic range of the species (Compagno, 1984; Baum *et al.,* 2007; Bester, 2011). The northern section of the western boundary provides the geophysical separation from the Central Pacific DPS and the rest of the boundary line coincides with the WCPFC convention area boundaries within the Eastern Pacific. As differences in *S. lewini* exploitation coinciding with international boundary lines were cited as support for the DPS delineation (78 FR 20718), we determined that the most effective way to conserve the DPS was to delineate it by relevant RFMO boundary lines.

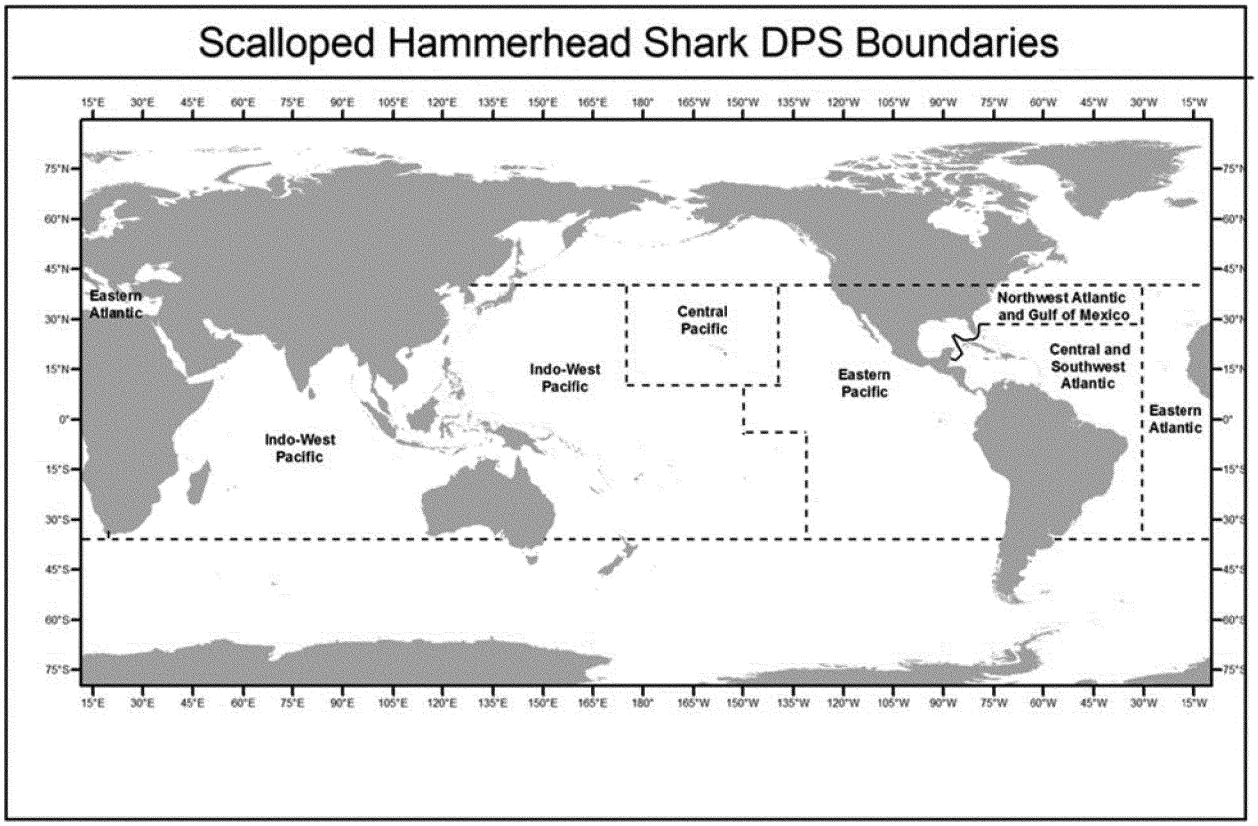

Figure 1. Map of the six scalloped hammerhead shark DPS boundaries

Summary of Factors Affecting the Four DPSs of Scalloped Hammerhead Sharks

The ESA defines an endangered species as one that is ''in danger of extinction throughout all or a significant portion of its range,'' and a threatened species as one that is ''likely to become an endangered species in the foreseeable future throughout all or a significant portion of its range'' (Sections 3 (6) and (20) of the ESA). Section 4(a)(1) of the ESA and NMFS' implementing regulations (50 CFR 424) state that we must determine whether a species is endangered or threatened because of any one or a combination of the following 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; inadequacy of existing regulatory mechanisms; or other natural or man-made factors affecting its continued existence. We are to make this determination based solely on the best available scientific and commercial information after conducting a review of the status of the species and taking into account any efforts being made by states or foreign governments to protect the species.

The Proposed Rule to list the Central & SW Atlantic DPS, Eastern Atlantic DPS, Indo-West Pacific DPS, and the Eastern Pacific DPS (78 FR 20718) and the Status Review Report (Miller *et al.,* 2014) provide detailed discussion of the status and threats to each DPS. As described in the Proposed Rule, the primary factors responsible for the decline of these four DPSs are overutilization, due to both catch and bycatch of these sharks in fisheries, and inadequate regulatory mechanisms for protecting these sharks, with illegal fishing identified as a significant problem. We conducted a comprehensive assessment of the combined impact of the five ESA section 4(a)(1) factors throughout the range of each DPS to determine extinction risk of each DPS. We focused on evaluating whether the DPSs are presently in danger of extinction, or whether the danger of extinction is likely to develop in the future. In our Proposed Rule and this final rule to list these four DPSs, we determined that the Eastern Atlantic and Eastern Pacific DPSs are currently in danger of extinction and that the Central & SW Atlantic and Indo-West Pacific DPSs are likely to become so in the foreseeable future. The next section briefly summarizes our findings regarding threats to these DPSs of scalloped hammerhead sharks, including any new information that was received during the public comment period. More details can be found in the Status Review Report and the Proposed Rule (78 FR 20718).

The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

We did not find evidence to suggest that habitat destruction, modification, or curtailment was presently contributing significantly to any of the DPS's risks of extinction. Because the scalloped hammerhead range is mainly comprised of open ocean environments occurring over broad geographic ranges, large-scale impacts such as global climate change that affect ocean temperatures, currents, and potentially food chain dynamics, are most likely to pose the greatest threat to this species. However, we did not find evidence of any large-scale impacts affecting habitat

conditions that are currently significant threats to the species. Additionally, the scalloped hammerhead shark is highly mobile within the range of its DPS (Kohler and Turner, 2001; Duncan and Holland, 2006, Maguire *et al.,* 2006; Bessudo *et al.,* 2011; Diemer *et al.,* 2011), and there is no evidence to suggest its access to essential habitat is restricted within the ranges of any of the DPSs. It also does not participate in natal homing, which would essentially restrict the species to a specific nursery ground, but rather has been found utilizing artificially enlarged estuaries as nursery habitats located 100 to 600 km from established nursery grounds (Duncan *et al.,* 2006). Also, based on a comparison of *S. lewini* distribution maps from 1984 (Compagno, 1984) and 2012 (Bester, n.d.), and current reports of scalloped hammerhead shark catches in FAO fishing areas, there is no evidence to suggest a range contraction for any DPS based on habitat degradation. Overall, using the best available information, there is no evidence to suggest there exists a present or threatened destruction, modification, or curtailment of the scalloped hammerhead shark's habitat or range and we conclude that it is unlikely that this factor is contributing on its own or in combination with other factors to the extinction risk of any of the four DPSs.

Overutilization for Commercial, Recreational, Scientific or Educational Purposes

We identified overutilization for commercial and/or recreational purposes as a significant threat contributing to the extinction risk of the four scalloped hammerhead shark DPSs. Scalloped hammerhead sharks are targeted by industrial, commercial, artisanal and recreational fisheries, and caught as bycatch in many other fisheries, including pelagic longline tuna and swordfish, gill net, and purse seine fisheries. Below, we briefly summarize our findings regarding overutilization for each of the four DPSs.

The threat of overutilization by industrial/commercial fisheries was identified as a high risk and overutilization by artisanal fisheries as a moderate risk to the extinction of the Central & SW Atlantic DPS. Brazil, the country that reports one of the highest scalloped hammerhead landings in South America, maintains heavy industrial fishing of this species off its coastal waters. In the late 1990s, Amorim *et al.* (1998) remarked that heavy fishing by longliners led to a decrease in this population. According to the FAO global capture production database, Brazil reported a significant increase in catch of *S. lewini* during this period, from 30 mt in 1999 to 508 mt by 2002, before decreasing to a low of 87 mt in 2009. Similar decreases in landings were also reported by the State of Santa Catarina in Brazil. Based on new information not previously discussed in the Proposed Rule, in 1989, landings of the hammerhead complex (mainly *S. lewini* and *S. zygaena*) totaled 6.7 mt, but then increased to a peak of 570 mt in 1994 as a result of the development of net fishing (CITES, 2013). From 1995 to 2007, landings varied but never recovered to the levels of 1994, and in 2008, landings dropped to 44 mt (CITES, 2013).

Documented heavy inshore fishing has also led to significant declines of adult female *S. lewini* abundance (up to 90 percent) (CITES, 2010) as well as targeted fishing of and reported decreases in juvenile and neonate scalloped hammerhead populations (Vooren *et al.,* 2005; Kotas *et al.,* 2008). Information from surface longline and bottom gillnet fisheries targeting hammerhead sharks off southern Brazil indicates declines of more than 80 percent in CPUE from 2000 to 2008, with the targeted hammerhead fishery abandoned after 2008 due to the rarity of the species (FAO, 2010).

S. lewini is also commonly landed by artisanal fishers in the Central and Southwest Atlantic, with concentrated fishing effort in nearshore and inshore waters, areas likely to be used as nursery grounds. Specific catch and landings data are unavailable from the Caribbean; however, *S. lewini* is often a target of artisanal fisheries off Trinidad and Tobago, eastern Venezuela, and Guyana, and anecdotal reports of declines in abundance, size, and distribution shifts of sharks suggest significant fishing pressure on overall shark populations in this region (Kyne *et al.,* 2012). Additionally, Chapman *et al.* (2009) recently linked *S. lewini* fins from Hong Kong fin traders to the Central American Caribbean region, suggesting the lucrative fin trade may partially be driving the artisanal and commercial fishing of this DPS. Farther south, in Brazil, artisanal fisheries make up about 50 percent of the fishing sector, with many fishers focusing their efforts inshore on schools of hammerheads. Between 1993 and 2001, adult female *S. lewini* abundance in Brazil decreased by 60–90 percent due to this inshore fishing pressure (CITES, 2010). In 2004, Brazil recognized this threat of *S. lewini* overutilization in its waters and subsequently added the species to its list of over-exploited species (Normative Instruction MMA n° 05); however, this listing does not carry with it any prohibitions on fishing for the species. The best available information indicates that overutilization of this DPS has resulted in, and continues to contribute to, declines in abundance of this DPS. As abundance decreases, the DPS becomes more vulnerable to risk of extinction due to environmental variation, anthropogenic perturbations, and depensatory processes. The ERA team concluded, and we agree, that this DPS' current trends and level of abundance due to overutilization of the DPS are contributing significantly to its risk of extinction.

The threat of overutilization by industrial/commercial and artisanal fisheries was identified as a high risk to the extinction of the Indo-West Pacific DPS. High levels of commercial fishing that target sharks or catch them as bycatch occur in this DPS. Unfortunately, few studies on the specific abundance of *S. lewini* have been conducted on this DPS, making it difficult to determine the rate of exploitation of this species. One study, off the coast of Oman, found *S. lewini* to be among the most commonly encountered species in commercial landings from 2002 to 2003 (Henderson *et al.,* 2007). However, in 2003, *S. lewini* experienced a notable decline in relative abundance and, along with other large pelagic sharks, was displaced by smaller elasmobranch species (a trend also reported by informal interviews with fishermen) (Henderson *et al.,* 2007). Off East Lombok, in Indonesia, data provided to the FAO also suggest potential declines in the population as the proportion of scalloped hammerhead sharks in the Tanjung Luar artisanal shark longline fishery catch decreased from 15 percent to 2 percent over the period of 2001 to 2011 (FAO, 2013).

In contrast, and based on new information not previously discussed in the Proposed Rule, records from Cohin Fisheries Harbor in India suggest an increase in the catch of *S. lewini* from 2007 to 2011, with the sharks constituting around 12.2 percent of the total shark landings at Cochin (CITES, 2013). However, during this same period, the minimum size of the sharks decreased from 1.1 m to 0.7 m, possibly indicating evidence of size truncation and overexploitation (CITES, 2013). Similarly, in Chinese Taipei, the median weight of *S. lewini* has significantly decreased over the past 20 years, based on new data from Huang (2013) (Joung *et al.,* 2013) that was received after publication of the Proposed Rule. The

removal of these larger, and hence, likely mature animals decreases the productivity of the population, particularly for slow-growing, late-maturing, and long-lived species such as the scalloped hammerhead shark. Additionally, CPUE data from South Africa and Australia shark control programs indicate significant declines (over 90 percent) of local scalloped hammerhead populations in this DPS, most likely a result from overharvesting, although it should be noted that these shark control programs were also assessed to have at least a medium causative impact on these localized depletions. Specifically, declines of 99 percent, 86 percent, and 64 percent have been estimated for *S. lewini* from catch rates in shark nets deployed off the beaches of South Africa from 1952–1972, 1961–1972, and 1978–2003, respectively (Dudley and Simpfendorfer, 2006; Ferretti *et al.,* 2010). Estimates of the decline in Australian hammerhead abundance range from 58–85 percent (Heupel and McAuley 2007; CITES, 2010). CPUE data from the northern Australian shark fishery indicate declines of 58–76 percent in hammerhead abundance in Australia's northwest marine region from 1996–2005 (Heupel and McAuley, 2007). From 1973 to 2008, the number of hammerheads caught per year in NSW beach nets decreased by more than 90 percent, from over 300 individuals to fewer than 30 (Reid and Krogh, 1992; Williamson, 2011). Similarly, data from the Queensland shark control program indicate declines of around 82 percent in hammerhead shark abundance between 1985 and 2012, with *S. lewini* abundance fluctuating over the years but showing a recent and steady decline since 2004 (QLD DEEDI, 2013). Between 2004 and 2012, the number of *S. lewini* sharks caught in the Queensland shark control program nets decreased by 80 percent (QLD DEEDI, 2013).

In other waters of this DPS, shark populations are presumed to be fully to over-exploited (de Young, 2006), with evidence of significant landings by longline and artisanal fisheries and declines in scalloped hammerhead shark catch. For example, Papua New Guinea, which currently has an active domestic shark longline fishery, reported a 43 percent decrease in its hammerhead catch over the course of 1 year (from 2011 to 2012). For many of the artisanal fisheries in this region, the lucrative shark fin trade is the driving force behind exploitation of scalloped hammerhead sharks. For example, in northern Madagascar, Robinson and Sauer (2011) documented an artisanal fishery that targets sharks primarily for their fins and discards the carcasses. Two shark families comprised the majority of the artisanal landings: Carcharhinidae accounted for 69 percent of the species and Sphyrnidae accounted for 24 percent (Robinson and Sauer, 2011). *S. lewini* was the most common species in the Sphyrnidae landings, with over 96 percent of the catch comprised of immature individuals (Robinson and Sauer, 2011). Similarly, the shark fisheries operating in Antongil Bay in northeastern Madagascar commonly land only fins, rather than whole sharks, with the scalloped hammerhead shark as the most represented species in the shark fishery (Doukakis *et al.,* 2011). Both adults, including pregnant females, and juveniles are harvested in the small and large-mesh artisanal gillnet and traditional beach seine fisheries, suggesting largely unregulated and targeted fishing of scalloped hammerhead sharks in a potential breeding ground (Doukakis *et al.,* 2011). Furthermore, four of the top five exporters of shark fins to Hong Kong (Singapore, Taiwan, Indonesia, and the United Arab Emirates) are located in this DPS' range, and in 2008 accounted for around 34 percent (or 3,384 mt) of the total exports of shark fins (both frozen and dried). The best available information indicates that overutilization of this DPS has resulted in, and continues to contribute to, declines in abundance of this DPS. Decreases in the size of the sharks over time likely indicate an overexploited population and portends declines in the per capita growth rate of the population. Over-harvesting of sharks in breeding grounds is likely to affect recruitment success to this DPS. Overall, the ERA team concluded, and we agree, that overutilization is significantly increasing this DPS' risk of extinction by contributing to the continued decline in current abundance and placing the DPS on a path where it is more vulnerable to risk of extinction due to environmental variation, anthropogenic perturbations, and depensatory processes.

The threat of overutilization by industrial/commercial fisheries was identified as a high risk and overutilization by artisanal fisheries as a moderate risk to the extinction of the Eastern Atlantic DPS. Although species-specific data are unavailable from this region, hammerheads are a large component of the bycatch in the European pelagic freezer-trawler fishery that operates off Mauritania. Between 2001 and 2005, 42 percent of the retained pelagic megafauna bycatch from over 1,400 freezer-trawl sets consisted of hammerhead species (*S. lewini, S. zygaena,* and *S. mokarran*). Of concern, especially as it relates to abundance and recruitment to the population, is the fact that around 75 percent of the hammerhead catch were juveniles of 0.50–1.40 m in length (Zeeberg *et al.,* 2006). In addition to the industrial fisheries, scalloped hammerhead sharks are targeted by many of the artisanal fisheries operating off West Africa. According to Diop and Dossa (2011), shark fishing has occurred in the Sub Regional Fisheries Commission (SRFC) member countries (Cape-Verde, Gambia, Guinea, Guinea-Bissau, Mauritania, Senegal, and Sierra Leone) for around 30 years. However, since 2005, there has been a significant and ongoing decrease in shark landings, with an observed extirpation of some species, and a scarcity of others, such as large hammerhead sharks (Diop and Dossa, 2011), indicating overutilization of the resource. In Mauritania, many of the artisanal fisheries have been documented fishing great quantities of juvenile scalloped hammerhead sharks using driftnets and fixed gillnets (CITES, 2010), with *S. lewini* also caught in large numbers in the sciaenid fishery operating in this region. In 2010, the first year that it provided capture production statistics to FAO, Mauritania reported a total catch of 257 mt of *S. lewini,* the highest amount reported by any one country since 2003. According to data provided to the FAO, *S. lewini* abundance off the coast of Mauritania has declined by 95 percent since 1999, with evidence of a decrease in average size of the shark since 2006 (FAO, 2013). From 2006 to 2009, CPUE of *S. lewini* declined from a peak of 55.0 kg/day at sea to 26.2 kg/day at sea (Dia *et al.,* 2012). Similarly, scientific research survey data, collected from 1982–2010, also show a sharp drop in yields, especially since 2005, and in 2010, virtually no *Sphyrna* sp (*S. lewini* and *S. zygaena*) were caught during the survey (Dia *et al.,* 2012). Given the evidence of significant declines in abundance, to the point where *S. lewini* is rarely observed, it is likely that the current DPS levels of abundance and density place it at a risk of extinction due to depensatory processes (where abundance may be insufficient to support reproductive processes). As such, any additional mortality on this DPS may be devastating, and given the largely unregulated catch of the species off West Africa but steady demand and fishing pressure on marine resources for food and livelihood in this region (Diop

and Dossa, 2011), we conclude that historical and current overutilization of this DPS is contributing significantly to its risk of extinction.

The threat of overutilization by industrial/commercial fisheries and artisanal fisheries was identified as a high risk to the extinction of the Eastern Pacific DPS. Although abundance data are lacking in this area, information from commercial and artisanal fisheries suggests heavy exploitation of this DPS. For example, in Mexico, *S. lewini* was and continues to be a popular fished species in artisanal fisheries. Historically, artisanal fishermen routinely caught them on the southern coast of Sinaloa (Pérez-Jiménez *et al.,* 2005; Bizzarro *et al.,* 2009), and they comprised over 50 percent of the elasmobranch catch and 43 percent of the total recorded catch in the late 1990s (Bizzarro *et al.,* 2009). From 2004 to 2005, *S. lewini* comprised 64 percent of the artisanal shark catch south of Oaxaca, Mexico (CITES, 2012). In the Gulf of Tehuantepec, scalloped hammerhead sharks constitute the second most important shark species targeted by Mexican fishers, comprising around 29 percent of the total shark catch from this region (INP, 2006). In fact, from 1996 to 2003, a total of 10,919 individual scalloped hammerhead sharks were landed from this area and brought to port in the Mexican state of Chiapas (INP, 2006), where *S. lewini* and *C. falciformis* represent 89.3 percent of the shark catch (CITES, 2012). However, it is estimated that the scalloped hammerhead population is currently decreasing by 6 percent per year, and from 1996–2001, CPUE of *S. lewini* in the Gulf of Tehuantepac declined to nearly zero (INP, 2006).

In Costa Rica, shark catches reported by the artisanal and longline fisheries declined by approximately 50 percent after reaching a maximum of 5,000 mt in 2000 (SINAC, 2012). According to the Costa Rican Institute of Fishing and Aquaculture, the estimated total catch of *S. lewini* by the coastal artisanal and longline fleet from 2004–2007 was 823 mt, which represented 3 percent of the national Costa Rican total catch of sharks for these years (SINAC, 2012). In Ecuador, sharks are mainly caught as incidental catch in a variety of fishing gear, including pelagic and bottom longlines, and drift and set gill nets, with scalloped hammerhead sharks used primarily for the fin trade. In 2004, total combined landings from ten of Ecuador's main small-scale fishing ports were approximately 149 mt. In 2005, this number decreased by about 67 percent to 49 mt, but subsequently increased in the following years to reach a peak of 327 mt in 2008. In 2009, landings decreased again by around 71 percent, but tripled the following year to reach approximately 304 mt of hammerhead sharks in 2010 (INP, 2010).

Of major concern is that many of the artisanal fishers from the Eastern Pacific region are targeting schools of juvenile and immature *S. lewini* due to the profitability of the younger shark meat (Arriatti, 2011), and likely negatively affecting recruitment to this DPS. In Colombia, around 73.7 percent of the *S. lewini* individuals caught in artisanal fisheries are juveniles < 200 cm TL (CITES 2013). In Panama, directed artisanal fishing for hammerheads has been documented in coastal nursery areas, with artisanal gillnet fishery catches dominated by neonate and juvenile *S. lewini* (Arriatti, 2011). Likewise, in Costa Rica, many of the identified nursery grounds for scalloped hammerhead sharks are also popular elasmobranch fishing grounds and are heavily fished by gillnets (Zanella *et al.,* 2009). In ''Tres Marias'' Islands and Isabel Island in the Central Mexican Pacific, Perez-Jimenez *et al.* (2005) found artisanal fishery catches dominated by immature individuals. Out of 1,178 females and 1,331 males caught from 1995–1996 and 2000–2001, less than 1 percent were mature (Perez-Jimenez *et al.,* 2005). On the coast of Chiapas in Mexico, neonates (≤ 60cm TL) comprised over 40 percent of the Port of Madero catch from 1996–2003 (INP, 2006). Seasonal surveys conducted in Sinaloa, Mexico from 1998–1999 depict an active artisanal fishery that primarily targets early life stages of *S. lewini,* with only four specimens (out of 1,515) measuring > 200 cm stretched TL (Bizzarro *et al.,* 2009). A comparison of landing sizes from this region between 1998–1999 and 2007–2008 revealed a significant decrease in *S. lewini* size, indicating a possible truncation of the size of the local population (Bizzarro *et al.,* 2009). In Michoacán, hammerheads represent 70 percent of the catch, with fishing effort concentrated in breeding areas and directed towards juveniles and pregnant females (CITES, 2012) and reports of the artisanal fishermen filleting the embryos of *S. lewini* for domestic consumption (Smith *et al.,* 2009).

Given the species' low productivity, slow growth rate, and late maturity, this substantial removal of recruits from the population is causing, and will continue to cause, a decline in the DPS abundance. For example, based on new information not previously discussed in the Proposed Rule, between 1995 and 2004, a shrimp trawling fishery operating in the Colombian Pacific noted a significant decrease in its bycatch of *S. lewini* juveniles, with no reports of the species in 2007 (CITES, 2013). Overall, the data suggest the heavy fishing pressure on scalloped hammerhead sharks by artisanal fisheries, especially in nursery areas where substantial takes of juveniles and neonates, and possibly pregnant females, have been recorded, and subsequent catch and population declines can be characterized as overutilization that is significantly increasing the species' risk of extinction.

Competition, Disease, and Predation

We did not find evidence to suggest that competition, disease, or predation was presently contributing significantly to any of the DPSs' risks of extinction, nor was it likely to put any of the DPSs at risk of extinction in the future. Scalloped hammerhead sharks are apex predators and opportunistic feeders, with a diet composed of a wide variety of items, including teleosts, cephalopods, crustaceans, and rays (Compagno, 1984; Bush, 2003; Júnior *et al.,* 2009; Noriega *et al.,* 2011). Although there may be some prey species that have experienced population declines, no information exists to indicate that depressed populations of these prey species are negatively affecting the scalloped hammerhead shark abundance. In addition, predation is not thought to be a major threat to scalloped hammerhead abundance numbers. In terms of disease, these sharks likely carry a range of parasites, such as external leeches (*Stilarobdella macrotheca*) and copepods (*Alebion carchariae, A. elegans, Nesippus crypturus, Kroyerina scotterum*); however, the sharks have often been observed visiting parasite cleaning stations (Bester, n.d.) and no data exist to suggest these parasites are affecting *S. lewini* abundance.

The Inadequacy of Existing Regulatory Mechanisms

We identified the inadequacy of existing regulatory mechanisms as a significant threat contributing to the extinction risk of the four scalloped hammerhead shark DPSs. Existing regulatory mechanisms may include Federal, state, and international regulations. Below we briefly summarize our findings regarding our evaluation of current and relevant domestic and international management measures that affect these four scalloped hammerhead shark DPSs. More information on these domestic and international management measures can

be found in the Status Review Report and Proposed Rule (78 FR 20718).

For the Central & SW Atlantic DPS, we identified the inadequacy of current regulatory mechanisms as a moderate risk, with illegal fishing significantly contributing to the DPS' risk of extinction. Many foreign commercial and artisanal fisheries operate within the range of this DPS, with little to no regulatory oversight, and thus regulatory mechanisms are likely inadequate to reduce the significant threat of overutilization to the scalloped hammerhead shark population. For example, artisanal gillnet fisheries, known for their substantial bycatch problems, are still active in Central America, with many allowed to operate in inshore nursery areas. Due in large part to the number of sovereign states found in this region, the management of shark species in Central America and the Caribbean remains largely disjointed, with some countries lacking basic fisheries regulations (Kyne *et al.,* 2012). Other countries lack the capabilities to enforce what has already been implemented. For example, in May 2012, the Honduran navy seized hundreds of shark fins from fishers operating illegally within the borders of its shark sanctuary. As Kyne *et al.* (2012) reports, it is basically common practice to move shark fins across borders for sale in countries where enforcement is essentially lacking in this region. In South America, Brazil has banned finning, but continues to find evidence of illegal fishing in its waters. In Belém in May 2012, the Brazilian Institute of Environmental and Renewable Natural Resources (IBAMA) seized around 7.7 mt of illegally obtained dried shark fins intended for export to China (Nickel, 2012). A few months later, IBAMA confiscated more than 5 mt of illegal shark fins in Rio Grande do Norte (Rocha de Medeiros, 2012), suggesting current regulations and enforcement are not adequate to deter or prevent illegal shark finning. In fact, it is estimated that illegal fishing constitutes 32 percent of the Southwest Atlantic region's catch (based on estimates of illegal and unreported catch averaged over the years of 2000 to 2003; Agnew *et al.,* 2009).

In addition, heavy industrial fishing off the coast of Brazil, with the use of drift gillnets and longlines, remains largely unregulated, as does the intensive artisanal fishery, which accounts for about 50 percent of the fishing sector. Brazil currently has regulations limiting the extension of pelagic gillnets and prohibiting trawls in waters less than 3 nautical miles (5.6 km) from the coast; however, as is the case with many regulations affecting this DPS, inadequate enforcement of these laws has led to continued fishing in these inshore nursery areas and resultant observed declines in both adult and juvenile scalloped hammerhead shark abundance (Amorim *et al.,* 1998; Kotas, 2008; CITES, 2010). Given the information above, the ERA team ranked both illegal fishing and the inadequacy of current regulatory mechanisms as moderate risks. We agree that these factors, in combination with others (such as overutilization and low species productivity), likely contribute significantly to the Central & SW Atlantic DPS' risk of extinction.

For the Indo-West Pacific DPS, we identified the inadequacy of current regulatory mechanisms as a moderate risk, with illegal fishing significantly contributing to the DPS' risk of extinction. Multiple RFMOs cover the Indo-West Pacific DPS area with requirements of full utilization of any retained catches of sharks and regulations that onboard fins cannot weigh more than 5 percent of the weight of the sharks. These regulations are aimed at curbing the practice of shark finning, but do not prohibit the fishing of sharks. In addition, these regulations may not even be effective in stopping finning of scalloped hammerhead sharks, as a recent study found the scalloped hammerhead shark to have an average wet-fin-to-round-mass ratio of only 2.13 percent (n=81; Biery and Pauly, 2012). This ratio suggests that fishing vessels operating in these RFMO convention areas would be able to land more scalloped hammerhead shark fins than bodies and still pass inspection. There are no scalloped hammerhead-specific RFMO management measures in place for this region, even though this DPS is heavily fished. Consequently, this species has seen population declines off the coasts of South Africa and Australia, so much so that in 2012, New South Wales, Australia, listed it as an endangered species.

Few countries within this DPS' range have regulations aimed at controlling the exploitation of shark species. Oman, Seychelles, Australia, South Africa, Taiwan, and most recently India all have measures to prevent the waste of shark parts and discourage finning. The Maldives have designated their waters as a shark sanctuary. A number of Pacific Island countries (including U.S. territories) have also created shark sanctuaries, prohibited shark fishing, or have strong management measures to control the exploitation of sharks in their respective waters, including Tokelau, Palau, Marshall Islands, American Samoa, CNMI, Cook Islands, and French Polynesia, although effective enforcement of these regulations is an issue for some of the countries. Additionally, many of the top shark fishing nations and world's exporters of fins are also located within the range of this DPS, and have little to no regulation (or enforcement) of their expansive shark fisheries. For example, off northern Madagascar, where there is an active artisanal fin fishery, sharks are an open access resource, with no restrictions on gear, established quotas, or fishing area closures (Robinson and Sauer, 2011). Indonesia, which is the top shark fishing nation in the world, does not currently have restrictions pertaining to shark fishing or finning. Indonesian small-scale fisheries, which account for around 90 percent of the total fisheries production, are not required to have fishing permits (Varkey *et al.,* 2010), nor are their vessels likely to have insulated fish holds or refrigeration units (Tull, 2009), increasing the incentive for shark finning by this sector (Lack and Sant, 2012). Ultimately, their fishing activities remain largely unreported (Varkey *et al.,* 2010), which suggests that the estimates of Indonesian shark catches are greatly underestimated. In fact, in Raja Ampat, an archipelago in Eastern Indonesia, Varkey *et al.* (2010) estimated that 44 percent of the total shark catch in 2006 was unreported (including small-scale and commercial fisheries' unreported catch and illegal, unregulated, and unreported (IUU) fishing). Although Indonesia adopted an FAO recommended shark conservation plan (National Plan of Action—Shark) in 2010, due to budget constraints, it can only focus its implementation of key conservation actions in one area, East Lombok (Satria *et al.,* 2011). Due to this historical and current absence of shark management measures, especially in the small-scale fisheries sector, many of the larger shark species in Indonesian waters have already been severely overfished (Field *et al.,* 2009).

In addition to the largely unregulated fishing of this DPS, illegal fishing, especially for shark fins, has been identified as a significant contributor to the extinction risk of this DPS. Scalloped hammerhead sharks are valued for their large fins, which fetch a high commercial value in the Asian shark fin trade (Abercrombie *et al.,* 2005) and comprise the second most traded fin category in the Hong Kong market (Clarke *et al.,* 2006). Due to this profit incentive, there have been many reports of finning and seizures of illegally gained shark fins throughout the range of this DPS, including in

waters of Australia (Field *et al.,* 2009), Mozambique, South Africa, Bay of Bengal, Arabian Gulf, Palau, the Federated States of Micronesia (FSM) (Paul, 2009), and Somalia (HSTF, 2006). Agnew *et al.* (2009) provided regional estimates of illegal fishing (using FAO fishing areas as regions) and found the Western Central Pacific (Area 71) and Eastern Indian Ocean (Area 57) regions to have relatively high levels of illegal fishing (compared to the rest of the regions), with illegal and unreported catch constituting 34 and 32 percent of the region's catch, respectively.

Although the number of shark management and conservation measures for this DPS is on the rise, the ERA team noted that the current protections that they afford the Indo-West Pacific DPS may be minimal if illegal fishing is not controlled. We agree and conclude that the inadequacy of current regulatory mechanisms, in the form of ineffective enforcement of current regulations or lack of existing regulatory measures, in combination with illegal fishing, is contributing significantly to the risk of extinction of this DPS.

For the Eastern Atlantic DPS, we identified the inadequacy of current regulatory mechanisms as a moderate risk, with illegal fishing significantly contributing to the DPS' risk of extinction. Although regulations in Europe appear to be moving towards the sustainable use and conservation of shark species, these strict and enforceable regulations do not extend farther south in the Eastern Atlantic, where the majority of scalloped hammerhead sharks are caught. Some western African countries have attempted to impose restrictions on shark fishing; however, these regulations have exceptions, loopholes, or poor enforcement. For example, Mauritania has created a 6,000 km^2 coastal sanctuary for sharks and rays, prohibiting targeted shark fishing in this region; however, sharks, such as the scalloped hammerhead, may be caught as bycatch in nets. Many other countries, such as Namibia, Guinea, Cape-Verde, Sierra Leone, Nigeria, and Gambia, have shark finning bans, but even with this regulation, scalloped hammerhead sharks are caught with little to no restrictions on harvest numbers. According to Diop and Dossa (2011), fishing in the SRFC region now occurs year-round, including during shark breeding season, and, as such, both pregnant and juvenile sharks may be fished, with shark fins from fetuses included on balance sheets at landing areas. Many of these state-level management measures also lack standardization at the regional level (Diop and Dossa, 2011), which weakens some of their effectiveness. For example, Sierra Leone and Guinea both require shark fishing licenses; however, these licenses are much cheaper in Sierra Leone, and as a result, fishers from Guinea fish for sharks in Sierra Leone (Diop and Dossa, 2011). Also, although many of these countries have recently adopted FAO recommended National Plan of Action—Sharks, their shark fishery management plans are still in the early implementation phase, and with few resources for monitoring and managing shark fisheries, the benefits to sharks from these regulatory mechanisms (such as reducing the threat of overutilization) have yet to be realized (Diop and Dossa, 2011). In addition, reports of illegal fishing are prevalent in the waters off West Africa and account for around 37 percent of the region's catch, the highest regional estimate of illegal fishing worldwide (Agnew *et al.,* 2009; EJF, 2012). The available data suggest that illegal fishing is a serious and rampant problem in West African waters, and with lack of enforcement of existing regulations and weak management of the fisheries in this area, as evidenced by the observed substantial and largely unregulated catches of both adult and juvenile hammerheads by artisanal fishers in this region, we agree with the ERA team's findings and conclude that the combination of both the inadequacy of existing regulatory measures and illegal fishing are contributing significantly to the risk of extinction of this DPS.

For the Eastern Pacific DPS, we identified the inadequacy of current regulatory mechanisms as a moderate risk, with illegal fishing significantly contributing to the DPS' risk of extinction. Similar to the RFMO regulations for the Indo-West Pacific DPS, the RFMO that covers the Eastern Pacific DPS area, the Inter-American Tropical Tuna Commission (IATTC), requires the full utilization of any retained catches of sharks, with a regulation that onboard fins cannot weigh more than 5 percent of the weight of the sharks. However, in 2013, we published a report to Congress that identified nations that engaged in IUU fishing, based on violations of international conservation and management measures during 2011 and/or 2012, and identified three Colombian, one Ecuadorian, one Panamanian, and two Venezuelan-flagged vessels that violated IATTC resolutions and illegally finned sharks, discarding the carcasses at sea (NMFS, 2013).

Shark finning and discarding the corresponding carcass at sea is also illegal in Colombia, Costa Rica, and El Salvador. Panama requires industrial fishers to land sharks with fins naturally attached, but artisanal fishers may separate the fins from the carcass, as long as they satisfy the 5 percent weight rule. Although the purpose of these regulations is to help deter finning, they do not protect sharks from overfishing. In addition, many of the other current regulatory mechanisms found in Central American countries in the Eastern Pacific may not adequately protect scalloped hammerhead sharks from overutilization. For example, although Ecuador has banned directed fishing for sharks in its waters, sharks caught in ''continental'' (i.e., not Galapagos) fisheries may be landed if bycaught. Panama still allows directed artisanal gillnet fishing for juvenile and adult sharks, including *S. lewini* (Arriatti, 2011), as does the Mexican State of Sinaloa, where the most popular gears in the elasmobranch fishery are bottom set gillnets and longlines (Bizzarro *et al.,* 2009). Bottom fixed gillnets are also allowed in the artisanal fishery around ''Tres Marias'' Island and Isabel Island in the Central Mexican Pacific, with bycatch dominated by juvenile *S. lewini* (Perez-Jimenez *et al.,* 2005). Although Mexico is working towards promoting a sustainable shark and ray fishery, the current legislation (NOM–029–PESCA–2006) allows artisanal fishers to target hammerheads with longlines within 10 nm from the shore. However, given the artisanal fleets' already substantial fishing effort on sharks (artisanal vessels contribute 40 percent of the marine domestic production and comprise up to 80 percent of the elasmobranch fishing effort; Cartamil *et al.,* 2011), this increase in fishing opportunity may further threaten the Eastern Pacific DPS, especially since 62 percent of the total Mexican domestic shark production comes from the Pacific Ocean (NOM–029–PESCA–2006). In addition, many of the new regulations are not well understood by current Mexican fishers, with very few fishers found to be in compliance with them (Cartamil *et al.,* 2011). Recently, Mexico issued regulations prohibiting shark fishing in its Pacific Ocean waters, from May 1 to July 31 (DOF, 2012).

More restrictive regulations, such as complete moratoriums on shark fishing, can be found within this DPS' range around Honduras and in the Eastern Tropical Pacific Seascape. However, there is evidence of illegal fishing by both local fishers and industrial longliners within these marine protected areas. For example, in Cocos Island National Park, off Costa Rica, a ''no take'' zone was established in 1992,

yet between 2004 and 2009, 1,512 km of illegal longlines, 48,552 hooks, and 459 hooked sharks were documented in the park (Friedlander *et al.,* 2012). Populations of *S. lewini* declined in this protected area by an estimated 71 percent from 1992 to 2004 (Myers *et al.,* nd). Data collected by dive masters since 1992 place the decline in hammerhead abundance at more than 11 fold from peak relative abundance numbers in the park (Friedlander *et al.,* 2012).

From 1998–2004, Jacquet *et al.* (2008) found Ecuadorian shark fin exports exceeded mainland catches by 44 percent (average of 3,850 mt per year), and suggested that this discrepancy may have been a result of illegal fishing on protected Galapagos sharks. New information that we received since publication of the Proposed Rule shows a decline in the relative abundance of *S. lewini* from 2003 to 2011 around the Malpelo Wildlife Sanctuary, off Colombia; however, the decrease was not strongly negative (Soler *et al.,* 2013). From 2004 to 2011, Soler *et al.* (2013) reported estimates of relative abundance ranging from 30 (hammerheads/dive) to 17 (hammerheads/dive) and suggested the decrease in hammerhead abundance was likely due to overfishing and poaching in the surrounding waters. Evidence of such poaching occurred in November 2011, when Colombian environmental authorities reported a large shark massacre in this wildlife sanctuary. The divers counted 10 illegal Costa Rican trawler boats in the wildlife sanctuary and estimated that as many as 2,000 scalloped hammerhead, Galápagos and silky sharks may have been killed for their fins (Brodzinsky, 2011).

Although shark finning is discouraged in the waters of this DPS, the ERA team voiced concerns about the allowed use of fishing gear that is especially effective at catching schools of scalloped hammerhead sharks within inshore and nursery areas in this DPS' range. Thus, the ERA team ranked the threat of inadequate current regulatory mechanisms as a moderate risk. Additionally, without stronger enforcement, especially in the marine protected areas in the Eastern Tropical Pacific, the known ''hot spots'' of scalloped hammerhead aggregations, the inadequacy of existing regulatory mechanisms will continue to enable the substantial illegal fishing, which we concluded is a threat contributing significantly to this DPS' risk of extinction.

Other Natural or Man-Made Factors Affecting Its Continued Existence

We also identified other natural factors, such as the species' high at-vessel fishing mortality and schooling behavior, as contributing to the risk of extinction for each DPS when combined with other threats such as overutilization and illegal fishing. Scalloped hammerhead sharks are obligate ram ventilators (they must keep moving to ensure a constant supply of oxygenated water) and suffer very high at-vessel fishing mortality in bottom longline fisheries (Morgan and Burgess, 2007; Macbeth *et al.,* 2009) and in beach net programs (Reid and Krogh, 1992; Dudley and Simpfendorfer, 2006). Their schooling behavior also increases the shark's likelihood of being caught in large numbers. For example, fishers in Costa Rica were documented using gillnets in shallow waters to target schools of juveniles and neonates in these nursery areas (Zanella *et al.,* 2009). In Brazil, schools of neonates and juveniles are caught in large numbers by coastal gillnets and recreational fishers in inshore waters, and consequently their abundance has significantly decreased over time (CITES, 2010). Off South Africa, Dudley and Simpfendorfer (2006) reported significant catches of newborn *S. lewini* by prawn trawlers, with estimates of 3,288 sharks in 1989 and 1,742 sharks in 1992.

This schooling behavior also makes the species a popular target for illegal fishing activity, with fishers looking to catch large numbers of scalloped hammerhead sharks (both adult and juveniles) quickly and with relatively little effort. In the Malpelo Wildlife Sanctuary, divers had reported sightings of schools of more than 200 hammerhead sharks before the sanctuary became a recent target of illegal fishing (Brodzinsky, 2011). Because this schooling behavior provides greater access to large numbers of scalloped hammerhead sharks, the likelihood of this species being overfished greatly increases. Given the species' low fecundity, slow growth rate, and late maturity, it would likely take decades for a given DPS to recover from large removals of individuals. In the interim, the DPS would be exposed to demographic risks that could lead to population collapse and possible extinction. Thus, we identified the species' high at-vessel mortality and schooling behavior as factors that work in combination with others, such as current abundance and trends, heavy fishing pressure and overutilization, inadequate regulatory mechanisms, and illegal fishing, to significantly increase the four DPSs' risks of extinction.

Efforts Being Made To Protect the Four DPSs

Section 4(b)(1)(A) of the ESA requires the Secretary of Commerce to take into account ''. . . efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species, whether by predator control, protection of habitat and food supply, or other conservation practices, within any area under its jurisdiction or on the high seas.'' The ESA therefore directs us to consider all conservation efforts being made to conserve the species. The joint USFWS and NMFS *Policy on Evaluation of Conservation Efforts When Making Listing Decisions* (''PECE Policy,'' 68 FR 15100; March 28, 2003) further identifies criteria we use to determine whether formalized conservation efforts that have yet to be implemented or to show effectiveness contribute to making listing unnecessary, or to listing a species as threatened rather than endangered. In determining whether a formalized conservation effort contributes to a basis for not listing a species, or for listing a species as threatened rather than endangered, we must evaluate whether the conservation effort improves the status of the species under the ESA. Two factors are key in that evaluation: (1) For those efforts yet to be implemented, the certainty that the conservation effort will be implemented, and (2) for those efforts that have not yet demonstrated effectiveness, the certainty that the conservation effort will be effective. The following is a brief review of the major conservation efforts and an evaluation of whether these efforts are reducing or eliminating threats by having a positive conservation benefit and thus improving the status of the scalloped hammerhead shark DPSs.

We identified the increasing number of shark fin bans as one potential effort to conserve the DPSs. The concern regarding the practice of finning and its effect on global shark populations has been growing both domestically and internationally. The push to stop shark finning and curb the trade of shark fins is evident overseas and most surprisingly in Asian countries, where the demand for shark fin soup is highest. Just recently, China prohibited shark fins at all official reception dinners (Ng, 2013). However, as many of these bans have just recently been implemented, their effect on reducing the threat of *S. lewini* overutilization and illegal fishing is unknown.

We also identified the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) listings as another potential effort to conserve the DPSs. Since publication of the Proposed Rule, member nations of CITES, referred to as ''Parties,'' voted in support of listing three species of hammerhead sharks (scalloped, smooth, and great) in Appendix II—an action that means increased protection, but still allows legal and sustainable trade. In addition, *S. lewini* was submitted for inclusion on CITES Appendix III by Costa Rica. These CITES listings will go into effect on September 14, 2014. At that time, export of their fins will require CITES permits that ensure the products were legally acquired and that the Scientific Authority of the State of export has advised that such export will not be detrimental to the survival of that species. The countries of Guyana and Yemen have entered reservations, which means that they are not bound by CITES requirements when trading in these species with countries not a party to CITES. Japan has also taken a reservation but has stated that it will comply voluntarily with the CITES requirements for export permits. Canada has also entered reservations but this is temporary until they are able to implement domestic regulations.

Although these CITES listings will likely work towards creating sustainable international trade in *S. lewini* products in the future, their effect on reducing current threats to the point where an ESA listing may be unnecessary or downgraded for any of the DPSs is uncertain. As the CITES listings will only apply to international trade, it is unclear if this effort will effectively reduce the threats of overutilization by artisanal fisheries for domestic consumption, or if these CITES listings will help promote stronger domestic regulatory and conservation measures or curb illegal fishing for these four DPSs.

We support all conservation efforts currently in effect and those that are planned for the near future, as mentioned above. However, we cannot say with a high level of certainty that the conservation efforts will be effective as required by the PECE policy (68 FR 15100, 28 March 2003). Therefore, we have determined that these efforts will not likely alter the extinction risk of the four DPSs.

Final Listing Determination

Section 4(b)(1) of the ESA requires that NMFS make listing determinations based solely on the best scientific and commercial data available after conducting a review of the status of the species and taking into account those efforts, if any, being made by any state or foreign nation, or political subdivisions thereof, to protect and conserve the species. We have reviewed the best available scientific and commercial information including the petition, the Status Review Report, peer review comments, public comments, and other available published and unpublished information, and we have consulted with species experts and individuals familiar with scalloped hammerhead sharks.

For the reasons stated above, and as summarized here, we conclude that: (1) Scalloped hammerhead sharks in the Central & SW Atlantic, Eastern Atlantic, Indo-West Pacific, and Eastern Pacific meet the discreteness and significance criteria for DPSs; (2) the Eastern Atlantic and Eastern Pacific scalloped hammerhead shark DPSs are in danger of extinction throughout their ranges; and (3) the Central & SW Atlantic and Indo-West Pacific scalloped hammerhead shark DPSs are likely to become endangered throughout their ranges in the foreseeable future.

The scalloped hammerhead shark population segment occurring in the Central & SW Atlantic is discrete from other population segments and significant to the scalloped hammerhead species based on the following: (1) Genetic differences between this population and those scalloped hammerhead sharks inhabiting waters of the Pacific, Indian, and eastern Atlantic oceans; (2) tagging studies that suggest limited distance migrations along coastlines, continental margins, and submarine features with no observed mixing between the Central & SW Atlantic population and the NW Atlantic & GOM population, supporting the conclusion of isolation from other populations; (3) fishery management measures that are lacking for this DPS compared to NW Atlantic & GOM DPS (with the exception of U.S. EEZ Caribbean), with significant differences in control of *S. lewini* exploitation and regulatory mechanisms across these international boundaries; and (4) evidence that a loss of this segment would result in a significant gap in the range of the taxon (from Caribbean to Uruguay), with oceanographic conditions that would act as barriers to re-colonization, and tagging and genetic studies that suggest the segment would unlikely be rapidly repopulated through immigration.

The scalloped hammerhead shark population segment occurring in the Eastern Atlantic is discrete from other population segments and significant to the scalloped hammerhead species based on the following: (1) Genetic differences between this population and those scalloped hammerhead sharks inhabiting waters of the Pacific, Indian, and western Atlantic oceans; (2) tagging studies that suggest limited distance migrations along coastlines, continental margins, and submarine features, with genetic studies that show migration around the southern tip of Africa is rare (i.e., no mixing with those sharks found in the Indian Ocean), supporting the conclusion of isolation from other populations; and (3) evidence that loss of this segment would result in a significant gap in the range of the taxon (from Mediterranean Sea to Namibia), with oceanographic conditions that would act as barriers to re-colonization, and tagging and genetic studies that suggest the segment would unlikely be rapidly repopulated through immigration.

The scalloped hammerhead shark population segment occurring in the Indo-West Pacific is discrete from other population segments and significant to the scalloped hammerhead species based on the following: (1) Genetic differences between this population and those scalloped hammerhead sharks inhabiting waters of the Eastern Pacific and Atlantic oceans; (2) tagging and genetic studies that show limited distance migrations and support isolation from other populations, but suggest males mix readily along coastlines and continental margins within the range of this DPS due to the high connectivity of habitat; (3) fishery management measures that are lacking for this DPS compared to those for the Central Pacific DPS, with significant differences in control of *S. lewini* exploitation and regulatory mechanisms across international boundaries; and (4) evidence that loss of this segment would result in a significant gap in the range of the taxon (from South Africa to Japan and south to Australia and New Caledonia and neighboring island countries), with oceanographic conditions that would act as barriers to re-colonization, and tagging and genetic studies that suggest the segment would unlikely be rapidly repopulated through immigration.

The scalloped hammerhead shark population segment occurring in the Eastern Pacific is discrete from other population segments and significant to the scalloped hammerhead species based on the following: (1) Genetic differences between this population and those scalloped hammerhead sharks inhabiting waters of the Indo-West Pacific, Central Pacific, and Atlantic oceans; (2) tagging studies that suggest wide movements around islands and

occasional long-distance dispersals between neighboring islands with similar oceanographic conditions, but isolation from other DPSs by bathymetric barriers and oceanographic conditions, supporting the conclusion of isolation from other populations; and (3) evidence that loss of this segment would result in a significant gap in the range of the taxon (from southern CA, USA to Peru), with oceanographic conditions that would act as barriers to re-colonization, and tagging and genetic studies that suggest the segment would unlikely be rapidly repopulated through immigration.

We have independently reviewed and evaluated the best available scientific and commercial information related to the status of each DPS, including the demographic risks and trends and the multiple threats related to the factors set forth in the ESA Section 4(a)(1)(A)–(E). As explained in the Proposed Rule (see 78 FR 20718, discussion of Proposed Determinations), no portion of any DPS' range is considered significant and we therefore have determined that no DPS is threatened or endangered throughout a significant portion of its range. Our determinations set forth above and summarized below are thus based on the status of each DPS across its entire range. Based on our evaluation of the status of each DPS and the threats to its persistence we predicted the likelihood that each DPS is in danger of extinction throughout all of its range now and in the foreseeable future (which was defined as 50 years) (78 FR 20718). We considered each of the statutory factors to determine whether it presented an extinction risk to each DPS on its own. We also considered the combination of those factors to determine whether they collectively contributed to the extinction of each DPS. As required by the ESA, Section 4(b)(1)(a), we also took into account efforts to protect scalloped hammerhead sharks by states, foreign nations and others and evaluated whether those efforts provide a conservation benefit to each DPS and reduced threats to the extent that a DPS did not warrant listing or could be listed as threatened rather than endangered. Our conclusions and final listing determinations are based on a synthesis and integration of the foregoing information, factors and considerations.

Below are the summaries of our final listing determinations:

We have determined that the Central & SW Atlantic DPS of the scalloped hammerhead shark is not presently in danger of extinction, but is likely to become so in the foreseeable future throughout all of its range. Factors supporting a conclusion that this DPS is not presently in danger of extinction include: (1) Low productivity rates but moderate rebound potential to pelagic longline fisheries common within the range of this DPS; (2) ICCAT recommendations slated for implementation (or already implemented) by Contracting Parties that offer protection for this species from ICCAT fishing vessels; (3) regulations that limit the extension of pelagic gillnets and trawls, shark fin bans, and prohibitions on shark fishing or the retention of scalloped hammerhead sharks; and (4) evidence that sharks are still present in significant enough numbers to be caught by commercial and artisanal fisheries. Factors supporting a conclusion that the DPS is likely to become in danger of extinction in the foreseeable future include overutilization, inadequacy of existing regulatory mechanisms and other natural or manmade factors, specifically: (1) Decreasing catch trends suggesting population decline; (2) high susceptibility to overfishing, especially given its schooling behavior, with artisanal fisheries catching large numbers of juveniles in inshore and nursery areas, likely affecting future recruitment to the DPS; (3) high at-vessel mortality rate associated with incidental capture in fisheries (resulting in further reduction of population productivity and abundance); (4) popularity of the species in the shark fin trade; and (5) limited regulatory mechanisms and/or weak enforcement in some areas, leading to illegal fishing of the species and contributing to the further decline of this DPS. Therefore, we are listing the Central & SW Atlantic DPS of the scalloped hammerhead shark as threatened under the ESA.

We have determined that the Indo-West Pacific DPS of scalloped hammerhead sharks is not presently in danger of extinction, but is likely to become so in the foreseeable future throughout all of its range. Factors supporting a conclusion that this DPS is not presently in danger of extinction include: (1) Relatively high reported catches of the species off the coasts of South Africa and Queensland, Australia; (2) still observed throughout the entire range of this DPS with the overall population size uncertain given the expansive range of this DPS; and (3) current regulations that prevent the waste of shark parts and discourage finning in this region, with the number of shark sanctuaries on the rise in the Western Pacific. Factors supporting a conclusion that the DPS is likely to become in danger of extinction in the foreseeable future include overutilization, inadequacy of existing regulatory mechanisms and other natural or manmade factors, specifically: (1) Decreases in CPUE of sharks off the coasts of South Africa and Australia and in longline catch in Papua New Guinea and Indonesian waters, suggesting localized population declines, (2) high susceptibility to overfishing, especially given its schooling behavior, in artisanal fisheries and industrial/commercial fisheries; (3) high at-vessel mortality rate associated with incidental capture in fisheries (resulting in further reduction of population productivity and abundance); (4) popularity of the species in the shark fin trade; and (5) inadequate regulatory mechanisms and/or weak enforcement of current regulations in many areas, resulting in frequent reports of illegal fishing of the species and contributing to the further decline of this DPS. Therefore, we are listing the Indo-West Pacific DPS of the scalloped hammerhead shark as threatened under the ESA.

We have determined that the Eastern Atlantic DPS of the scalloped hammerhead shark is currently in danger of extinction throughout all of its range. Factors supporting this conclusion include overutilization, inadequacy of existing regulatory mechanisms and other natural or manmade factors, specifically: (1) Reduced abundance and declining population trends and catch; (2) low productivity rates; (3) high susceptibility to overfishing, especially given its schooling behavior; (4) significant historical removals of scalloped hammerhead sharks by artisanal and industrial fisheries, with directed shark fisheries still in operation and heavy fishing pressure despite evidence of species' extirpations and declines of large hammerheads; (5) high at-vessel mortality rate associated with incidental capture in fisheries (resulting in further reduction of population productivity and abundance); (6) popularity of the species in the shark fin trade; and (7) inadequate regulatory mechanisms along the coast of West Africa, with severe enforcement issues leading to heavy illegal fishing. Therefore, we are listing the Eastern Atlantic DPS of the scalloped hammerhead shark as endangered under the ESA.

We have determined that the Eastern Pacific DPS of the scalloped hammerhead shark is also currently in danger of extinction throughout all of its range. Factors supporting this conclusion include overutilization, inadequacy of existing regulatory mechanisms and other natural or

manmade factors, specifically: (1) Reduced abundance, declining population trends and catch, and evidence of size truncation; (2) low productivity rates; (3) high susceptibility to overfishing, especially given its schooling behavior, with artisanal fisheries targeting juveniles of the species in inshore and nursery areas; (4) high at-vessel mortality rate associated with incidental capture in fisheries (resulting in further reduction of population productivity and abundance); (5) popularity of the species in the shark fin trade and importance in Mexican artisanal fisheries operating in the Pacific; and (6) limited regulatory mechanisms and weak enforcement in many areas, leading to illegal fishing of the species, especially in protected waters. Therefore, we are listing the Eastern Pacific DPS of the scalloped hammerhead shark as endangered under the ESA.

Effects of Listing

Conservation measures provided for species listed as endangered or threatened under the ESA include recovery plans and actions (16 U.S.C. 1536(f)); concurrent designation of critical habitat if prudent and determinable (16 U.S.C. 1533(a)(3)(A)); Federal agency requirements to consult with NMFS and to ensure its actions do not jeopardize the species or result in adverse modification or destruction of critical habitat should it be designated (16 U.S.C. 1536); and prohibitions on taking (16 U.S.C. 1538). Recognition of the species' plight through listing promotes conservation actions by Federal and state agencies, foreign entities, private groups, and individuals.

Identifying ESA Section 7 Consultation Requirements

Section 7(a)(4) of the ESA requires Federal agencies to confer with us on actions likely to jeopardize the continued existence of species proposed for listing or result in the destruction or adverse modification of proposed critical habitat. Once a species is listed as threatened or endangered, section 7(a)(2) requires Federal agencies to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the continued existence of the species. Once critical habitat is designated, section 7(a)(2) also requires Federal agencies to ensure that they do not fund, authorize, or carry out any actions that are likely to destroy or adversely modify that habitat. Our section 7 regulations require the responsible Federal agency to initiate formal consultation if a Federal action may affect a listed species or its critical habitat (50 CFR 402.14(a)). Examples of Federal actions that may affect the scalloped hammerhead shark DPSs include: fishery harvest and management practices, military activities, alternative energy projects, dredging in known scalloped hammerhead nursery grounds, point and non-point source discharge of persistent contaminants in known nursery grounds, toxic waste and other pollutant disposal in known nursery grounds, and shoreline development in known nursery grounds.

Critical Habitat

Critical habitat is defined in section 3 of the ESA (16 U.S.C. 1532(3)) as: (1) The specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the ESA, on which are found those physical or biological features (a) essential to the conservation of the species, and (b) that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by a species at the time it is listed upon a determination that such areas are essential for the conservation of the species.

Section 4(a)(3) of the ESA requires that, to the extent practicable and determinable, critical habitat be designated concurrently with the listing of a species. Designation of critical habitat must be based on the best scientific data available and must take into consideration the economic, national security, and other relevant impacts of specifying any particular area as critical habitat.

In determining what areas qualify as critical habitat, 50 CFR 424.12(b) requires that we consider those physical or biological features that are essential to the conservation of a given species including ''space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, and rearing of offspring; and habitats that are protected from disturbance or are representative of the historical geographical and ecological distribution of a species.'' The regulations further direct NMFS to ''focus on the principal biological or physical constituent elements . . . that are essential to the conservation of the species,'' and specify that the ''Known primary constituent elements shall be listed with the critical habitat description.'' The regulations identify physical and biological features as including: ''roost sites, nesting grounds, spawning sites, feeding sites, seasonal wetland or dry land, water quality or quantity, host species or plant pollinator, geological formation, vegetation type, tide, and specific soil types.''

In our proposal to list the scalloped hammerhead shark DPSs (78 FR 20718), we requested information on the identification of specific areas that meet the definition of critical habitat defined above for the Central & SW Atlantic DPS, Indo-West Pacific DPS, and Eastern Pacific DPS. These DPSs are the only DPSs that occur in U.S. waters or its territories. We also solicited biological and economic information relevant to making a critical habitat designation for each DPS. We have reviewed the comments provided and the best available scientific information. We conclude that critical habitat is not determinable at this time for the following reasons: (1) Sufficient information is not currently available to assess impacts of designation; and (2) sufficient information is not currently available regarding the physical and biological features essential to conservation.

ESA Section 9 Take Prohibitions

Because we are listing the Eastern Pacific DPS and Eastern Atlantic DPS of scalloped hammerhead sharks as endangered, all of the take prohibitions of section 9(a)(1) of the ESA (16 U.S.C. 1538(a)(1)) will apply. These include prohibitions against importing, exporting, engaging in foreign or interstate commerce, or ''taking'' of the species. ''Take'' is defined under the ESA as ''to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.'' These prohibitions apply to all persons, organizations and entities subject to the jurisdiction of the United States, including in the United States and its territorial seas, or on the high seas.

In the case of threatened species, ESA section 4(d) requires the Secretary to issue regulations deemed necessary and appropriate for the conservation of the species. We have evaluated the needs of and threats to the Central & SW Atlantic DPS and Indo-West Pacific DPS and have determined that protective regulations pursuant to section 4(d) are not currently necessary and appropriate for the conservation of either DPS. The main threats identified for these two DPSs are overutilization (high risk) and inadequate existing regulatory measures (especially illegal fishing) (moderate risk). The threat of overutilization is primarily a result of heavy fishing pressure by foreign industrial,

commercial and artisanal fisheries. Most of the commercial fishermen under U.S. jurisdiction who could catch the Central & SW Atlantic DPS are already prohibited from landing this DPS in the Atlantic Ocean, including the Caribbean Sea. Starting in 2011, Atlantic Highly Migratory Species (HMS) commercially-permitted vessels that have PLL gear on board and dealers buying from these vessels have been prohibited from retaining onboard, transshipping, landing, storing, selling, or offering for sale any part or whole carcass of hammerhead sharks of the family *Sphyrnidae* (except for the *Sphyrna tiburo*) (76 FR 53652; August 29, 2011). HMS fishermen using other types of gear who fish for, retain, possess, sell, or intend to sell, scalloped hammerhead sharks need a Federal Atlantic Directed or Incidental shark limited access permit. These permits are administered under a limited access program and we are no longer issuing new shark permits. Additionally, HMS fishermen who have an HMS Commercial Caribbean Small Boat permit (which allows fishing for and sales of HMS species within the local U.S. Caribbean market) are currently prohibited from retaining Atlantic sharks and are restricted to fishing with only rod and reel, handline, and bandit gear under the permit (77 FR 59842; October 1, 2012).

Recreational fishermen under U.S. jurisdiction are also prohibited from retaining hammerhead sharks in the Atlantic, including the Caribbean Sea, when tuna, swordfish or billfish are also retained (76 FR 53652; August 29, 2011). When tuna, swordfish or billfish are not onboard, then recreational fishermen are only allowed to land one shark per trip (and if it is a scalloped hammerhead shark, then it must be a minimum size of 78 inches (6.5 feet; 198 cm) FL to ensure that primarily mature individuals are retained).

In the western Pacific, scalloped hammerhead sharks are rarely caught or seen around the U.S. Pacific Island Territories. Both CNMI and Guam have banned the possession, sale, offer for sale, trade, and distribution of shark fins. Guam also explicitly prohibits the take, purchase, barter, transport, export, and import of shark fins. American Samoa prohibits the possession, delivery, or transportation of any shark species or shark body party. American Samoa also prohibits shark fishing within three nautical miles of its shore. A lthough there are no targeted shark fisheries in Guam, CNMI, or American Samoa, American Samoa does have a limited entry longline fishery that operates within the U.S. EEZ. However, this longline fishery is strictly managed and regulated (see Miller *et al.,* 2014), with only eight scalloped hammerhead sharks observed caught in this fishery since 2006. There is currently no longline fishery operating in the CNMI, and Guam has had a 50–100 nm longline exclusion zone in place since 1992. Guam also prohibits drift gillnets in its fisheries. In terms of the Hawaii longline fisheries, which operate in some areas of the Indo-West Pacific DPS range, there is very low interaction with scalloped hammerhead sharks. From 1994 to 2004, there were only 26 observed interactions in the deep-set longline fishery (HLA, 2013). From 2004 to the present, this number drops to three (HLA, 2013). Catch of scalloped hammerhead sharks by U.S. vessels in the WCPFC convention area is also very minimal (SPC, 2010; Miller *et al.* 2014). Overall, the significant and adequate management measures that are in place for fishermen under U.S. jurisdiction (including gear restrictions, permit and logbook requirements, quota monitoring, bycatch measures, vessel monitoring systems, and protected species workshop requirements), directly and indirectly contribute to the very rare interactions between U.S. fishing activities and the threatened DPSs. As such, we do not see these activities as contributing significantly to the identified threats of overutilization and inadequate regulatory measures. In addition, we do not find that prohibiting these activities would have a significant effect on the extinction risks of the threatened DPSs (considering the U.S. interaction with the DPSs is negligible and the DPS' risks of extinction are primarily a result of threats from foreign fishing activities).

As mentioned previously, scalloped hammerhead sharks were included on Appendix II of CITES at the 16 Conference of the CITES Parties in March 2013, with the listing going into effect on September 14, 2014. At that time, export of their fins will require CITES permits that ensure the products were legally acquired and that the Scientific Authority of the State of export has advised that such export will not be detrimental to the survival of that species (after taking into account factors such as its population status and trends, distribution, harvest, and other biological and ecological elements). In other words, trade of these DPSs will have to be monitored to ensure that the species is maintained throughout its range at a level consistent with its role in the ecosystem, and does not reach the level whereby international trade would have to be prohibited to protect the species from extinction. Although this CITES protection was not considered to be an action that decreased the current listing status of the threatened DPSs (due to its uncertain effects at reducing the threats of foreign domestic overutilization and inadequate regulations) it does help address the threat of foreign overutilization for the international fin trade, ensuring that international trade of these threatened DPSs is sustainable. Because the United States does not have a significant presence in the international fin trade (U.S. exports and imports of all species of shark fins comprise less than one percent of the total number of fins globally exported and imported; see NMFS, 2012 and FAO, 2014) we have concluded that restrictions on U.S. trade of these DPSs, in addition to the CITES requirements, are not necessary and appropriate for the conservation of these DPSs.

Identification of Those Activities That Would Constitute a Violation of Section 9 of the ESA

On July 1, 1994, NMFS and FWS published a policy (59 FR 34272) that requires us to identify, to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the ESA. The intent of this policy is to increase public awareness of the effect of a listing on proposed and ongoing activities within a species' range. We will identify, to the extent known, specific activities that will not be considered likely to result in violation of section 9, as well as activities that will be considered likely to result in violation.

Based on the best available information, activities that we believe could result in violation of section 9 prohibitions against ''take'' of the Eastern Atlantic and Eastern Pacific DPSs include the following: (1) Importing fins or any part of a scalloped hammerhead shark; (2) exporting fins or any part of a scalloped hammerhead shark; (3) taking fins or any part of a scalloped hammerhead shark, including fishing for, capturing, handling, or possessing scalloped hammerhead sharks or fins; (4) selling fins or any part of a scalloped hammerhead shark; (5) delivery of fins or any part of a scalloped hammerhead shark; and (6) impacting the water column attributes in scalloped hammerhead nursery grounds (e.g., coastal development and habitat alterations, point and non-point source discharge of persistent contaminants, toxic waste and other pollutant disposal). We emphasize that whether a violation results from a particular activity is entirely dependent

upon the facts and circumstances of each incident. The mere fact that an activity may fall within one of these categories does not mean that the specific activity will cause a violation; due to such factors as location and scope, specific actions may not result in direct or indirect adverse effects on the species. Further, an activity not listed may in fact result in a violation.

ESA sections 10(a)(1)(A) and (B) provide us with authority to grant exceptions to the ESA's section 9 ''take'' prohibitions. Section 10(a)(1)(A) scientific research and enhancement permits may be issued to entities (Federal and non-Federal) for scientific purposes or to enhance the propagation or survival of the species. The type of activities potentially requiring a section 10(a)(1)(A) research/enhancement permit include scientific research that targets the Central & SW Atlantic DPS, Indo-West Pacific DPS, Eastern Atlantic DPS, or Eastern Pacific DPS.

ESA Section 10(a)(1)(B) incidental take permits may be issued to non-Federal entities performing activities that may incidentally take listed species, as long as the taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

Based on the best available information, we believe the following actions will not result in a violation of ESA section 9: (1) Take or possession of scalloped hammerhead sharks acquired lawfully by permit issued by NMFS pursuant to section 10 of the ESA, or take in accordance with the terms of an incidental take statement in a biological opinion pursuant to section 7 of the ESA; and (2) Federally approved projects that involve activities such as managed fisheries or the alteration of water column attributes within known scalloped hammerhead nursery grounds for which consultation under section 7 of the ESA has been completed and determined not likely to jeopardize the continued existence of the scalloped hammerhead DPS, and when such activity is conducted in accordance with any terms and conditions given by NMFS in an incidental take statement in a biological opinion pursuant to section 7 of the ESA.

Policies on Peer Review

In December 2004, the Office of Management and Budget (OMB) issued a Final Information Quality Bulletin for Peer Review establishing a minimum peer review standard. Similarly, a joint NMFS/FWS policy (59 FR 34270; July 1, 1994) requires us to solicit independent expert review from qualified specialists, concurrent with the public comment period. The intent of the peer review policies is to ensure that listings are based on the best scientific and commercial data available. We formally solicited the expert opinion of three appropriate and independent specialists regarding scientific or commercial data or assumptions related to the information considered for listing. We received comments from two of these scientists and their comments were incorporated into the status review report and this final rule. We conclude that these experts' reviews satisfy the requirements for ''adequate [prior] peer review'' contained in the Bulletin (sec. II.2.), as well as the Services' joint policy.

Information Solicited

We request interested persons to submit relevant information related to the identification of critical habitat and essential physical or biological features, as well as economic or other relevant impacts of designation of critical habitat for the Central & SW Atlantic DPS, Indo-West Pacific DPS, and Eastern Pacific DPS. We solicit information from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party (see **ADDRESSES**).

References

A complete list of all references cited herein is available upon request (see **FOR FURTHER INFORMATION CONTACT**).

Classification

National Environmental Policy Act

The 1982 amendments to the ESA, in section 4(b)(1)(A), restrict the information that may be considered when assessing species for listing. Based on this limitation of criteria for a listing decision and the opinion in *Pacific Legal Foundation* v. *Andrus,* 657 F. 2d 829 (6th Cir. 1981), we have concluded that ESA listing actions are not subject to the environmental assessment requirements of the National Environmental Policy Act (See NOAA Administrative Order 216–6).

Executive Order 12866, Regulatory Flexibility Act, and Paperwork Reduction Act

As noted in the Conference Report on the 1982 amendments to the ESA, economic impacts cannot be considered when assessing the status of a species. Therefore, the economic analysis requirements of the Regulatory Flexibility Act are not applicable to the listing process. In addition, this final rule is exempt from review under Executive Order 12866. This final rule does not contain a collection-of-information requirement for the purposes of the Paperwork Reduction Act.

Executive Order 13132, Federalism

Executive Order 13132 requires agencies to take into account any federalism impacts of regulations under development. It includes specific consultation directives for situations where a regulation will preempt state law, or impose substantial direct compliance costs on state and local governments (unless required by statue). Neither of those circumstances is applicable to this final listing determination.

List of Subjects

50 CFR Part 223

Endangered and threatened species, Exports, Imports, Transportation.

50 CFR Part 224

Administrative practice and procedure, Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Dated: June 27, 2014.

Eileen Sobeck,

Assistant Administrator for Fisheries, National Marine Fisheries Service.

For the reasons set out in the preamble, 50 CFR parts 223 and 224 are amended as follows:

PART 223—THREATENED MARINE AND ANADROMOUS SPECIES

■ 1. The authority citation for part 223 continues to read as follows:

Authority: 16 U.S.C. 1531 *et seq.;* subpart B, § 223.201–202 also issued under 16 U.S.C. 1361 *et seq.;* 16 U.S.C. 5503(d) for § 223.206(d)(9).

■ 2. In § 223.102, amend the table in paragraph (e) by adding new entries for two species in alphabetical order under the ''Fishes'' table subheading to read as follows:

§ 223.102 Enumeration of threatened marine and anadromous species.

* * * * *

(e) The threatened species under the jurisdiction of the Secretary of Commerce are:

Species [1]			Citation(s) for listing determination(s)	Critical habitat	ESA rules
Common name	Scientific name	Description of listed entity			
*	*	*	*	*	*
FISHES					
*	*	*	*	*	*
Shark, scalloped hammerhead (Central & Southwest Atlantic DPS).	*Sphyrna lewini*	Scalloped hammerhead sharks originating from the Central & Southwest Atlantic Ocean, including all waters of the Caribbean Sea, the Bahamas' EEZ off the coast of Florida, the U.S. EEZ off Puerto Rico and the U.S. Virgin Islands, and Cuba's EEZ, and further delineated by the following boundary lines: bounded to the north by 28° N. lat., to the east by 30° W. long., and to the south by 36° S. lat.	[Insert FR page number where the document begins], July 3, 2014.	NA	NA
Shark, scalloped hammerhead (Indo-West Pacific DPS).	*Sphyrna lewini*	Scalloped hammerhead sharks originating from the Indo-West Pacific Ocean, delineated by the following boundary lines: bounded to the south by 36° S. lat., to the west by 20° E. long., and to the north by 40° N. lat. In the east, the boundary line extends from 175° E. long. due south to 10° N. lat., then due east along 10° N. lat. to 150° W. long., then due south to 4° S. lat., then due east along 4° S. lat. to 130° W. long, and then extends due south along 130° W. long.	[Insert FR page number where the document begins], July 3, 2014.	NA	NA
*	*	*	*	*	*

[1] Species includes taxonomic species, subspecies, distinct population segments (DPSs) (for a policy statement, see 61 FR 4722, February 7, 1996), and evolutionarily significant units (ESUs) (for a policy statement, see 56 FR 58612, November 20, 1991).

* * * * *

PART 224—ENDANGERED MARINE AND ANADROMOUS SPECIES

■ 3. The authority citation for part 224 continues to read as follows:

Authority: 16 U.S.C. 1531 *et seq.* and 16 U.S.C. 1361 *et seq.*

■ 4. In § 224.101, amend the table in paragraph (h) by adding new entries for two species in alphabetical order under the ''Fishes'' table subheading to read as follows:

§ 224.101 Enumeration of endangered marine and anadromous species.

* * * * *

(h) The endangered species under the jurisdiction of the Secretary of Commerce are:

Species [1]			Citation(s) for listing determination(s)	Critical habitat	ESA rules
Common name	Scientific name	Description of listed entity			
*	*	*	*	*	*
FISHES*					
*	*	*	*	*	*
Shark, scalloped hammerhead (Eastern Atlantic DPS).	*Sphyrna lewini*	Scalloped hammerhead sharks originating from the Eastern Atlantic Ocean, including all waters of the Mediterranean Sea, and delineated by the following boundary lines: bounded to the west by 30° W. long., to the north by 40° N. lat., to the south by 36° S. lat., and to the east by 20° E. long.	[Insert FR page number where the document begins], July 3, 2014.	NA	NA

Species [1]			Citation(s) for listing determination(s)	Critical habitat	ESA rules
Common name	Scientific name	Description of listed entity			
Shark, scalloped hammerhead (Eastern Pacific DPS).	*Sphyrna lewini*	Scalloped hammerhead sharks originating from the Eastern Pacific Ocean, delineated by the following boundary lines: bounded to the north by 40° N lat. and to the south by 36° S lat. The western boundary line extends from 140° W. long. due south to 10° N., then due west along 10° N. lat. to 150° W. long., then due south to 4° S. lat., then due east along 4° S. lat. to 130° W. long, and then extends due south along 130° W. long.	[Insert FR page number where the document begins], July 3, 2014.	NA	NA

[1] Species includes taxonomic species, subspecies, distinct population segments (DPSs) (for a policy statement, see 61 FR 4722, February 7, 1996), and evolutionarily significant units (ESUs) (for a policy statement, see 56 FR 58612, November 20, 1991).

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