

July 16, 2013

**Via Regulations.gov Portal**

National Marine Fisheries Service  
Office of Protected Resources  
1315 East-West Highway  
Silver Spring, Maryland 20910

Re: Comments of the American Petroleum Institute, the Independent Petroleum Association of America, and the National Ocean Industries Association on the National Marine Fisheries Service's 90-Day Finding on Petitions to List the Dusky Shark as Threatened or Endangered under the Endangered Species Act, RIN 0648-XC515 (NOAA-NMFS-2013-0045).

Dear Sir/Madam:

This letter provides the public comments of the American Petroleum Institute ("API"), the International Association of Geophysical Contractors ("IAGC"), and the National Ocean Industries Association ("NOIA") (collectively, "the Associations") in response to the National Marine Fisheries Service's ("NMFS" or the "Service") request for information and public comment on: (1) a petition from Wildearth Guardians ("WEG") to list dusky sharks as threatened or endangered throughout their global range or, alternatively, to designate dusky sharks in the Northwest Atlantic ("NW Atlantic") and Gulf of Mexico ("GoM") as a threatened or endangered distinct population segment ("DPS"); and (2) a petition from the National Resources Defense Council ("NRDC") to list dusky sharks as threatened throughout their global range, or, alternatively, to designate the NW Atlantic/GoM as a threatened DPS.<sup>1</sup> Specifically, NMFS has issued a 90-day finding that the petitions presented substantial scientific or commercial information that the NW Atlantic/GoM dusky shark population may be a threatened DPS and is seeking data to inform its more rigorous 12-month review, under which it will make a determination whether the petitioned designation of the DPS is warranted and whether the putative DPS is threatened under the Endangered Species Act ("ESA"). As explained in more detail below, we believe that there is no basis in law or science that would support designating dusky sharks in the NW Atlantic/GoM as a threatened DPS, much less an endangered one.

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<sup>1</sup> 78 Fed. Reg. 29100 (May 17, 2013).

In conjunction with its finding that the petitions presented substantial scientific or commercial information that the NW Atlantic/GoM dusky shark population may be a threatened DPS, NMFS also found that the petitions failed to present substantial scientific and commercial information that dusky sharks are threatened or endangered range-wide. The Associations support this finding.

The WEG/NRDC (“Petitioners”) petitions also called on NMFS to designate critical habitat. The Associations believe this aspect of the petitions is unauthorized by the ESA, which vests the decision as to whether such designation is “reasonable and prudent” solely in NMFS. Nonetheless, in response to NMFS’s request, the Associations herein provide general comment on critical habitat. Should NMFS decide to designate the dusky sharks in the NW Atlantic/GoM as a threatened or endangered DPS and later propose critical habitat, the Associations will provide more substantive and responsive comments in that rulemaking.

The Associations appreciate the opportunity to provide this information and analysis. We hope and expect that the Service will give close consideration of the comments set forth below.

## **I. INTRODUCTION**

### **A. The Associations**

API is a national trade association representing over 540 member companies involved in all aspects of the oil and natural gas industry. API’s members include explorers, producers, refiners, suppliers, pipeline operators, and marine transporters, as well as service and supply companies that support all segments of the industry and provide most of the nation’s energy. API and its members are dedicated to meeting environmental requirements, while economically developing and supplying energy resources to benefit the national economy and meet consumer demands. API members may be impacted by designation of dusky sharks in the NW Atlantic/GoM as a threatened or endangered DPS because many of its members maintain significant offshore and shore-side operations in the GoM.

IAGC is the international trade association representing the industry that provides geophysical services (geophysical data acquisition, processing and interpretation, geophysical information ownership and licensing, associated services and product providers) to the oil and natural gas industry. IAGC member companies play an integral role in the successful exploration and development of offshore hydrocarbon resources through the acquisition and processing of geophysical data. IAGC members may be impacted by designation of dusky sharks in the NW Atlantic/GoM as a threatened or endangered DPS because many of its members conduct significant offshore operations in the GoM.

NOIA is the only national trade association representing all segments of the offshore industry with an interest in the exploration and production of both traditional and renewable energy resources on the nation’s outer continental shelf. The NOIA membership comprises more than 275 companies engaged in business activities ranging from producing to drilling, engineering to marine and air transport, offshore construction to equipment manufacture and supply, telecommunications to finance and insurance, and renewable energy. NOIA members may be impacted by designation of dusky sharks in the NW Atlantic/GoM as a threatened or

endangered DPS because they maintain significant offshore and shore-side operations in the GoM.

Together, the members represented by these Associations provide a tremendous economic benefit to the nation. In 2011, oil and gas development in the GoM alone resulted in nearly a quarter million jobs.<sup>2</sup> Those employment numbers are projected to have increased significantly in the ensuing years.<sup>3</sup> From an investment perspective, the Bureau of Ocean Energy Management (“BOEM”) has determined that over a 40-year period, the new 5-year drilling plan will result in “[b]etween \$1,050 million and \$2,180 million in income.”<sup>4</sup>

## **B. Summary of Comments**

As set forth in detail in Section II below, neither WEG nor NRDC have presented sufficient evidence that dusky sharks are threatened or endangered under the ESA globally or in the NW Atlantic/GoM. NMFS properly found that the petitions did not present sufficient information to warrant listing the dusky sharks globally. The Associations herein support that conclusion and believe it should apply as well to the aspects of the petitions calling for listing dusky sharks in the NW Atlantic/GoM as an endangered or threatened DPS.

Dusky sharks in the NW Atlantic/GoM do not constitute a DPS. Dusky sharks in the NW Atlantic/GoM are not markedly separate from other populations. In fact, there are no reliable studies that have even examined discreteness from contiguous populations.

Even if dusky sharks in the NW Atlantic/GoM were markedly distinct from other populations, they are not significant to the population as a whole as required by the DPS Policy. The NW Atlantic/GoM is not a unique or unusual setting for the dusky shark, and the unlikely extirpation of dusky sharks therein would not result in a significant gap in the dusky shark’s range. Dusky sharks in the NW Atlantic/GoM are not markedly different from dusky sharks in other regions, nor are dusky sharks in the NW Atlantic/GoM the sole surviving natural occurrence of the taxon. Dusky sharks in the NW Atlantic/GoM are therefore not a DPS.

Furthermore, even if dusky sharks in the NW Atlantic/GoM properly constituted a DPS, they cannot be considered endangered or threatened. The sole evidence of peril provided by the Petitioners are poorly understood and grossly misinterpreted stock assessment data and unsupported threat allegations. As explained further below, the stock assessment data do not support listing dusky sharks as endangered or threatened. Similarly, Petitioners’ allegations that the Deepwater Horizon incident and climate change are threatening dusky sharks with extinction are wholly unsupported.

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<sup>2</sup> Quest Offshore Resources, Inc., *The State of the Offshore U.S. Oil and Gas Industry An in-depth study of the outlook of the industry investment flows offshore*, (Table 26) (Dec. 2011), available at [http://www.api.org/~media/Files/Policy/Exploration/Quest\\_2011\\_December\\_29\\_Final.pdf](http://www.api.org/~media/Files/Policy/Exploration/Quest_2011_December_29_Final.pdf)

<sup>3</sup> *Id.*

<sup>4</sup> Outer Continental Shelf Oil and Gas Leasing Program: 2012-1017 Final Programmatic Environmental Impact Statement (July, 2012).

NMFS should therefore deny all aspects of these petitions, including the improper and premature request to designate critical habitat. Failure to do so would be arbitrary, capricious, and not in accordance with the ESA.

## **II. DETAILED COMMENTS**

### **A. NMFS Properly Declined to List the Dusky Shark Globally**

The WEG Petition analyzed the ESA listing factors and argued that dusky sharks should be listed globally as threatened or endangered. NRDC's Petition, on the other hand, argued that dusky sharks should be listed globally as threatened because the NW Atlantic/GoM, where NRDC argued that dusky sharks are at risk of extinction, represents a significant portion of dusky sharks' global range. As NMFS pointed out, both of these arguments fail to "present substantial scientific or commercial information indicating that the petitioned action may be warranted for the global action."<sup>5</sup> The Associations support these conclusions. Even under the relaxed standard NMFS employs in making a 90-day finding, Petitioners failed to show dusky sharks are threatened or endangered globally.

#### **1. The WEG Petition's Analysis of Global Listing Factors Was Unsupported**

The WEG Petition argued dusky sharks are threatened or endangered globally due to: (1) the present or threatened destruction, modification, or curtailment of the species' habitat or range; (2) overutilization for commercial and recreational purposes; (3) the inadequacy of existing regulatory mechanisms; and (4) other man-made factors affecting the species' continued existence.<sup>6</sup> WEG provided little or no support for the existence of these assertions.

The WEG Petition referenced the Deepwater Horizon incident and coastal development as factors threatening dusky shark habitat with destruction, modification, or curtailment.<sup>7</sup> As discussed below in Section II.C.3, WEG's allegations are entirely unsupported. Similarly, WEG's allegations regarding the threats alleged from coastal development consist of a single statement that such activity is occurring "at an alarming rate."<sup>8</sup> The WEG Petition never quantified the rate of coastal development, never argued how such development is affecting dusky shark habitat, and never explained the alleged nexus between shore-side development and dusky shark habitat in inshore and offshore areas. As NMFS itself admonished, "[b]road statements about generalized threats to the species, or identification of factors that could negatively impact a species, do not constitute substantial information indicating that listing may be warranted."<sup>9</sup>

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<sup>5</sup> 78 Fed. Reg. at 29109.

<sup>6</sup> WEG Petition at 14-28, citing listing factors under 16 U.S.C. § 1533(1)(A)-(E).

<sup>7</sup> WEG Petition at 14.

<sup>8</sup> WEG Petition at 14.

<sup>9</sup> 78 Fed. Reg. at 29102.

WEG's arguments as to global overutilization are equally unconvincing. WEG cited in numerous places the lack of global dusky shark population estimates or catch data.<sup>10</sup> In an attempt to tack around the lack of relevant data, the WEG Petition attempted to use a study on the dusky shark's presence in the global fin trade as evidence that dusky sharks are overutilized.<sup>11</sup> Not only did WEG ignore the study authors' caveat that the estimate of 1.2-1.7% "most likely overestimates this species proportion in the trade,"<sup>12</sup> it misread biomass estimates that were represented in "metric tons" as "million tons."<sup>13</sup> WEG also failed to provide any analysis of how it extrapolated a global overutilization risk from its fundamental misunderstanding of dusky sharks' presence in the fin trade. Instead, WEG simply detailed the types of fishing gear used to catch dusky sharks and noted that dusky sharks are caught both directly and indirectly<sup>14</sup> – hardly a compelling case for global overutilization.

The WEG Petition's failure to properly analyze the global commercial and recreational threats to dusky sharks likely led to its equally improper analysis of the global regulatory mechanisms in place to address those threats. WEG's analysis is essentially that because there are countries that allow commercial and recreational fishing for dusky sharks and because some countries allow trade in dusky shark fins, dusky sharks must be inadequately protected under existing regulatory mechanisms. Significantly, WEG never attempted to tie the lack of universal bans/prohibitions to any evidence of threats to the global dusky shark population. Moreover, as NMFS pointed out, WEG's petition mischaracterizes the state of the international regulations that are in place to protect dusky sharks.<sup>15</sup> WEG largely ignored the number of nations that have banned finning and fin trade, mischaracterized the efficacy of shark management programs, ignored the numerous states that have outright bans on shark fishing, and failed to consider at all the impact of large shark sanctuaries in the Pacific Ocean.<sup>16</sup> As noted by NMFS, the WEG petition "does not provide substantial evidence to support the assertion that current regulatory mechanisms are insufficient to prevent the endangerment or extinction of the global dusky shark populations."<sup>17</sup>

Finally, the WEG Petition lists the "other natural and manmade factors" allegedly contributing to the decline of dusky sharks.<sup>18</sup> This "analysis" is nothing more than a short recital of dusky shark attributes and unsupported risk assertions. As NMFS appropriately concluded,

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<sup>10</sup> WEG Petition at 10, 11, and 12.

<sup>11</sup> WEG Petition at 17 citing Clarke, S., J. Magnussen, D. Abercrombie, M. McAllister, M. Shivji [Clarke et al. 2006a]. 2006. Identification of Shark Species Composition and Proportion in the Hong Kong Shark Fin Market Based on Molecular Genetics and Trade Records. *Conservation Biology* vol. 20, No. 1, 201-211.

<sup>12</sup> Clark *et al.* (2006).

<sup>13</sup> WEG Petition at 17.

<sup>14</sup> WEG Petition at 17-19.

<sup>15</sup> 78 Fed. Reg. at 29108.

<sup>16</sup> 78 Fed. Reg. at 29108.

<sup>17</sup> 78 Fed. Reg. at 29108.

<sup>18</sup> WEG Petition at 28.

“the petition provides only broad general assertions regarding the impact of other natural or manmade factors to global population.”<sup>19</sup> The Associations support this conclusion. This portion of WEG’s Petition is an example of the conclusion-driven advocacy that WEG attempts to cloak as scientific analysis throughout its petition. The Service’s determination that the WEG Petition failed to present substantial scientific and commercial information is consistent with its duty to make fact-based determinations.

## 2. NW Atlantic/GoM is not a Significant Portion of Range

Like WEG, NRDC also petitioned NMFS to list the dusky shark globally. The NRDC Petition argued that “NMFS should designate the entire species of dusky shark as threatened because the waters of the Gulf of Mexico and the U.S. Atlantic coast constitute a significant portion of its range (SPOIR), and the species is likely to become endangered in this SPOIR within the foreseeable future.”<sup>20</sup> Similarly, the WEG petition concluded that “[t]he Gulf of Mexico comprises a significant portion of the dusky shark’s range.”<sup>21</sup> NMFS concluded that both of Petitioners’ conclusions were unsupported and inconsistent with the Service’s Draft Policy interpreting the phrase “Significant Portion of its Range” in the ESA’s Definitions of “Endangered Species” and “Threatened Species” (“Draft SPOIR Policy”).<sup>22</sup> The Associations support this conclusion.

In the Draft SPOIR Policy, NMFS and the U.S. Fish and Wildlife Service (“FWS”) proposed that a portion of a species’ range be considered “‘significant’ if its contribution to the viability of the species is so important that, without that portion, the species would be in danger of extinction.”<sup>23</sup> Neither NRDC nor WEG made any attempt to demonstrate that without dusky sharks in the NW Atlantic/GoM, dusky sharks globally would be in danger of extinction. Rather, the Petitioners merely assert that this region is “a significant portion of its range” with no analysis or scientific support.<sup>24</sup> NMFS properly rejected the Petitioners’ unsupported conclusions and further added that the Service itself also had no information in its files to suggest that dusky sharks in the NW Atlantic/GoM constitute a significant portion of the dusky sharks’ global range.<sup>25</sup> Indeed, while little is known about the global abundance of dusky sharks, as discussed further below, NMFS is well aware that dusky sharks are found in the Atlantic, Pacific and Indian Oceans, as well as the Mediterranean and Black Seas, and are found off the coasts of every continent except Antarctica.<sup>26</sup>

Petitioners have failed to provide any credible evidence that dusky sharks are threatened or endangered globally. They have similarly failed to demonstrate that any threats to dusky

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<sup>19</sup> 78 Fed. Reg. at 29109.

<sup>20</sup> NRDC Petition at ii.

<sup>21</sup> WEG Petition at 14.

<sup>22</sup> 76 Fed. Reg. 76987 (Dec. 9, 2011).

<sup>23</sup> 76 Fed. Reg. at 76991.

<sup>24</sup> See, e.g., WEG Petition at 13; NRDC Petition at i-ii.

<sup>25</sup> 78 Fed. Reg. at 29104.

<sup>26</sup> NRDC Petition at 2, Figure 1.

sharks in the NW Atlantic/GoM, which, as discussed below, are similarly unsupported, necessitate listing the species globally. The Associations support the Service's conclusions on these aspects of the petitions and encourage NMFS to apply the same level of scientific and analytical rigor to the remainder of the petitions.

**B. The GoM Stock Does Not Meet the Elements of a DPS Under the DPS Policy**

1. DPS Designation Must be Used Sparingly and Only When Stringent Criteria Are Met

The ESA applies to distinct taxonomic species, “any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife that interbreeds when mature.”<sup>27</sup> The aspects of this definition that relate to DPS were intensely scrutinized during congressional debate for fear that, through recognition of DPS, the ESA could be manipulated to disaggregate a species to such an extent that even healthy and abundant species could be found to be endangered.

The 1978 addition of the phrase “DPS” was, in fact, designed to constrain language in the ESA of 1973 which extended the statute to “any other group of fish or wildlife of the same species or smaller taxa in common special arrangement that interbreed when mature.” Still, the U.S. General Accounting Office (“GAO”) at the time warned that use of a DPS could lead to unnecessary subdivision that did little more than lead to the listing of segments of healthy and abundant species.<sup>28</sup> In response to such concerns, Congress carefully included within the Conference Report on the ESA Reauthorization recognition that it “is aware of the great potential for abuse of this authority,” and an admonition that the listing agencies use its DPS authority “sparingly and only when the biological evidence indicates that such action is warranted.”<sup>29</sup>

In the ensuing decades, the listing agencies have generally respected the high bar that Congress demanded be used to designate a DPS. In 1991, NMFS established a policy outlining criteria for designating Pacific salmon by DPS.<sup>30</sup> Under the policy, DPS status was restricted to “evolutionarily significant units” (“ESU”) that are substantially reproductively isolated and which represent an important component of the evolutionary legacy of the species.<sup>31</sup> In 1996, NMFS and FWS established a new, more encompassing DPS policy that, like the ESU policy and consistent with congressional intent, maintained a high bar to designate a DPS.<sup>32</sup> For a population segment to be considered a DPS under the 1996 Policy, the segment must meet two

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<sup>27</sup> 16 U.S.C. § 1532(16).

<sup>28</sup> See U.S. General Accounting Office, *Endangered Species: A Controversial Issue Needing Resolution* (1979).

<sup>29</sup> S. Rep. No. 95-151, at 7 (1979), reprinted in *ESA Legislative History*, *supra* note 144, at 1397.

<sup>30</sup> 56 Fed. Reg. 58612 (Nov. 20, 1991).

<sup>31</sup> *Id.* at 58518.

<sup>32</sup> 61 Fed. Reg. 4722 (Feb. 7, 1996).

criteria: (1) it must be discrete; and, (2) it must be significant.<sup>33</sup> Discreteness requires conspicuous separation from the remainder of the species, but separation alone is not enough to designate a DPS.<sup>34</sup> Even if the species is markedly discrete, the listing agencies, at Congress's direction, instruct that the discrete segment be significant in some unique biological manner or that the segment provide some significant role in the species as a whole.<sup>35</sup> The "significance" element of the DPS Policy is critical to the evaluation of population segments for DPS status. Indeed, the listing agencies have found several populations to be distinct, but declined to extend DPS status because the discrete segment was not significant.<sup>36</sup>

The DPS Policy provides a high hurdle – appropriately so. Unlike ESA listing decisions wherein a listing agency is acting to avoid extinction of a species and therefore employs a precautionary approach, DPS designation involves the structuring of a species' population. If agencies employed all the favorable evidentiary inferences that may be appropriate for a listing decision in their DPS analyses, it would lead to a widespread deconstruction of taxonomic units, an enormous drain on agency resources, and little or no conservation benefit to the species.

As explained further in the detailed analysis of the DPS Policy elements below, considerable evidence exists that dusky sharks in the GoM do not meet the standards for a DPS.

2. NMFS Did Not Designate Dusky Sharks in the NW Atlantic/GoM as a DPS When it Designated Them a Species of Concern

While the NRDC Petition provides some (albeit flawed) analysis of the elements of the DPS Policy, the WEG Petition simply declares that "NMFS listed the NWA/GoM dusky shark as a DPS in the Federal Register when the agency revised its list of 'species of concern.'"<sup>37</sup> The Federal Register notice designating dusky sharks in the NW Atlantic/GoM as species of concern, however, did not also designate them as a DPS.<sup>38</sup> According to the Federal Register notice, the geographic delineation "denotes the general geographic range of the species or the vertebrate population for which concern has been expressed."<sup>39</sup>

The WEG Petition is correct that the chart of the 42 species of concern did contain the acronym "DPS" in the description.<sup>40</sup> However, the inclusion of the acronym was clearly a

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<sup>33</sup> *Id* at 4725. If the species is both discrete and significant, it is considered a DPS, but that DPS is not then protected under the ESA unless and until the listing agency determines that the DPS is either threatened or endangered under the ESA.

<sup>34</sup> *Id.*

<sup>35</sup> *Id.*

<sup>36</sup> *See, e.g.*, 67 Fed. Reg. 44133 (Jul. 1, 2002); 68 Fed. Reg. 11574 (Mar. 11, 2003); 68 Fed. Reg. 34628 (Jun 10, 2003); 77 Fed. Reg. 25792 (May 1, 2012).

<sup>37</sup> WEG Petition at 13.

<sup>38</sup> 71 Fed Reg. 61022 (Oct. 17, 2002).

<sup>39</sup> 71 Fed. Reg. at 61023.

<sup>40</sup> 71 Fed. Reg. at 61024.



drafting error. NMFS never analyzed dusky sharks in the NW Atlantic/GoM population under the DPS Policy. In fact, the Federal Register notice identifying the species of concern stated that the geographic areas of concern may expand or narrow based on status reviews.<sup>41</sup> Once designated, a DPS cannot be expanded or narrowed based on status reviews. Designating a DPS for listing under the ESA must be done through notice and comment rulemaking.<sup>42</sup> No such rulemaking occurred. Indeed, NMFS would not be taking comment on a petition to designate a DPS if such a designation was already established through the offhand inclusion of the acronym “DPS” in the 2001 Federal Register notice. The 2001 designation of dusky sharks in the NW Atlantic/GoM as a species of concern did nothing more than identify this population as a stock. Stocks, however, are not DPS, nor, contrary to both petitions, are stocks indicators of discreteness or significance for purposes of evaluating a DPS.

The Magnuson-Stevens Fishery Conservation and Management Act (“MSA”) defines a stock as “a species, subspecies, geographical grouping, or other category of fish capable of management as a unit.”<sup>[1]</sup> As the definition shows, and as has been applied by NMFS in the Atlantic Highly Migratory Species Fisheries Management Plan (“HMS FMP”), defining a stock for management purposes is a completely separate exercise than the stringent standards that apply when designating a DPS. In the case of dusky sharks, along with other large coastal sharks managed under the HMS FMP, the stock unit is delimited both by the extent of U.S. jurisdiction and extent of the contiguous commercial fishery as it developed historically, not by any biological boundary. These decisions, arbitrary in the sense that they rely on the happenstance of U.S. jurisdiction and the historic delineation of fishing grounds, have no bearing on the present inquiry under the ESA. Indeed, perhaps the only reason NMFS has not delineated the dusky shark to include populations in the southern GoM or further south is because NMFS does not, and cannot, manage fisheries outside U.S. waters.

As NMFS has not established dusky sharks in the NW Atlantic/GoM as a DPS, nor is NMFS management of them as a stock indicative of a DPS, to establish a DPS NMFS must carefully consider the elements of the DPS Policy. As discussed further below, dusky sharks in the NW Atlantic/GoM do not meet the elements necessary to designate a DPS under that policy.

### 3. Dusky Sharks in the NW Atlantic/GoM are Not a Discrete Population

According to the DPS Policy, a population segment of a species may be considered discrete if it is markedly separate from other population segments of the same taxon or it is delimited by international governmental boundaries with different conservation levels and measures.<sup>43</sup> As explained below, dusky sharks in the NW Atlantic/GoM do not meet either element. Dusky sharks in the NW Atlantic/GoM are physically, physiologically, ecologically, and behaviorally the same as dusky sharks everywhere else in their global range.<sup>44</sup> Indeed, these

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<sup>41</sup> 71 Fed. Reg. at 61023.

<sup>42</sup> 16 U.S.C. § 1533(a)

<sup>[1]</sup> 16 U.S.C. § 1802(42).

<sup>43</sup> 61 Fed. Reg. at 4725.

<sup>44</sup> Benavides, M.T., Horn, R.L., Feldheim, K.A., Shivji, M.S., Clarke, S.C., Wintner, S., Natanson, L., Braccini, M., Boomer, J.J., Gulak, S.J.B., and D.D. Chapman. 2011. Global phylogeography of the dusky shark *Carcharhinus*

striking similarities necessitated Benavides *et al.* 2011, the genealogical study cited by Petitioners and NMFS, which was designed to determine whether the similarities in dusky sharks in the various oceans indicated they were a single freely mixing population. That those studies may have found that dusky sharks in the NW Atlantic/GoM may have modest genetic distinctions from dusky sharks in other oceans, however, is hardly material to the DPS analysis, and, most importantly, not evidence of marked separation. Nor are dusky sharks in the NW Atlantic/GoM delimited by international boundaries with significantly different regulatory mechanisms. NMFS acknowledged as much in rejecting the aspects of the petitions calling for a global listing.<sup>45</sup> These criteria are discussed further below.

*i. Dusky Sharks in the NW Atlantic/GoM are Not Markedly Separated from Other Populations*

As there is no evidence that dusky sharks in the NW Atlantic/GoM are morphologically distinct from dusky sharks anywhere else in their global range, to demonstrate marked separation, NRDC relied exclusively on supposed genetic distinctions and poorly supported evidence of isolation. Significantly, in order to make its case for isolation and genetic distinction, NRDC only compared dusky sharks in the NW Atlantic/GoM to dusky sharks in other oceans. Dusky sharks, however, range throughout the Atlantic and its gulfs and seas.<sup>46</sup>

In the western Atlantic, dusky sharks are found from off southern Massachusetts to Florida, the Bahamas, Cuba, the northern GoM, Nicaragua, and southern Brazil.<sup>47</sup> In the eastern Atlantic, dusky sharks have been observed off the Canary and Cape Verde Islands, and off Senegal, Sierra Leone, Portugal, Spain, Morocco, and Madeira.<sup>48</sup> Dusky sharks have also been observed off of several nations within the Mediterranean Sea.<sup>49</sup> NRDC provides no evidence that dusky sharks are markedly separate from these significant populations. As a nomadic and highly migratory species capable of movements in excess of 2,000 miles,<sup>50</sup> it is highly likely that dusky sharks in the NW Atlantic/GoM are not isolated or genetically distinct from dusky sharks that inhabit other areas of the Atlantic Ocean.

NRDC ignores these interwoven populations and known dusky shark behaviors by stating that its delineation of the NW Atlantic/GoM as a DPS is supported by tag and recapture data.<sup>51</sup> The tagging data referenced by NRDC is the NMFS Cooperative Shark Tagging Program, which

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*obscurus*: implications for fisheries management and monitoring the shark fin trade. *Endangered Species Research* 14: 13-22, 19 (2011).

<sup>45</sup> 78 Fed. Reg. at 29108.

<sup>46</sup> IUCN Red List of Threatened Species. <http://www.iucnredlist.org/details/3852/0>. Visited on June 20, 2013.

<sup>47</sup> IUCN Red List of Threatened Species. <http://www.iucnredlist.org/details/3852/0>. Visited on June 20, 2013.

<sup>48</sup> IUCN Red List of Threatened Species. <http://www.iucnredlist.org/details/3852/0>. Visited on June 20, 2013.

<sup>49</sup> IUCN Red List of Threatened Species. <http://www.iucnredlist.org/details/3852/0>. Visited on June 20, 2013.

<sup>50</sup> IUCN Red List of Threatened Species. <http://www.iucnredlist.org/details/3852/0>. Visited on June 20, 2013.

<sup>51</sup> NRDC Petition at 4.

tagged 5,983 dusky sharks and then tracked where those tagged sharks were later recovered or encountered.<sup>52</sup>

NRDC is correct that the tagging data show that, other than Mexico, no other foreign nation reported a found tag.<sup>53</sup> As evidence of discreteness, however, these data are highly questionable as there were significant numbers of returns from Puerto Rico, but none from the adjacent island of Hispaniola.<sup>54</sup> The same is true of Florida, which had the largest number of returns, and yet none was reported recaptured in Cuba, just fifty miles from the Florida coast.<sup>55</sup> All these data show is that non-U.S. fishermen may be unlikely to return tags to the United States. That some tags were returned by Mexican fishermen is not surprising, given the existence of the United States States-Mexico Fisheries Cooperation Program, implemented as part of the Memorandum of Understanding on Cooperation for Wilderness Conservation among the United States, Canada, and Mexico, and the close relationship among fisheries managers in these two countries.

If anything, the tagging data suggest that dusky sharks are significantly intermixing in foreign waters. Of the shark species for which there were a large number of individuals tagged, dusky sharks had among the lowest rates of return – just 124 sharks out of 5,983 (2.1%).<sup>56</sup> Dusky sharks also had among the highest recorded migration distances – 2,052 miles.<sup>57</sup> These long distance migrations, the low return rate for dusky shark tags, and the known low rate of tag return from other counties strongly suggests that the tagged dusky sharks, more than the other 33 species of sharks that were tagged, traveled outside U.S. waters and were potentially caught there. This more plausible reading of the tagging data is supported by comments provided to NMFS in the rulemaking for Amendment 5b to the 2006 Consolidated Highly Migratory Species Fishery Management Plan which revealed that “[d]usky shark tags have been recovered further south near Belize and Panama in Central America.”<sup>58</sup> Indeed, the Service’s own mapping of dusky shark range demonstrates that, far from recognizing jurisdictional boundaries, dusky sharks range freely along the coast of every country in the eastern Atlantic from the northern U.S. to southern Argentina.

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<sup>52</sup> Kohler, N.E., Casey, J.G., and P.A. Turner. 1998. NMFS Cooperative Shark Tagging Program, 1962–93: an atlas of shark tag and recapture data. *Marine Fisheries Review* **60**: 1–87. Available at: <http://spo.nwr.noaa.gov/mfr6021.pdf>.

<sup>53</sup> Kohler *et al.* 1998 at 52.

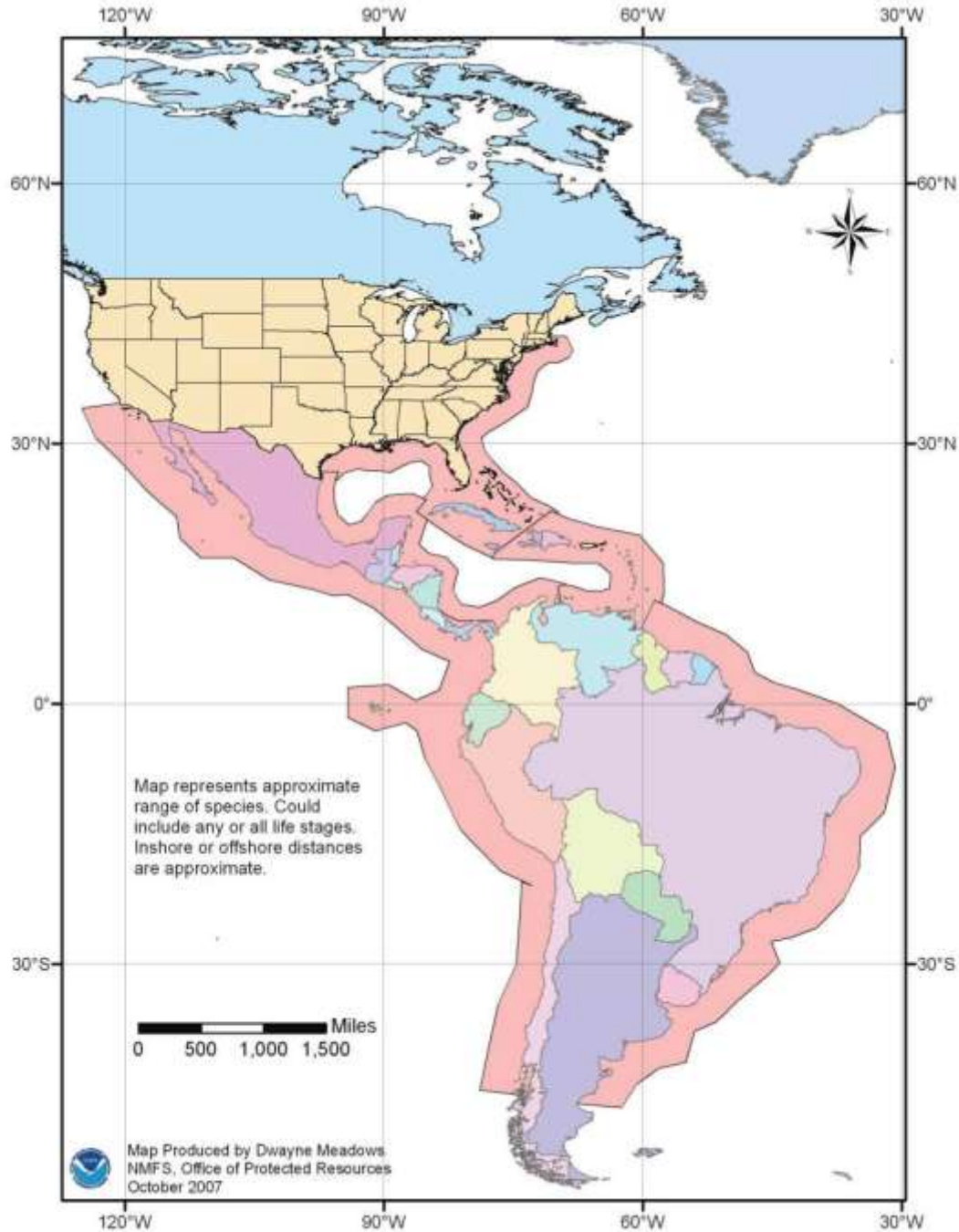
<sup>54</sup> Kohler *et al.* 1998 at 52.

<sup>55</sup> Kohler *et al.* 1998 at 52.

<sup>56</sup> Kohler *et al.* 1998 at 3.

<sup>57</sup> Kohler *et al.* 1998 at 3.

<sup>58</sup> May 24, 2013 comment letter from Russell Howard Hudson, President of Directed Sustainable Fisheries, Inc.



Map of the Western Hemisphere range of the dusky shark.  
Figure 1

There is no evidence that dusky sharks in the NW Atlantic/GoM are separated in any way, much less markedly, from most contiguous populations in the Atlantic Ocean. The only evidence of any genetic separation from continuous Atlantic populations comes from preliminary findings in Benavides *et al.* 2011, which, as discussed below, should not be relied upon.

Absent evidence of separation from contiguous Atlantic populations, NMFS cannot find dusky sharks in the NW Atlantic/GoM to be discrete, nor can it even define or delineate the

population from which to base a DPS analysis because the only evidence available suggests that dusky sharks in the NW Atlantic/GoM are part of a larger Atlantic Ocean population. The only evidence of distinction offered by Petitioners or available in scientific literature is the unenlightening evidence that the genetic code of dusky sharks in the Atlantic is different from the genetic code of dusky sharks in other oceans. As explained further below, even such genetic differences are not evidence of marked separation.

a. Genetic Differences are Not Marked

In an attempt to demonstrate marked separation from dusky sharks in other oceans, NRDC relied on two studies (Benavides *et al.* 2011, and Grey *et al.* 2012)<sup>59</sup>, both of which were conducted in large part by a shark conservation group.<sup>60</sup> Benavides *et al.* 2011 was designed to disprove a hypothesis that dusky sharks all over the globe were part of a single freely mixing population.<sup>61</sup> As such, it examined 255 sharks taken from eight widely dispersed locations and found genetic differentiation among dusky sharks along the United States East Coast, around South Africa, and around Australia.<sup>62</sup> Because Benavides *et al.* 2011 was designed to identify differences in populations (not similarities), it sampled populations that were far from each other. Critically, therefore, it did not attempt to sample contiguous populations.

For those widely dispersed populations (*i.e.*, those in different oceans), Benavides *et al.* 2011 found genetic differentiation in mitochondrial DNA (“mtDNA”), which is only inherited from mothers.<sup>63</sup> Significantly, however, Benavides *et al.* 2011 did not examine nuclear DNA, which is inherited through both parents. Recognizing this limitation, Benavides *et al.* 2011 characterized these distant populations as “semiautonomous,” and noted that “[w]e stop short of calling these groups ‘stocks’ on the grounds that we would need to demonstrate differentiation at nuclear loci do to so.”<sup>64</sup> Benavides *et al.* 2011 further cautioned that “nuclear marker data and additional sampling efforts to define all management units and delineate their boundaries are now necessary so that a [mixed stock analysis] can be applied at its full potential.”<sup>65</sup> Indeed, all that can be inferred from Benavides *et al.* 2011 is that the Atlantic, Pacific, and Indian oceans each contain pools of breeding female dusky sharks and that the continents that separate the

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<sup>59</sup> NRDC Petition at 3. Benavides, M.T., Horn, R.L., Feldheim, K.A., Shivji, M.S., Clarke, S.C., Wintner, S., Natanson, L., Braccini, M., Boomer, J.J., Gulak, S.J.B., and D.D. Chapman. 2011. Global phylogeography of the dusky shark *Carcharhinus obscurus*: implications for fisheries management and monitoring the shark fin trade. *Endangered Species Research* 14: 13-22; Gray, T., Bernard, A., Clarke, S., Chapman, D., McAuley, R., and M.S. Shivji. 2012. Global phylogeography of the dusky shark (*Carcharhinus obscurus*) based on nuclear microsatellite DNA analysis: delineation of genetic stocks and the geographic sourcing of shark fins from commercial markets. Presented at the August 2012 American Elasmobranch Society Meeting: Elasmobranch Conservation, Vancouver, B.C., Canada. Available at: [http://wch2012vancouver.com/files/World\\_Congress\\_of\\_Herpetology\\_2012\\_Abstracts.pdf](http://wch2012vancouver.com/files/World_Congress_of_Herpetology_2012_Abstracts.pdf).

<sup>60</sup> Both studies list authors from the Save our Seas Shark Center.

<sup>61</sup> Benavides *et al.* 2011 at 14.

<sup>62</sup> See Benavides *et al.* 2011.

<sup>63</sup> Benavides *et al.* 2011 at 19.

<sup>64</sup> Benavides *et al.* 2011 at 19.

<sup>65</sup> Benavides *et al.* 2011 at 20.

oceans appear to inhibit, but not stop, female gene flow.<sup>66</sup> There are no conclusions about the gene flow supplied by highly migratory male dusky sharks.

Additionally, as explained above, the study also found preliminary evidence of a population structure between the eastern coast of the United States and the southwest Atlantic.<sup>67</sup> Benavides *et al.* 2011 carefully characterized these findings as premature because of small sample size, inability to confirm that the samples were taken from the southwest Atlantic, and because, as with its inter-ocean analysis, Benavides *et al.* 2011 intra-Atlantic analysis only examined mtDNA.<sup>68</sup> The authors' caution is necessary and appropriate. Benavides *et al.* 2011 examined only 10 samples from the southwest Atlantic, allegedly off the coast of Brazil.<sup>69</sup> The study authors, however, did not directly catch and sample the alleged Brazilian cohort as they did with the other cohorts.<sup>70</sup> Instead, they purchased the fins from two shark fin dealers in Hong Kong, "who stated that the fins came from Brazilian suppliers."<sup>71</sup> The study authors then "assum[ed] the animals were caught in Brazil . . ."<sup>72</sup>

Obviously, the use of data on the "Brazilian" dusky sharks raises some serious analytical issues, which the study authors, to their credit, recognize and disclose. Unverified representations of shark fin dealers provide an insufficient basis, in and of themselves, to establish that the samples were taken from Brazil. That being said, the shark fin dealers never even claimed that the sharks were from Brazil. They simply stated that the shark fin dealers were Brazilian.<sup>73</sup> The study authors provide the unexplained assumption that the Brazilian dealers take only sharks off of Brazil. Thus, any conclusion related to these "Brazilian" samples is highly suspect.

The extremely uncertain provenance of the Brazilian cohort stopped the Benavides *et al.* 2011 authors from drawing conclusions relative to dusky shark population structure in the Atlantic, opting instead to present their findings as "preliminary" and "tentative."<sup>74</sup> NMFS must similarly restrain itself from drawing conclusions based on small samples, compounded and unverified hearsay, and unexplained assumptions. There is no credible basis, in Benavides *et al.* 2011 or anywhere else, to conclude that dusky sharks in the NW Atlantic/GoM are at all separated from contiguous populations in the Atlantic.<sup>75</sup>

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<sup>66</sup> Benavides *et al.* 2011 at 19.

<sup>67</sup> Benavides *et al.* 2011 at 19.

<sup>68</sup> Benavides *et al.* 2011 at 19.

<sup>69</sup> Benavides *et al.* 2011 at 15.

<sup>70</sup> Benavides *et al.* 2011 at 15.

<sup>71</sup> Benavides *et al.* 2011 at 15.

<sup>72</sup> Benavides *et al.* 2011 at 15.

<sup>73</sup> Benavides *et al.* 2011 at 15.

<sup>74</sup> Benavides *et al.* 2011 at 19.

<sup>75</sup> Even if dusky sharks off Brazil showed genetic differences from dusky sharks in the NW Atlantic/GoM, there are thousands of miles of inshore and offshore water between the NW Atlantic/GoM and Brazil that are home to dusky sharks. No genetic testing was done in any of these areas.

Grey *et al.* 2012 allegedly found genetic differentiation among dusky sharks in the western North Atlantic, around South Africa, and around Australia.<sup>76</sup> Grey *et al.* 2012, however, exists only as an abstract. While the detailed results of the Grey *et al.* 2012 research may have been presented at a conference at one point, NRDC and NMFS have apparently based their analysis and conclusions on a three-paragraph study abstract summarizing the findings of the study. The abstract contains no discussion of methods or materials, includes no analysis, no raw data, and no citations. Further, as the study is unpublished – in fact, apparently *unwritten* - it has not been peer reviewed nor subjected to any type of validation or scrutiny. NRDC and the Service’s citation to this study, therefore, is improper.

If the three-paragraph abstract reveals anything, it is that the underlying study seems to be based on suspect methods and is irrelevant to the DPS determination. This study took DNA samples from fins sold in commercial markets, and was used by the authors to support conclusions that greater conservation measures are required for dusky sharks.<sup>77</sup> As explained above, unverified representations from shark fin suppliers provide poor evidence of origin and undermine the credibility of the study and conclusions therefrom. Further, and significantly, while the abstract stated that the study found that these populations were largely isolated from one another, it did find that there was some level of migratory exchange between the populations.<sup>78</sup>

Finally, even if the abstract for the Grey *et al.* 2012 study was 100% verified and accurate, the fact that sharks in three different oceans exhibit some genetic differences does not mean that that they are markedly discrete. Indeed, without some analysis to delineate the Atlantic population of dusky sharks, there is no proper population from which to measure distinctiveness. With no delineation from contiguous Atlantic populations, some evidence of genetic communication in and among the various oceans, and, at most, some genetic differences from populations in other oceans, dusky sharks in the NW Atlantic/GoM cannot be considered separate from other populations, much less markedly so, as required by the DPS Policy.

*ii. There are No Meaningful Differences in Dusky Shark Conservation Status in NW Atlantic/GoM*

NRDC also made the case that dusky sharks in the NW Atlantic/GoM are distinct because the NW Atlantic/GoM primarily overlays U.S. waters, which offer “the prospect of greater regulatory protection compared to many other jurisdictions globally where the species is found.”<sup>79</sup> NRDC’s analysis of these indicia of discreteness is illogically circular. As noted above, NRDC failed to provide evidence that dusky sharks in the NW Atlantic/GoM are separate, markedly or otherwise, from contiguous populations throughout the Atlantic Ocean. That NRDC is arbitrarily petitioning to delineate primarily U.S. waters as a DPS is not itself support for designating a DPS. At any rate, NRDC never made the requisite showing that conservation measures within the putative DPS are, in any way, different than conservation

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<sup>76</sup> See Grey *et al.* 2012

<sup>77</sup> See Grey *et al.* 2012

<sup>78</sup> Grey *et al.* 2012 .

<sup>79</sup> NRDC Petition at 4.

measures in other countries. Instead, NRDC states that the U.S. “offers *the prospect* of greater regulatory protection.”<sup>80</sup> The DPS Policy, however, requires analysis of conservation measures that “*exist . . . [and] are significant in light of section 4(a)(1)(D) of the Act.*”<sup>81</sup> All nations have the capacity to offer enhanced regulatory protections to dusky sharks. What matters for purposes of the DPS analysis is whether those protections are in place.<sup>82</sup>

NRDC’s Petition did not provide any analysis that differences in conservation measures in the U.S. and elsewhere are significant in light of section 4(a)(1)(D) of the Act,” simply noting that such information is not available.”<sup>83</sup> NMFS, however, in rejecting under ESA section 4(a)(1)(D) Petitioners’ arguments about global protections, provided a lengthy analysis of international dusky shark protections.<sup>84</sup> These international measures include the Food and Agriculture Organization of the United Nations International Plan of Action for the Conservation and Management of Sharks, robust management measures in Australia, shark fishing bans in the Bahamas, Marshall Islands, Honduras, Sabah (Malaysia), and Tokelau (an island territory of New Zealand), and around 2,000,000 square kilometers of shark sanctuary encompassing numerous islands and important dusky shark habitat.<sup>85</sup>

With respect to shark finning, which the Petitioners consider among the gravest global threats to the dusky shark, NMFS cited to numerous national and local bans on the sale or trade of shark fins/products and its own 2010 Shark Finning Report to Congress which concluded that “great strides continue to be made in shark conservation, data gathering, management, research, and education on a national and global scale that will contribute to sustainable management of sharks.”<sup>86</sup> Based on this broad review of available data, NMFS concluded that “neither the information in the petitions, nor the information in our files, suggest that the global dusky shark population is at risk of extinction from the inadequacy of existing regulatory mechanisms.”<sup>87</sup> That rational analysis must carry over to the Service’s analysis of the potential DPS designation. Because the Petitioners provided no evidence comparing dusky shark conservation measures between the U.S. and abroad, and because NMFS’s own analysis under ESA section 4(a)(1)(D) of international conservation measures concluded that such international measures could not be shown to be deficient, NMFS must reject Petitioners’ unsupported assertion that the putative

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<sup>80</sup> NRDC Petition at 4 (emphasis added).

<sup>81</sup> 61 Fed. Reg. at 4725 (emphasis added).

<sup>82</sup> Even so, in the DPS analysis supporting the Service’s recent decision to not list the ribbon seal under the ESA, NMFS found that differences between Russia’s regulations, which allow ribbon seal hunting, and U.S. regulations, which ban ribbon seal hunting, “do not rise to a level that provides a sufficient basis to justify the use of international boundaries to satisfy the discreteness criterion of our DPS Policy.” 78 Fed. Reg. 41371, 41375 (July 10, 2013).

<sup>83</sup> NRDC Petition at 4-5.

<sup>84</sup> 78 Fed. Reg. at 29108.

<sup>85</sup> 78 Fed. Reg. at 29108.

<sup>86</sup> [http://www.nmfs.noaa.gov/sfa/domes\\_fish/ReportsToCongress/SharkFinningReport10.pdf](http://www.nmfs.noaa.gov/sfa/domes_fish/ReportsToCongress/SharkFinningReport10.pdf). Last visited 6/20/13.

<sup>87</sup> 78 Fed. Reg. at 29108.



DPS is delimited by nations with management practices and conservation regulations that are so different that such differences “are significant in light of section 4(a)(1)(D) of the Act.”<sup>88</sup>

4. Dusky Sharks In The NW Atlantic/GoM are Not “Significant” as Defined by the DPS Policy

Because Congress admonished that DPS designation be used “sparingly,” even where a population could be considered distinct, it cannot be treated as a DPS unless the discrete population is important to the taxon as a whole.<sup>89</sup> This “significance” consideration is important as listing agencies applying the DPS policy have found several species to be distinct, but did not classify them as DPS because they were not important to the taxon as a whole.<sup>90</sup> While, as discussed above, the Associations believe there to be insufficient evidence that dusky sharks in the NW Atlantic/GoM are distinct, there is even less evidence that the minor genetic distinctions between dusky sharks in the Atlantic and other oceans, to the extent they exist at all, are in any way significant. Each of the DPS Policy’s indicia of “significance” is discussed in detail below.

*i. The NW Atlantic/GoM is Not a Unique or Unusual Setting for Dusky Sharks*

Under the DPS Policy, a population segment may be considered to have a “significant distinction” if the population persists in “an ecological setting that is unusual or unique for the taxon.”<sup>91</sup> With respect to dusky sharks, there is nothing unusual or unique, however, about the ecology of the NW Atlantic/GoM. Dusky sharks are a highly adaptable, highly migratory, and widely distributed species. As the International Union for Conservation of Nature range map utilized by NRDC and reproduced below makes apparent, dusky sharks are found in the Atlantic, Pacific and Indian Oceans, as well as the Mediterranean and Black Seas, and are found off the coasts of every continent except Antarctica.<sup>92</sup>

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<sup>88</sup> 61 Fed. Reg. at 4725.

<sup>89</sup> 61 Fed. Reg. at 4725.

<sup>90</sup> See e.g., 67 Fed. Reg. 44133 (Jul. 1, 2002); 68 Fed. Reg. 11574 (Mar. 11, 2003); 68 Fed. Reg. 34628 (Jun 10, 2003); 77 Fed. Reg. 25792 (May 1, 2012).

<sup>91</sup> 61 Fed. Reg. at 4725.

<sup>92</sup> NRDC Petition at 2, Figure 1.



Figure 2: The global distribution of the dusky shark (*Carcharhinus obscurus*). Image from the IUCN Red List of Threatened Species, Version 2011.2 (<http://maps.iucnredlist.org/map.html?id=3852>).

Dusky sharks inhabit the NW Atlantic/GoM for the same reasons they inhabit coastal waters all over the world – the NW Atlantic/GoM provides both inshore and offshore waters that meet dusky sharks’ broad depth preferences (from surface down to 400 meters)<sup>93</sup> and temperature preferences<sup>94</sup> (between 19 and 30° C),<sup>95</sup> is sufficiently saline,<sup>96</sup> and contain prey species, which, for dusky sharks, is an exceptionally wide variety of species.<sup>97</sup> Simply put, the NW Atlantic/GoM is not unusual or unique because dusky sharks, as highly migratory apex predators, do not require unique or unusual habitat.

The NRDC Petition attempted to characterize the NW Atlantic/GoM as unique and unusual by asserting (without support) that the NW Atlantic/GoM differs from other areas in bathymetry, hydrography, productivity, and trophic relationships.<sup>98</sup> We agree. Every body of water is unique in some way. The proper inquiry under the DPS policy, however, is whether the “unique” ecology of the NW Atlantic/GoM is significant to the taxon as a whole.<sup>99</sup> NRDC skirts that inquiry and instead avers that NW Atlantic/GoM is unusual and unique because the United Nations (“UN”) Environment Program classified the GoM, the Northeast U.S. continental shelf, and the Southeast continental shelf as large marine ecosystems (“LME”).<sup>100</sup> LME, however, are

<sup>93</sup> Musick, J.A., Grubbs, R.D., Baum, J., and E. Cortés. 2009. *Carcharhinus obscurus*. In: IUCN 2011. IUCN Red List of Threatened Species. Version 2011.2. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded on 19 October 2012.

<sup>94</sup> 78 Fed. Reg. at 29102.

<sup>95</sup> Musick, J.A., Grubbs, R.D., Baum, J., and E. Cortés. 2009. *Carcharhinus obscurus*. In: IUCN 2011. IUCN Red List of Threatened Species. Version 2011.2. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded on 19 October 2012.

<sup>96</sup> 78 Fed. Reg. at 29102.

<sup>97</sup> 78 Fed. Reg. at 29103.

<sup>98</sup> NRDC Petition at 6.

<sup>99</sup> 71 Fed. Reg. at 4723; *see also* 77 Fed. Reg. at 25806.

<sup>100</sup> NRDC Petition at 6.

not unique or unusual. The UN designated 64 LME covering every coastal water on the planet.<sup>101</sup> If anything, the fact that the putative NW Atlantic/GoM DPS was broken into three distinct LME by the UN Environment Program is evidence that the NW Atlantic/GoM is not unique or unusual.

Even if the NW Atlantic/GoM were, in some way, unique or unusual, that fact is not enough to meet the DPS Policy requirement that the unique ecology be significant to the taxon as a whole. In order for a unique ecology to be of significance to the taxon as a whole, the DPS Policy and subsequent listing agency decisions interpreting it, require an evaluation of: (1) whether the species is adapted to the unique ecology in a way that is significant to the taxon as a whole; (2) whether other populations of the species could persist in the ecological setting.<sup>102</sup>

NRDC's petition offers no information suggesting that dusky sharks in the NW Atlantic/GoM have adapted to any "unique ecology" in the NW Atlantic/GoM. There is no such evidence because dusky sharks in the NW Atlantic/GoM are physically, physiologically, and behaviorally the same as dusky sharks everywhere else.<sup>103</sup> There is nothing about the NW Atlantic/GoM that would prohibit dusky sharks from any other part of the globe from inhabiting it. Indeed, there is evidence that dusky sharks all over the Atlantic Ocean have migrated, and are migrating, in and out of the NW Atlantic/GoM.<sup>104</sup>

The NW Atlantic/GoM is not a distinguishable ecological setting for dusky sharks in any way, much less a significant way. Dusky sharks in the NW Atlantic/GoM have not adapted to the NW Atlantic/GoM in any significant way, nor would such adaptations (to the extent they exist at all) make them the only population suited for the NW Atlantic/GoM. Therefore, the NW Atlantic/GoM is not an unusual or unique ecological setting for dusky sharks.

*ii. Loss of NW Atlantic/GoM Stock Would Not Result in a Significant Gap in the Range of the Taxon*

Under the DPS Policy, a population segment may be considered to have a "significant distinction" if loss of the discrete segment would result in a significant gap in the range of the taxon. Again, "significance" is measured relative to the taxon as a whole by examining: (1) the size of the population segment relative to the taxon as a whole; (2) the size of the population segment's range relative to the range of the taxon as a whole; (3) the likelihood that other populations would immigrate and repopulate the extirpated range; (4) distinctive traits or genetic variations of the population segment; and (5) the role of the population segment's range relative to the taxon as a whole.<sup>105</sup>

Despite the detailed analysis required for this element by the DPS Policy, the NRDC's entire argument in support of the premise that loss of the NW Atlantic/GoM stock would result

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<sup>101</sup> [http://www.lme.noaa.gov/index.php?option=com\\_content&view=category&id=41&Itemid=53](http://www.lme.noaa.gov/index.php?option=com_content&view=category&id=41&Itemid=53).

<sup>102</sup> 77 Fed. Reg. at 25806.

<sup>103</sup> Benavides *et al.* 2011 at 19.

<sup>104</sup> See Benavides *et al.* 2011; Grey *et al.* 2012.

<sup>105</sup> 77 Fed Reg. at 25809.

in a significant gap in the range of the taxon is a one-line conclusion that “the loss of the northwest Atlantic population of dusky sharks would result in a significant geographic gap in the range of dusky sharks worldwide.”<sup>106</sup> NRDC appears to support its conclusion by restating its argument that dusky sharks in U.S. waters are afforded “greater opportunities for regulatory protections.”<sup>107</sup> Not only is this statement irrelevant to this element of the DPS Policy analysis, as discussed above, NMFS itself concluded that this statement is wholly unsupported.

Nonetheless, NMFS helped remediate NRDC’s analytical deficiency by importing into this significance inquiry an argument on which NRDC improperly based its discreteness justification. That argument suggested that dusky sharks in the NW Atlantic/GoM are so isolated that the region would not be repopulated if the NW Atlantic/GoM population were extirpated.<sup>108</sup> NRDC based this conclusion on genetic data that it believed indicate that dusky sharks in the NW Atlantic/GoM do not intermix with contiguous populations.<sup>109</sup> In doing so, NRDC ignores entirely that there are no studies analyzing genetic isolation from most of the contiguous populations in the Atlantic Ocean.

NRDC relies exclusively on one study, Benavides *et al.* 2011, which “found preliminary evidence” of modest genetic distinctiveness between dusky sharks along the U.S. East Coast and southern Brazil.<sup>110</sup> Benavides *et al.* 2011 did not study any other known Atlantic populations in Central America, South America, Europe, or Africa – each of which is within the extensive migratory range of dusky sharks. Even with respect to southern Brazil, the “preliminary evidence” found some level of genetic communication with dusky sharks along the U.S. East Coast.<sup>111</sup> As such, not only did NRDC fail to provide evidence of isolation from most contiguous dusky shark populations, the sole study it relies on to attempt to demonstrate genetic isolation actually demonstrates genetic communication with the NW Atlantic/GoM. There is no basis for concluding that the NW Atlantic/GoM would not be repopulated by this highly migratory species following such a hypothetical extirpation.

To the contrary, if this apex predator were somehow extirpated from the NW Atlantic/GoM, prey species there would likely increase in the absence of feeding pressure from dusky sharks. Highly migratory dusky sharks from contiguous populations that are known or suspected to pass into the NW Atlantic/GoM would likely exploit the increased feeding opportunities and repopulate the area. In analogous circumstances, NMFS held that such immigration by the migratory population provided sufficient likelihood of repopulation that the “significant gap” element was not met.<sup>112</sup> Even where the listing agency had strong evidence

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<sup>106</sup> NRDC Petition at 6.

<sup>107</sup> NRDC Petition at 6.

<sup>108</sup> 78 Fed. Reg. at 29103; NRDC Petition at 4.

<sup>109</sup> NRDC Petition at 4.

<sup>110</sup> Benavides, M.T., Horn, R.L., Feldheim, K.A., Shivji, M.S., Clarke, S.C., Wintner, S., Natanson, L., Braccini, M., Boomer, J.J., Gulak, S.J.B., and D.D. Chapman. 2011. Global phylogeography of the dusky shark *Carcharhinus obscurus*: implications for fisheries management and monitoring the shark fin trade. *Endangered Species Research* **14**: 13-22.

<sup>111</sup> Benavides *et al.* 2011 at 19.

<sup>112</sup> 67 Fed. Reg. at 44137.

that the extirpated range would not be repopulated, it determined that the loss of that portion of range was not meaningful unless it could be shown to have a significant role for the taxon as a whole.<sup>113</sup> No such showing was made by Petitioners or considered by NMFS.

NRDC's entire support for the notion that loss of the NW Atlantic/GoM would result in a significant gap in the taxon of the species was to simply state such in a one-line conclusion. Even where NMFS provided some justification for NRDC's conclusion, it did so without adequate support. Genetic isolation of dusky sharks in the NW Atlantic/GoM from contiguous populations is largely unstudied. What evidence is available is preliminary, focused on one small population off of southern Brazil, and showed some genetic communication. Known dusky shark migratory behaviors and feeding preferences suggest the NW Atlantic/GoM may be readily repopulated following a hypothetical extirpation. Even if it were not, however, the inability to repopulate the NW Atlantic/GoM would not create a significant gap in the range of the taxon unless a demonstration were made that the NW Atlantic/GoM played a significant role for the taxon as a whole. As that showing was not made by Petitioners or considered by NMFS, the Service must find that loss of the NW Atlantic/GoM would not result in a significant gap in the range of the dusky shark.<sup>114</sup>

*iii. The NW Atlantic/GoM Population is Not the Only Surviving Natural Occurrence of the Dusky Shark*

Under the DPS Policy, a population can be shown to be significant to the taxon as a whole if there is evidence that the population represents the only surviving natural occurrence of the taxon that may be more abundant elsewhere as an introduced population outside its historic range. The Petitioners presented no evidence on this element, presumably because dusky sharks have never been introduced anywhere.

Naturally occurring populations of the species inhabit three oceans, two seas, and the coastlines of every continent except for Antarctica. The dusky shark is abundant and occupies the entire historic range of the species.

*iv. NW Atlantic/GOM Stock Does Not Differ Markedly from Other Populations*

The final grounds for deeming a distinct segment to be "significant," among those suggested in the DPS Policy, is that it "differs markedly from other populations of the species in

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<sup>113</sup> 77 Fed. Reg. at 25809; 68 Fed. Reg. at 34637; 68 Fed. Reg. at 11578.

<sup>114</sup> Neither Petitioner offered evidence that the NW Atlantic/GoM, and dusky sharks therein, represented a significant portion of overall dusky shark range and abundance. As to abundance, no such comparison can be made as both NMFS and Petitioners have acknowledged that there is little information on dusky shark abundance outside the NW Atlantic/GoM. (78 Fed. Reg. at 29106). While it is possible to compare the range encompassed in the NW Atlantic/GoM to known global dusky shark range, the Petitioners failed to do so. NMFS, however, in rejecting Petitioners' argument that the NW Atlantic/GoM represents a significant portion of range such that a global listing was warranted, concluded that "neither petition presented substantial information, nor is there information in our files, to indicate that the Northwest Atlantic and Gulf of Mexico is a significant portion of the dusky shark's range." (78 Fed. Reg. at 29103-104).

its genetic characteristics.” Importantly, this requirement presents an even higher hurdle than the “marked separation” standard in the DPS Policy’s “discreteness” analysis because here, the genetic differences not only have to be “markedly different,” but those marked differences have to be significant to the taxon as a whole.<sup>115</sup>

Despite the higher hurdle presented by this requirement, the NRDC petition simply reiterates its argument for distinction – that Benavides *et al.* 2011 and Grey *et al.* 2012 found that dusky sharks in the Atlantic were genetically distinct from dusky sharks in other oceans and that Benavides *et al.* 2011 found preliminary evidence of some genetic distinction between dusky sharks in the NW Atlantic/GoM and dusky sharks off of southern Brazil. As discussed above, where genetic information about dusky shark populations is available, it is hardly conclusive. More importantly, genetic information is literally nonexistent for dusky sharks in important areas contiguous to the NW Atlantic/GoM. As such, there is no credible evidence that the NW Atlantic/GoM stock is even a properly delineated population nor that it is genetically distinct from contiguous populations.

Even if there are demonstrated genetic differences between dusky sharks in the NW Atlantic/GoM and dusky sharks elsewhere, and even if such differences were considered significant enough to be “markedly different,” those differences could not be considered significant to the taxon as a whole. In the DPS analysis for the Lower Kootenai River burbot (as in the present case), the sampled populations showed some differences in haplotype frequency; however, the listing agency found that such differences did “not indicate that genetic differentiation of this population segment is significant to the remainder of the population.”<sup>116</sup> Instead, the Service concluded that “the genetic difference that is presented in the studies is nothing more than what would be expected from such a wide-ranging species.”<sup>117</sup> Notably, dusky sharks are an even wider ranging species, strongly suggesting that any genetic differences exhibited by dusky sharks in the NW Atlantic/GoM are not significant to the taxon as a whole. Further, in the DPS analysis for the Washington population of the grey squirrel, the listing service found that the genetic differences were not significant because the haplotypes in different segments show similarities.<sup>118</sup> That is precisely the case with Benavides *et al.* 2011. As such, even if dusky sharks in the NW Atlantic/GoM were genetically different from dusky sharks elsewhere, those differences cannot be shown to be significant to the taxon as a whole.

### **C. Dusky Sharks Are Not Threatened or Endangered in the NW Atlantic/GoM**

In addition to petitioning for designation of a NW Atlantic/GoM DPS, the NRDC Petition requested that dusky sharks in the putative NW Atlantic/GoM DPS be listed as threatened,<sup>119</sup> while the WEG Petition requested they be listed as threatened or endangered.<sup>120</sup> Neither petition

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<sup>115</sup> 77 Fed. Reg. at 25809.

<sup>116</sup> 68 Fed. Reg. at 11578.

<sup>117</sup> *Id.* at 11578.

<sup>118</sup> *Id.* at 34639.

<sup>119</sup> NRDC Petition at i.

<sup>120</sup> WEG Petition at 2.

was supported by a rational examination of dusky shark population trends and management in the NW Atlantic/GoM or even a passing familiarity with ESA listing standards. Under the ESA, an endangered species is “any species in danger of extinction throughout all or a significant portion of its range.”<sup>121</sup> A “threatened” species is “any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.”<sup>122</sup> Dusky sharks in the NW Atlantic/GoM do not meet either definition.

While there is very little information on historic dusky shark abundance or range in the NW Atlantic/GoM, there is some evidence that between the 1950s and the 1990s, dusky shark numbers in the NW Atlantic/GoM declined substantially.<sup>123</sup> NMFS recognized this decline, understood its linkage to commercial and recreational fishing, and acted.

In 1999, the Service’s Fishery Management Plan (“FMP”) for Atlantic Tunas, Swordfish, and Sharks classified dusky sharks as a prohibited species for both commercial and recreational fishing. In 2003, NMFS amended this FMP to establish a Mid-Atlantic shark fishery closure to protect the dusky shark and other species.<sup>124</sup> Beginning in January 2005, in order to reduce dusky shark bycatch and mortality, NMFS closed the entire Mid-Atlantic to bottom longline fishing from January 1 to July 31 every year.<sup>125</sup> In July 2008, NMFS issued Amendment 2 to the Consolidated Atlantic Highly Migratory Species FMP to further reduce dusky shark bycatch by reducing the overall retention limits for large coastal shark species, no longer allowing species to be collected under display permits, and prohibiting recreational fishing for similar looking species.<sup>126</sup>

Additionally, with large coastal sharks like dusky sharks, state laws and regulations promulgated through the State Marine Fisheries Commissions play a particularly important role in protecting against the decline of the species. The Gulf States and Atlantic States Marine Fisheries Commissions work in cooperation with NMFS to develop complementary protective regulations for highly migratory sharks. Formed by interstate compact, these management bodies develop rules protecting dusky sharks within state waters, generally out three miles from the coast. Every state from Texas to Maine is a member of, and participates in, these commissions, and promulgates rules for the protection of dusky sharks. As indicated in Table 3 of the WEG Petition (reproduced here), these state-level protections are robust.

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<sup>121</sup> 16 U.S.C. § 1532(6).

<sup>122</sup> 16 U.S.C. § 1532(20).

<sup>123</sup> Cortés, E., E. Brooks, P. Apostolaki, C. A. Brown. 2006. Stock Assessment of Dusky Shark in U.S. Atlantic and Gulf of Mexico. NMFS Panama City Laboratory, Sustainable Fisheries Division Contribution SFD-2006-014.

<sup>124</sup> Amendment 1 to FMP for Atlantic Tunas, Swordfish, and Sharks (NMFS 2003).

<sup>125</sup> [http://www.nmfs.noaa.gov/pr/pdfs/species/duskyshark\\_detailed.pdf](http://www.nmfs.noaa.gov/pr/pdfs/species/duskyshark_detailed.pdf).

<sup>126</sup> 78 Fed. Reg. at 29107.

**Table 3. Relevant state laws affecting dusky shark in the Northwest Atlantic Gulf of Mexico**  
(current as of January 1, 2010).

State	Relevant laws
Delaware	Prohibited species: same as federal - prohibition against fins not naturally attached to body (NMFS 2010 at 3-9, <i>citing</i> DE Code Regulations 3541)
Maryland	Adopted into regulation all measures for the ASMFC Interstate Fishery Management Plan for Atlantic Coastal Sharks ( <i>Id.</i> at 3-9, <i>citing</i> Code of Maryland Regulations 08.02.12.03 and 08.02.22.01-.04)
Virginia	Bag limits on large coastal sharks; prohibitions - fillet at sea, long-lining, same prohibited species as federal regulations ( <i>Id.</i> at 3-9, <i>citing</i> 4 VA Administrative Code 20-490)
North Carolina	Director may impose restrictions for size, season, areas, quantity, etc. (January-July dusky and sandbar closure); LCS restrictions; same prohibited species as federal regulations ( <i>Id.</i> at 3-10, <i>citing</i> NC Administrative Code tit. 15A, r.3M.0505)
South Carolina	Prohibition on gillnets; reference to commercial federal regulations and prohibited species ( <i>Id.</i> at 3-10, <i>citing</i> SC Code Ann. 50-5-2730)
Georgia	Dusky sharks are prohibited species; all sharks must be landed with head and fins intact; prohibition on longlines and gillnets in state waters ( <i>Id.</i> at 3-10, <i>citing</i> GA Code Ann. ' 27-4-130.1; OCGA ' 27-4-7(b); GA Comp. R. & Regs. ' 391-2-4-.04)
Florida	Prohibited species: same as federal regulations ( <i>Id.</i> at 3-10, <i>citing</i> FL Administrative Code Ann. r.68B-44, F.A.C)
Alabama	Dusky sharks are prohibited species ( <i>Id.</i> at 3-10, <i>citing</i> AL Administrative Code r. 220-2-.46, r.220-3-.30, r.220-3-.37)
Louisiana	Prohibited species: same as federal regulations ( <i>Id.</i> at 3-10, <i>citing</i> LA Administrative Code Title 76, Pt. VII, Ch. 3, § 357)
Mississippi	Prohibited species: reference to federal regulations ( <i>Id.</i> at 3-10, <i>citing</i> MS Code Title-22 part 7)
Texas	Prohibited species: same as federal regulations ( <i>Id.</i> at 3-10, <i>citing</i> TX Administrative Code Title 31, Part 2, Parks and Wildlife Code Title 5, Parks and Wildlife Proclamations 65.3 and 65.72)

Further, for management measures promulgated by the Atlantic States Marine Fisheries Commission via its Interstate Fishery Management Plan for Atlantic Coastal Sharks,<sup>127</sup> the federal Atlantic Coastal Fisheries Cooperative Management Act provides for federal enforcement against non-compliant states through a fishing moratorium.<sup>128</sup>

Despite these protections, the WEG and NRDC petitions focus intently on the mid-1990s low water mark of dusky shark abundance. While that nadir is important as it was the catalyst

<sup>127</sup> See ASMFC, “Coastal Sharks,” available at <http://asmfc.org/coastalSharks.htm>.

<sup>128</sup> See 16 U.S.C. §§ 5105(b), 5106.



for the substantial protections that NMFS and the states put in place in the succeeding decades, it is the species' present status that matters for purposes of an ESA listing. The proper evaluation, therefore, is whether dusky sharks *today* are in danger of extinction or likely to become so.<sup>129</sup> As NMFS has recognized, the 2011 Stock Assessment Report on dusky sharks produced by the Southeast Data, Assessment, and Review 21 (“SEDAR 21”)<sup>130</sup> provides the best scientific and commercial data available on the current status of dusky sharks.<sup>131</sup> Because SEDAR 21 provides its assessments for purposes of fisheries management, however, its findings must be properly interpreted to be relevant to an ESA listing analysis.

A proper interpretation of SEDAR 21 suggests that dusky shark numbers in the NW Atlantic/GoM have been increasing, as have many of the abundance indices, although it does appear that fewer older fish are present.<sup>132</sup> These findings may call for the need for stringent management under the Magnuson-Stevens Fishery Conservation and Management Act (“MSA”),<sup>133</sup> but certainly do not meet the standards for listing under the ESA.

1. There is No Evidence that Dusky Sharks in the NW Atlantic/GoM are at Risk of Extinction Now or in the Foreseeable Future

According to SEDAR 21, dusky sharks in the NW Atlantic/GoM are overfished (in terms of biomass) and overfishing is occurring (in terms of fishing mortality). However, the criteria

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<sup>129</sup> While the Associations recognize that there was evidence of a decline, they do not suggest that dusky sharks could have been listed as endangered or threatened in the mid-1990s either. As explained in this section, evaluating declines in biomass for purposes of fisheries management is entirely different than evaluating population decline for purposes of an ESA listing.

<sup>130</sup> NMFS, Southeast Fisheries Science Center, Southeast Data, Assessment, and Review, SEDAR 21 Stock Assessment Report HMS Dusky Shark, Section III (Aug. 2011). 414 p. The Associations will refer to this report as “SEDAR 21.” Unless otherwise noted, page references will be to Section III, the Stock Assessment Report of the SEDAR 21 document.

<sup>131</sup> The Petitions, in contrast, also rely on several high-profile, but critically received, journal articles often cited by environmentalists as evidence that large pelagic species have been depleted by fisheries worldwide. In particular, one of these papers in particular, Baum *et al.* (2003), argues that many shark species, both globally and in the NW Atlantic/GoM (including dusky sharks), have undergone rapid and significant declines of upwards of ninety percent. Baum, J. K., R. A. Myers, D. G. Kehler, B. Worm, S. J. Harley, and P. A. Doherty 2003. Collapse and Conservation of Shark Populations in the Northwest Atlantic. *Science* 299:389-392. This paper and several other papers cited by Petitioners are based on analysis of catch-per-unit-of-effort (“CPUE”) data employed without the statistically-based standardization and integration of CPUE data with other information as is the norm for a NMFS stock assessment. In fact, Baum *et al.* (2003) has generated an unusually high volume of published responses criticizing the authors on this very ground. See, e.g., Maunder, Mark N., John R. Sibert, Alain Fonteneau, John Hampton, Pierre Kleiber, and Shelton J. Harley (2006). Interpreting catch per unit effort data to assess the status of individual stocks and communities. *ICES J. of Mar. Sci.* 63, no. 8: 1373-1385; Burgess, George H., Lawrence R. Beerkircher, Gregor M. Cailliet, John K. Carlson, Enric Cortes, Kenneth J. Goldman, R. Dean Grubbs, John A. Musick, Michael K. Musyl, and Colin A. Simpfendorfer (2005). Is the collapse of shark populations in the Northwest Atlantic Ocean and Gulf of Mexico real? *Fisheries* 30, no. 10: 19-26. For an instructive overview of this debate and various papers generated, see University of Hawaii Pelagic Research Program at [http://www.soest.hawaii.edu/PFRP/large\\_pelagics/large\\_pelagic\\_predators.html](http://www.soest.hawaii.edu/PFRP/large_pelagics/large_pelagic_predators.html).

<sup>132</sup> SEDAR 21, Sect. I, at 62; Sect. III. at 15 (Table 2.2).

<sup>133</sup> 16 U.S.C. § 1801 *et seq.*

for determining “overfishing” pursuant to MSA Section 303(a)(10)<sup>134</sup> for a managed fishery are entirely different from ESA listing standards. Nonetheless, both Petitioners and NMFS improperly point to these findings as evidence that dusky sharks are overutilized for commercial and recreational purposes and are inadequately protected under existing regulatory protections.<sup>135</sup>

As NMFS is aware, MSA status determination criteria are “objective and measurable” guideposts designed help achieve the MSA’s primary objective of preventing overfishing and achieving optimum yield (“OY”) from a fishery over the long term.<sup>136</sup> By definition, OY is an amount of fish that “will provide the greatest overall benefit to the Nation” and which “is prescribed on the basis of maximum sustainable yield” (“MSY”), as reduced by certain statutory factors.<sup>137</sup> In general, this “amount of fish” is determined on an annual or multi-year basis by applying a rate of harvest determined to achieve MSY to a stock’s estimated biomass.<sup>138</sup> In theory, maintaining harvests at the MSY rate of fishing mortality rate (“ $F_{MSY}$ ”) should result in long-term average stock size that produces the highest long-term average catch.

Overfishing occurs when harvest levels result in a fishing mortality rate exceeding  $F_{MSY}$ .<sup>139</sup> If overfishing persists, it jeopardizes the capacity of a stock to produce the maximum amount of long-term landings. Put another way, overfishing means that present fishing pressures could negatively impact future catch rates. As such, exceeding  $F_{MSY}$ , even by large amounts, does not put a fish population on an inevitable course toward extinction. The benchmarks developed for the purposes of fisheries management cannot be substituted for the rigorous and substantially different analytical purposes of determining whether a species may qualify as threatened or endangered under the ESA. Indeed, populations of fish can persist for very long periods of time at fishing mortality rates (“ $F$ ”) many times  $F_{MSY}$ . In the case of NW Atlantic/GoM stock of dusky shark, the current estimate of the ratio of current  $F$  to  $F_{MSY}$  is 1.59.

Not only are the MSA status determination criteria geared toward preserving abundance, as opposed to preventing extinction, for dusky sharks in the NW Atlantic/GoM, they are also conservative. One of fishing’s effects is to reduce the per capita reproductive output of fish in the population, as fishing reduces the fraction of fish that live long enough to spawn and the average number of times they spawn during their lifetime.<sup>140</sup> It is common for a stock

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<sup>134</sup> 16 U.S.C. § 1853(a)(10).

<sup>135</sup> 78 Fed. Reg. at 29104 – 29108.

<sup>136</sup> See 16 U.S.C. § 1853(a)(10); see also *id.* § 1851(a)(1) (“Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.”).

<sup>137</sup> 16 U.S.C. § 1802(33).

<sup>138</sup> See generally 50 C.F.R. § 600.310(e)(1).

<sup>139</sup> 50 C.F.R. § 600.310(e)(2)(i)(B),(C). The National Standard 1 Guidelines refer to the overfishing criterion as the “maximum fishing mortality threshold,” *id.* § (C)l a rate of harvest that if exceeded, “jeopardizes the capacity of a stock ... to produce MSY on a continuing basis.” *Id.* § (B). By definition, this threshold is a rate in excess of  $F_{MSY}$ , and the Associations will use that term to denote the overfishing threshold.

<sup>140</sup> See, e.g., Pauly, D. (1983). Some simple methods for the 1983 assessment of tropical fish stocks. *FAO Fish.Tech.Pap.*, (234):52 p.

assessment to calculate associated F values in terms of the percent spawning potential of a population relative to the stock's unfished or "virgin" population ("F<sub>x%</sub>").<sup>141</sup> A typical reference point based on this measure would fall in the range of thirty (F<sub>30%</sub>) to forty percent (F<sub>40%</sub>) of unfished spawning potential.<sup>142</sup> Though now dated, the Service's Technical Guidance on precautionary approaches to setting management reference points states, "[Spawning potential ratio]-based policies such as F<sub>35%</sub> account for impacts on spawning potential and tend to provide more precaution" for fish with delayed maturity and which are vulnerable to fishing mortality before they have a chance to spawn.<sup>143</sup> Dusky sharks would fall into this category as a species that live relatively long and do not reach full maturity until a relatively late age.<sup>144</sup>

By contrast, the HMS FMP establishes F<sub>MSY</sub> at a level that SEDAR 21 showed roughly equates to F<sub>50%</sub>.<sup>145</sup> In fact, estimated F for NW Atlantic/GoM dusky sharks for the assessment's terminal year, 2009, was 0.055, which corresponds to a percent spawning output of about thirty-five percent, a level the above analysis shows would not be classified as overfishing for many stocks.<sup>146</sup> That is not to minimize the fact that dusky sharks in the NW Atlantic/GoM are subject to overfishing (although that finding was not entirely without uncertainty).<sup>147</sup> Rather, it is to suggest that dusky sharks in the NW Atlantic/GoM represent a routine case for fisheries management and, contrary to the representations of the Petitioners, that management is having the intended ameliorative effects. Managing a low fecundity species like dusky shark according to such conservative reference points is both precautionary and appropriate, but the fact that a species is conservatively managed does not mean that it is threatened or endangered under the ESA. In fact, in this case, as is often the case, the conservatively managed species shows population growth – not decline.

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<sup>141</sup> See, e.g., SEDAR 21 at 49 (Table 3.7) (showing F associated with various levels of spawning potential). As an example, a stock fished at F<sub>30</sub> over the long run should, in theory, result in a stock with thirty percent of spawning potential if the stock were unfished. When F<sub>MSY</sub> cannot be directly calculated, as with Atlantic menhaden, an F designed to achieve a management-determined level of spawning potential can be used as a proxy.

<sup>142</sup> See, e.g., South Atlantic Fishery Management Council, Amendment 17A to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Final Environmental Impact Statement, Initial Regulatory Flexibility Act Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement (July 2010) (adopting an F<sub>MSY</sub> proxy of F<sub>30%</sub> for red snapper).

<sup>143</sup> Restrepo *et al.* Technical Guidance On the Use of Precautionary Approaches to Implementing National Standard 1 of the Magnuson-Stevens Fishery Conservation and Management Act, NOAA Technical Memorandum NMFS-F/SPO-## (July 17, 1998), at 41, § 3.5.4 (citing Clark 1991; Goodyear 1993).

<sup>144</sup> Romine, J.G., John A. Musick, J.A., and G.H. Burgess (2009). Demographic analyses of the dusky shark, *Carcharhinus obscurus*, in the Northwest Atlantic incorporating hooking mortality estimates and revised reproductive parameters. *Environmental Biology of Fishes* 84: 277-289.

<sup>145</sup> See SEDAR 21 at 49 (Table 3.7) (F<sub>MSY</sub> is equal to 0.035; F<sub>50%</sub> is slightly higher at 0.036).

<sup>146</sup> See SEDAR 21 at 49 (Table 3.7) (F<sub>2009</sub> is equal to 0.055, a value that falls between F<sub>30%</sub> (0.063) and F<sub>40%</sub> (0.048)).

<sup>147</sup> See SEDAR 21 at 38 (F<sub>2009</sub>/F<sub>msy</sub> indicated considerable uncertainty in terminal estimates of fishing mortality relative to MSY levels. In particular, the posterior appeared to be bimodal, with approximately 51% of the posterior mass above 1.0 (Figure 3.8).") In other words, only slightly more than half the runs resulted in a finding that overfishing was occurring.

SEDAR 21 found “an increasing abundance (in numbers [of dusky sharks]) from 2004-present,” although it also noted a decreasing trend in biomass (the estimated weight of all fish in the stock).<sup>148</sup> “This apparent contradiction is attributable to decreasing number of older (and heavier) sharks even while the numbers of younger fish are increasing.”<sup>149</sup> Not surprisingly, therefore, SEDAR 21 found that the stock was overfished, with abundance of spawning stock just under half—forty-four percent—of dusky shark’s target spawning stock biomass at maximum sustainable yield (“SSB<sub>MSY</sub>”).<sup>150</sup> This quite obviously is a finding of concern and sufficient to trigger the need for management action under the MSA. It does not, however, put this stock on any appreciably different footing than many other overfished stocks. In such instances, fisheries management, not ESA listing, is appropriate.

While SSB<sub>MSY</sub> represents the long-term abundance target, as it is the level of biomass that produces MSY, the overfished criterion which triggers the need for management action is referred to as the minimum stock size threshold (“MSST”). Whenever any stock falls below its designated MSST, the MSA requires management action to rebuild the stock. The overfished criterion for dusky shark is particularly conservative, thus ensuring that stock will virtually always be under strict management.

Specifically, the Consolidated Atlantic Highly Migratory Species FMP establishes a common formula for determining the MSST for all managed shark species. For stocks with a natural mortality rate of 0.5 or above (stocks which tend to be more productive), the MSST is set at half the level of SSB<sub>MSY</sub>.<sup>151</sup> For those, such as dusky sharks, with lower natural mortality rates, the formula sets the MSST at one minus the natural mortality rate.<sup>152</sup> In this case, dusky sharks have an estimated natural mortality rate of 0.0666,<sup>153</sup> which means that the stock is considered overfished whenever the stock declines by just over six percent of the maximum sustainable yield stock size.<sup>154</sup> This threshold for overfishing is so close to SSB<sub>MSY</sub>, that even once the stock is rebuilt, it either will frequently be classified as overfished and subject to rebuilding even if overfishing never occurs.

The important point is that a finding that dusky sharks in the NW Atlantic/GoM are classified as overfished and that overfishing is occurring is irrelevant to an ESA listing. According to recent NMFS reports to Congress on the status of stocks, about twenty percent of all assessed U.S. stocks are overfished and/or overfishing is occurring, and none of these stocks has been listed under ESA based on these status determinations.<sup>155</sup> U.S. fisheries management

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<sup>148</sup> SEDAR 21 at 37.

<sup>149</sup> SEDAR 21 at 37.

<sup>150</sup> SEDAR 21 at 49.

<sup>151</sup> SEDAR 21, Sect. I, at 37.

<sup>152</sup> SEDAR 21, Sect. I, at 37.

<sup>153</sup> SEDAR 21, Sect. I, at 59 (Table 1).

<sup>154</sup> In other words, the stock is considered overfished if the biomass is less than ninety-four percent of the biomass that produces MSY. For comparison, for stocks that are not overfished, the National Standard 1 Guidelines recommend that the “MSST should equal ... [o]ne-half the MSY stock size ....” 50 C.F.R. § 600.310(e)(2)(ii)(B).

<sup>155</sup> NOAA Fisheries. Status of Stocks 2012, Annual Report to Congress at 1 (Undated).

practices are widely regarded as setting a high conservation standard. The benchmarks that are applied to fisheries management, however, have little relevance to ESA listing. Its relevance is analogous to arguing that a professional athlete that is not in “game shape” is at risk of a heart attack. Not being in “game shape” is very different from being morbidly obese.

The number of dusky sharks in the NW Atlantic/GoM is increasing, albeit at slow pace. The conservative management system in place, is working as intended. There was no information presented by Petitioners or considered by NMFS that shows that dusky sharks in the NW Atlantic/GoM are in danger of extinction or will be in the foreseeable future.

## 2. Oil and Gas Development is Not a Threat to Dusky Sharks in the NW Atlantic/GoM

In support for aspects of its petition requesting endangered or threatened status for dusky sharks, WEG asserts without support that the 2010 Deepwater Horizon incident has caused, and will further cause, harm to dusky sharks in the GoM.<sup>156</sup> NMFS properly dismissed these assertions as unsupported.<sup>157</sup> The Associations support the Service’s finding in this respect.

The WEG Petition’s threat analysis relative to the Deepwater Horizon incident is indicative of the unsupported conclusion-driven analysis that infects the entirety of these two petitions. WEG provided no information on how the incident may harm dusky sharks in the GoM. Instead, WEG cited to a National Geographic Daily News Article that discussed the potential harmful effects of the spill on whale sharks.<sup>158</sup> The article never mentions dusky sharks, nor did WEG in any way explain its apparent conclusion that whale sharks are an appropriate surrogate for dusky sharks in evaluating the impacts of the Deepwater Horizon incident. As it were, whale sharks are incredibly poor surrogates for dusky sharks in this respect. Whale sharks are filter feeders that filter over 100,000 gallons of water per hour as they swim with their mouths open.<sup>159</sup> This unique behavior, which is not shared by dusky sharks, led to Handwerk’s conclusion that oil filtered while feeding could cause suffocation.<sup>160</sup>

The WEG Petition alternatively alleges that oil from the Deepwater Horizon incident “has degraded sea grass habitat south of Chandeleur Island, a known nursery for a number of shark species.”<sup>161</sup> WEG’s sole citation for this premise is an advocacy document produced by the Center for Biological Diversity (“CBD”).<sup>162</sup> As NMFS pointed out, neither the CBD

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<sup>156</sup> WEG Petition at 14. We presume that this aspect of WEG’s analysis is focused on the GoM, as opposed to the Atlantic portions of the putative DPS. The petition is not clear.

<sup>157</sup> 78 Fed. Reg. at 29104.

<sup>158</sup> WEG Petition at 14 citing Handwerk, B. 2010. Whale Sharks Killed, Displaced by Gulf Oil? National Geographic Daily News, Sept. 24. Available at: [news.nationalgeographic.com/news/2010/09/100924-whale-sharks-gulf-oil-spill-science-environment](http://news.nationalgeographic.com/news/2010/09/100924-whale-sharks-gulf-oil-spill-science-environment).

<sup>159</sup> Handwerk 2010.

<sup>160</sup> Handwerk 2010.

<sup>161</sup> WEG Petition at 14.

<sup>162</sup> WEG Petition at 29.

advocacy document, nor anything in the Service's files, indicate that Chandeleur Island is a nursery for dusky sharks.<sup>163</sup>

Finally, the WEG Petition alleges that, as apex predators, dusky sharks must be suffering harmful effects from the Deepwater Horizon incident through bioaccumulation of toxins released from, or in response to, the Deepwater Horizon incident.<sup>164</sup> Again, WEG provides no evidence of actual harm and no analysis of how the risk of toxic bioaccumulation could create an extinction risk for dusky sharks globally or in the NW Atlantic/GoM. NMFS appropriately recognized the conclusion-driven nature of these aspects of the WEG Petition and properly rejected them. The Associations strongly support the Service's decision to do so.

3. Climate Change is Not a Threat to Dusky Sharks Globally or in the NW Atlantic/GoM

Petitioner NRDC alleges that climate change is a threat "affecting dusky sharks' continued existence."<sup>165</sup> In so concluding, Petitioner NRDC pushes the climate models on which it relies, both spatially and temporally, well beyond the limits of their reliability, and impermissibly ignores the significant uncertainty acknowledged by the model builders and disclosed in the Intergovernmental Panel on Climate Change ("IPCC") reports on which NRDC bases its conclusion. Even assuming that NRDC could accurately pinpoint climate change impacts in the dusky shark's range, and particularly in the NW Atlantic/GoM, NRDC failed to support its allegations that dusky shark abundance would be impacted by these climatic changes. As discussed further below, none of these suppositions is supported by a critical reading of the data.

i. NRDC's Petition Ignores Model Uncertainty that IPCC Acknowledges<sup>166</sup>

When an agency is petitioned to regulate based in large part on a risk assessment, or, as NMFS was here, on projections of theoretical future climate change impacts, it is critical that the agency acknowledge and address the uncertainties in, and inherent limitations of, the models on which it relies.<sup>167</sup> Doing so ensures that regulatory determinations made by the agency are appropriately tethered to the output from these scientific modeling exercises. Failure to acknowledge and address these modeling limitations will cause the agency to overstate (or in some cases to understate) the likelihood and severity of the threat which the agency is being petitioned to regulate. While Petitioners such as NRDC are free to craft petitions that ignore

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<sup>163</sup> 78 Fed. Reg. at 20104.

<sup>164</sup> WEG Petition at 14.

<sup>165</sup> NRDC Petition at 24.

<sup>166</sup> References throughout these comments to IPCC reports are intended to point out where NMFS misconstrued or misrepresented IPCC findings. Neither the Associations, nor their members, are herein taking any position on the IPCC reports or the credibility thereof.

<sup>167</sup> Winterfeldt, von D. and W. Edwards. 1986. *Decision Analysis and Behavioral Research*. Cambridge University Press. London, United Kingdom.

uncertainty and which offer unsupported conclusions, it is up to NMFS to critically analyze and evaluate such conclusions and ensure that the regulatory actions it proposes are based on sound science, and not the agendas of its Petitioners.

While the IPCC acknowledges the profound uncertainty in climate modeling, NRDC, in concluding that climate change is a threat to the dusky shark, ignores that uncertainty, never attempts to quantify it, and petitions for regulatory actions that treat localized and theoretical future climate change impacts as certain events.

In the IPCC's own words:

[U]ncertainty in climate change projections has always been a subject of previous IPCC assessments. Uncertainty arises in various steps towards a climate projection (figure reference omitted). For a given emissions scenario, various biogeochemical models are used to calculate concentrations of constituents in the atmosphere. Various radiation schemes and parametrizations are required to convert these concentrations to radiative forcing. Finally, the response of the different climate system components (atmosphere, ocean, sea ice, land surface, chemical status of atmosphere and ocean, *etc.*) is calculated in a comprehensive climate model. In addition, the formulation of, and interaction with, the carbon cycle in climate models introduces important feedbacks which produce additional uncertainties.<sup>168</sup>

Similarly, other national authorities also note the presence and impact of such uncertainties.

It is important to be aware that projections from climate models are always subject to uncertainty because of limitations on our knowledge of how the climate system works and on the computing resources available. Different climate models can give different projections. The projections are also based on emissions scenarios, such as the level of CO<sub>2</sub> emissions increasing or decreasing. Many different scenarios are used, based on estimates of economic and social growth, and this is one of the major sources of uncertainty in climate prediction.<sup>169</sup>

Climate models are composed of a series of linked equations that, in theory, represent the state of nature for which the model is intended.<sup>170</sup> For example, a model designed to estimate change in global average surface temperature is composed of equations intended to mimic air transport worldwide and estimate CO<sub>2</sub> emissions. Model builders routinely disagree about how

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<sup>168</sup> [http://www.ipcc.ch/publications\\_and\\_data/ar4/wg1/en/ch10s10-1.html](http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch10s10-1.html).

<sup>169</sup> <http://www.metoffice.gov.uk/climate-change/guide/future/projections>.

<sup>170</sup> Curry, J. Georgia Institute of Technology. 2003. *Some Thoughts on Uncertainty: Applying Lessons to the CCSP Synthesis and Assessment Products*.

to reflect these inputs in equations and further disagree on how to utilize current and historical climate data that form the foundations for the models.<sup>171</sup> They also routinely disagree on the values to place on the inputs to those equations. Such inputs include historical weather patterns, current and historic amounts solar radiation, total land cover, and the chemical interactions that affect energy and water vapor transport in the atmosphere and between the oceans and atmosphere.<sup>172</sup>

Since the very first IPCC assessment and continuing into the most recent AR4, the IPCC has attempted to provide users and policy makers with an understanding of the uncertainties associated with its various conclusions. The IPCC provides this cautionary information precisely so that its findings cannot be misapplied in policy decision-making. In fact, the AR4 Synthesis Report notes the following “Key Uncertainties” (internal citations omitted):<sup>173</sup>

- (1) “Climate data coverage remains limited in some regions and there is a notable lack of geographic balance in data and literature on observed changes in natural and managed systems, with marked scarcity in developing countries.
- (2) Analyzing and monitoring changes in extreme events, including drought, tropical cyclones, extreme temperatures and the frequency and intensity of precipitation, is more difficult than for climatic averages as longer data time-series of higher spatial and temporal resolutions are required.
- (3) Effects of climate changes on human and some natural systems are difficult to detect due to adaptation and non-climatic drivers.
- (4) Difficulties remain in reliably simulating and attributing observed temperature changes to natural or human causes at smaller than continental scales. At these smaller scales, factors such as land-use change and pollution also complicate the detection of anthropogenic warming influence on physical and biological systems.
- (5) The magnitude of CO<sub>2</sub> emissions from land-use change and CH<sub>4</sub> emissions from individual sources remain as key uncertainties.”<sup>174</sup>

These important caveats condition the IPCC findings upon which NRDC’s climate change allegations are largely based. By failing to reference the existing uncertainty which underlies the central aspect of its work, NRDC misleadingly assesses the state of the science that

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<sup>171</sup> IPCC 2007b. 10.5 Quantifying the Range of Climate Change Projections. 10.5.1 Sources of Uncertainty and Hierarchy of Models.

<sup>172</sup> Randall, D.A., et. al. *Climate Models and Their Evaluation*. In: *Climate Change 2007: The Physical Science Basis. Contribution to Working Group I to the Fourth Assessment Report of the IPCC*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

<sup>173</sup> Available at [http://www.ipcc.ch/publications\\_and\\_data/ar4/syr/en/mains6-1.html](http://www.ipcc.ch/publications_and_data/ar4/syr/en/mains6-1.html).

<sup>174</sup> The IPCC AR4 further notes that these uncertainties noted above do not represent an exhaustive list and that its findings can be altered if these uncertainties are reduced.



underpins the climate change threat analysis. In considering NRDC's petition, NMFS should carefully consider the uncertainty identified by the IPCC and not accept NRDC's improper characterization of the state of climate science.

ii. *Impossible to Localize Climate Change Impacts*

The uncertainty inherent in climate modeling (as acknowledged by IPCC) is compounded at the local scales relevant to the petition to list dusky sharks in the NW Atlantic/GoM as a threatened DPS. The few regional models that have been built are driven by global scale model predictions, and compound uncertainty regarding parameterizations and resolutions, initial and boundary conditions inherited from the driving global model, and inter-model variability.<sup>175</sup> Thus, for example, at the regional scale, even a change in mean precipitation (a key variable and probably the most widely studied other than global average temperature rise) is uncertain.<sup>176</sup> Regional models also generally cannot be verified because regional scale "calibration" data from the past are typically not available in sufficient quantity or quality to enable any sort of rigorous, quantitative, statistical analyses.<sup>177</sup>

Significantly, less than a week ago, NMFS declined to list the ribbon seal based on the numerous uncertainties inherent in the alleged climate change-based threats.<sup>178</sup> NMFS explained that the "course resolution" of climate models makes it difficult to localize climate change impacts and cautioned against reliance on models that predict impact on spatial scales smaller than hemispheres or continents.<sup>179</sup>

Indeed, as evidenced by NRDC's lack of citation and reliance on studies modeling global impacts, there are few reliable regional (or smaller scale) models currently available to make the sort of predictions that are needed in order to assess potential climate change impacts on dusky sharks in the NW Atlantic/GoM, or in other regions and sub-regions inhabited by dusky sharks. NRDC does cite two studies that predict increased precipitation in the northeastern United States,<sup>180</sup> but even assuming that changes in precipitation could be reliably predicted on a regional level, NRDC did not clearly state how increased precipitation levels negatively impact dusky sharks or why the northeastern United States is a relevant area of study. The coastal waters of the Northeastern United States represent a small part of the dusky shark's global population. It does not even include the full range of the DPS that NRDC is petitioning to establish.

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<sup>175</sup> Foley, A.M., Uncertainty in Regional Climate Modeling: A Review, *Progress in Physical Geography*, 34(5) 647–670, 2010.

<sup>176</sup> Hawkins, E., The potential to narrow uncertainty in projections of regional precipitation change, Accepted by *Climate Dynamics*: 28th March 2010.

<sup>177</sup> Foley, A.M., Uncertainty in Regional Climate Modeling: A Review, *Progress in Physical Geography*, 34(5) 647–670, 2010.

<sup>178</sup> 78 Fed. Reg. 41371 (July 10, 2013).

<sup>179</sup> 78 Fed. Reg. at 41376-41377.

<sup>180</sup> NRDC Petition at 25.

Without any information particularly concluding that allegedly deleterious climate change impacts will occur in, or near, the habitat of the species in question, NRDC has no basis to allege climate change is a threat to the species. As such, the best available scientific and commercial information demonstrates that climate change cannot be shown to be a threat to dusky sharks globally, or in the NW Atlantic/GoM.

4. Even If Alleged Climate Change Impacts Were Certain, NRDC Failed To Demonstrate How Such Impacts Would Harm Dusky Sharks

As explained above, NRDC incorrectly ignores the uncertainty that IPCC recognizes in its climate change analysis and improperly (and inexplicably) attempts to localize those impacts to the northeastern United States. But even if the climate change impacts that NRDC alleged were certain to occur, its petition failed to show how such impacts would harm dusky sharks.

NRDC's petition first alleged that climate change may result in increased at-vessel mortality by citing a study that found that longline fishing mortality rates were highest where **bottom** water temperatures were warmest.<sup>181</sup> The NRDC petition, based on a study that found water temperatures in the **upper** water column increased by 0.31° C between 1948 and 1998, concluded that climate change would increase at-vessel mortality from longline fishing. NRDC's conclusion was based on no data on temperature increases at the ocean bottom and contained no explanation how it extrapolated the data temporally or spatially to show that a 1/3 ° C temperature increase in surface temperature between 1949 and 1998 evinces a present or future temperature at the bottom of the ocean.

NRDC's petition also alleged that increased ocean temperatures caused by climate change may cause biomass on which dusky sharks feed to shift toward cooler water at the poles.<sup>182</sup> While such a migration may be a possible adaptation behavior for species that require specific water temperatures, NRDC again failed to show how dusky sharks would be negatively impacted. Indeed, dusky sharks are highly migratory<sup>183</sup> and are fully capable of migrating with their prey species or, as the case may be, remaining within their normal range as new prey species migrate in. As an apex predator with a broad and varied diet and which is known to make long temperature-related migrations,<sup>184</sup> it is highly unlikely that modest migratory shifts in prey species would adversely impact dusky sharks locally or globally.<sup>185</sup>

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<sup>181</sup> NRDC Petition at 25.

<sup>182</sup> NRDC Petition at 25.

<sup>183</sup> IUCN Red List of Threatened Species. <http://www.iucnredlist.org/details/3852/0>. Visited on June 20, 2013.

<sup>184</sup> NMFS Species of Concern Fact Sheet. [http://www.nmfs.noaa.gov/pr/pdfs/species/duskyshark\\_detailed.pdf](http://www.nmfs.noaa.gov/pr/pdfs/species/duskyshark_detailed.pdf). Downloaded June 20, 2013.

<sup>185</sup> NRDC cited also to Kerr *et al.* 2009 for the proposition that increases in water temperature could impact reproductive timing and success for dusky sharks. (NRDC Petition at 25). Kerr *et al.* 2009, however, never discussed dusky sharks. It is a study of potential climate change impacts on the sportfishing industry in the U.S. Atlantic, which would not include dusky sharks as they are a protected species in the U.S. Atlantic. Kerr, L.A., Connelly, W.J., Martino, E.J., Peer, A.C., Woodland, R.J. and D.H. Secor. 2009. Climate Change in the U.S. Atlantic Affecting Recreational Fisheries. *Reviews in Fisheries Science* 17: 267-289.

NRDC alternatively argued that, if dusky sharks shift their range toward the poles, they would be disconnected from the protective management practices that are in place within their existing range.<sup>186</sup> Notably, NRDC seemed to suggest that dusky sharks *are* well protected within their current range. The Associations agree with this suggestion, however, with respect to the threat potentially posed by potential migration outside protected zones, NRDC provided no evidence that management practices differ in regions and jurisdictions closer to the poles. In fact, it may be the case that migratory shifts toward the poles bring more dusky sharks into areas with robust management practices. Even if migrations toward the poles divorced dusky sharks from their protective measures, NRDC ignored the fact that all species of sharks managed under the HMS FMP which also occur in state waters are managed under interstate fishery management plans and regulations promulgated by the Gulf States and Atlantic States Marine Fisheries Commissions, in consultation with NMFS. Sharks in the NWA are managed under the ASMFC's Fishery Management Plan for Atlantic Coastal Sharks, the provisions of which, if necessary, can be extended all the way to Maine. If dusky sharks migrate toward the poles, the U.S. fisheries management system has the flexibility and jurisdiction to shift its management plans and regulations to include the current and changing range of the species.

Finally, NRDC's petition alleged that climate change will adversely impact bays and estuaries that may be utilized by neonates and juvenile dusky sharks.<sup>187</sup> Even if this degradation occurs, however, NRDC again failed to demonstrate a potential for harm to species. Instead, NRDC stated that increased precipitation in the Northeast and, specifically in Maryland, will increase nutrient discharges and eutrophication.<sup>188</sup> NRDC's petition, however, provided no evidence that the eutrophication that may result from the estimated 10% increase in rainfall would adversely impact dusky sharks or their prey.<sup>189</sup> Nor did NRDC explain why marginal increases in eutrophication in Northeastern estuaries and bays threaten dusky sharks globally or even in the putative NW Atlantic/GoM DPS.

There are no models that can accurately predict how climate change may impact dusky shark habitat. Even if all of NRDC's assumptions were true, however, there is a similar paucity of information on whether these habitat changes would adversely affect dusky sharks. Dusky sharks are highly migratory apex predators with a diverse and varied diet that makes them particularly suited to adapt to any potential change in climatological conditions. In the course of its 12-month review, NMFS must conclude that the best available scientific and commercial evidence does not demonstrate any threat to dusky sharks from climate change.

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<sup>186</sup> NRDC Petition at 25.

<sup>187</sup> NRDC Petition at 25.

<sup>188</sup> NRDC Petition at 25.

<sup>189</sup> Nor is the 10% at all certain. Consistent with the climate modeling limitations discussed above, the authors of the study on which NRDC relied in offering this estimate disclaimed "[d]ocumenting changes in precipitation is difficult given the isolated and patchy nature of rain and snow events, methodological limitations in measuring precipitation, and the limited spatial coverage of sampling locations." Kerr *et al.* 2009. p. 269.

#### **D. The ESA Is Not An Appropriate Mechanism To Regulate Climate Change And GHG Emissions**

The listing of species under the ESA based principally or exclusively on theoretical climate change impacts necessarily involves policy questions that are assigned by the Constitution to Congress.

NRDC's purpose in alleging threats to dusky sharks from climate change is the same purpose found in similar petitions to list the polar bear, American pika, Pacific walrus, ringed seal, bearded seal, spotted seal, ribbon seal, white-tailed ptarmigan, sperm whale and other species - to use the provisions of the ESA to regulate GHG emissions and global climate change. However, as the Service and the FWS have consistently acknowledged, Congress did not intend the ESA to be used in this manner; nor does the Service have the expertise, authority, or resources to establish a comprehensive carbon emission regulatory program through administration of the ESA §7 consultation and §9 take provisions.

This Administration's position is that GHG emission control regulation is best done by EPA. Similarly, the Supreme Court has recognized EPA's primacy among agencies in regulating GHGs. ". . . Congress designated an expert agency, here, EPA, as best suited to serve as *primary regulator* of greenhouse gas emissions."<sup>190</sup>

The Administration amplified this position repeatedly in the FWS's 2008 listing of the polar bear as threatened. That listing was based, in large part, upon alleged impacts of climate change on the species. Because of the identified linkage in the decision to climate change, various environmental groups argued to FWS that because of threats caused by alleged climate-based sea ice declines, GHG-emitting activities anywhere in the United States can trigger both ESA consultation under § 7 and potential private liability under § 9.

In considering the potential impact of GHG emissions on polar bears under the ESA, § 7 frames the consultation requirement as follows: "[A] Federal agency shall consult with the Secretary on any prospective agency action . . . that 'may affect' a listed species." The "may affect" test relies upon causation or a nexus between "the action under consideration" and the "discrete" effect of the proposed agency action.<sup>191</sup>

Applying that standard, FWS issued a Final 4(d) Rule that properly concluded that GHG emissions across the nation could not trigger ESA requirements. FWS found that "[w]ithout the requirements of a causal connection between the action under consideration and effects to species, literally every agency action that contributes greenhouse gases to the atmosphere would arguably result in consultation with respect to every listed species or critical habitat that may be affected by climate change."<sup>192</sup>

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<sup>190</sup> *AEP v. Connecticut*, 131 S. Ct. 2527 (2011) (emphasis added).

<sup>191</sup> See 73 Fed. Reg. 28306, 28312-13 (May 15, 2008).

<sup>192</sup> *Id.* at 28313.

The government provided several reasons for not extending various requirements of the ESA (such as consultation and take) to GHG emissions. In 2008, former Interior Secretary Kempthorne explained that the polar bear's listing:

should not open the door to use the ESA to regulate greenhouse gas emissions from automobiles, power plants, and other sources. That would be a wholly inappropriate use of the Endangered Species Act. ESA is not the right tool to set U.S. climate policy. The Endangered Species Act neither allows nor requires the Fish and Wildlife Service to make such interventions.<sup>193</sup>

In an October 2008 Memorandum to the Secretary of Interior from Solicitor David Bernhardt, entitled *Guidance on the Applicability of the Endangered Species Act's Consultation Requirements to Proposed Actions Involving the Emission of Greenhouse Gases*, the Solicitor acknowledged that, based on a review of “the best scientific and commercial data available,” “[i]t is currently beyond the scope of existing science to identify a specific source of CO<sub>2</sub> emissions and designate it as the cause of specific climate impacts at an exact location.” The Solicitor also pointed to FWS Guidance providing that “GHG that are projected to be emitted from a facility would not, in and of themselves, trigger § 7 consultation for a particular action unless it is established that the emissions from the proposed action cause an indirect effect to listed species or critical habitat.” Based upon the relevant data, therefore, the Solicitor concluded that where effects at issue “result from climate change potentially induced by GHGs, a proposed action that will involve the emission of GHG cannot pass the ‘may affect’ test, and is not subject to consultation under the ESA and its implementing regulations.”

In 2009, the Obama Administration affirmed these views. In the face of a newly enacted statute allowing the new Administration to immediately “withdraw” the 2008 Final 4(d) Rule for the polar bear,<sup>194</sup> Interior Secretary Salazar decided to retain the 2008 Final 4(d) Rule, reasoning that “the Endangered Species Act is not the proper mechanism for controlling our nation’s carbon emissions. Instead, we need a comprehensive energy and climate strategy that curbs climate change and its impacts.”<sup>195</sup>

When environmental groups litigated the polar bear 4(d) rule, the United States District Court for the District of Columbia sided with both the Bush and Obama Administrations’ rationale for the exclusion and acknowledged that the following record evidence was uncontradicted:

(1) a USGS Survey of findings by leading international climate science research organizations concluded that “[i]t is currently beyond the scope of existing science to identify a specific source of CO<sub>2</sub> emissions and designate it as the cause of specific climate impacts at an exact location,” (2) a memorandum from EPA to FWS observed that climate change researchers

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<sup>193</sup> Remarks of Secretary Dirk Kempthorne, Press Conference on Polar Bear Listing, May 14, 2008.

<sup>194</sup> See Omnibus Appropriations Act, § 429, Act of March 11, 2009, Pub. L. 111-8, 123 Stat. 524, 749 (2009).

<sup>195</sup> Interior News Release entitled, “Salazar Retains Conservation Rule for Polar Bears,” (May 8, 2009) (available at [http://www.doi.gov/news/09\\_News\\_Releases/050809b.html](http://www.doi.gov/news/09_News_Releases/050809b.html)).

have “not yet developed tools specifically intended for evaluating or quantifying end-point impacts attributable to the emissions of [GHGs] from a given facility and the effects posed to listed species or their habitats,” and (3) an Interior Department memorandum that provided:

Given the nature of the complex and independent processes active in the atmosphere and the ocean acting on [GHGs], the causal link simply cannot currently be made between emissions from a proposed action and specific effects on a listed species or its critical habitat. Specifically, science cannot say that a tiny incremental global temperature rise that might be produced by an action under consideration would manifest itself in the location of a listed species or its habitat. Similarly, any observed climate change effect on a member of a particular listed species or its critical habitat cannot be attributed to the emissions from any particular source. Rather it would be the consequence of the collective greenhouse gas accumulation from natural sources and the world-wide anthropogenically produced [GHG] emissions since at least the beginning of the industrial revolution.<sup>196</sup>

On February 20, 2013, FWS published a new final 4(d) rule for the polar bear.<sup>197</sup> There again, FWS found that “comprehensive authority to regulate those emissions [GHG] is not found in the ESA.”<sup>198</sup> FWS similarly stood by its view of the state of climate science and traceability, and the broad and untenable implication that, unless reasonably cabined in a 4(d) rule, “literally every agency action that contributes to GHG emissions would arguably result in consultations with respect to every listed species that may be affected by climate change.”<sup>199</sup> As two Administrations, and the federal district Judge overseeing the polar bear litigation have concluded after extensive analysis, Congress did not design the ESA to be a statutory mechanism for mandatory controls of GHG emissions in the United States. NMFS should reject NRDC’s attempt to, once again, petition the agency to use its ESA authority to regulate lawful GHG emissions.

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<sup>196</sup> *In re Polar Bear Endangered Species Act Listing and 4(d) Rule Litig.*, 818 F. Supp. 2d 214, at 231-32 (D.D.C. Oct. 17, 2011).

<sup>197</sup> 78 Fed. Reg. 11766 (Feb. 20, 2013).

<sup>198</sup> *Id.* at 11785.

<sup>199</sup> *Id.*

## E. Critical Habitat

### 1. WEG/NRDC's Petitions For Designation of Critical Habitat are Impermissible

Petitioners request, without any attempt to delimit or describe critical habitat for dusky sharks in the NW Atlantic/GoM, designation of critical habitat.<sup>200</sup> This request is inappropriate and unauthorized by the ESA.

Section 4 of the ESA provides for only two types of petitions: Those seeking to list, reclassify, or delist species, and those to *revise* critical habitat.<sup>201</sup> As the Services' ESA Petition Management Guidance notes: "Although emergency listing or concurrent designation of critical habitat are frequently requested by Petitioners, they are not subject to the ESA's petition provisions."<sup>202</sup> Designation, or not, of critical habitat is fully committed to NMFS's discretion, which is charged with deciding whether such a determination is "prudent and determinable."<sup>203</sup>

In the present case, this portion of the petitions should be rejected for their inconsistency with the law and agency policy. Further, as shown below, the designation of critical habitat for dusky sharks in the NW Atlantic/GoM is neither "determinable," nor likely warranted under the ESA's cost-benefit analysis for critical habitat designations.

### 2. Costs of Designating Critical Habitat Likely Outweigh Benefits

As explained above, the petitions are not warranted, nor, as mentioned above, is critical habitat properly the subject of a petition. Should NMFS decide to designate critical habitat for the dusky sharks in the NW Atlantic/GoM, however, significant evaluation of economic impacts of the type of restrictions Petitioners envision will be required.

The ESA provides:

The Secretary shall designate critical habitat, and make revisions thereto, under subsection (a)(3) of this section on the basis of the best scientific data available and after taking into consideration the economic impact ... of specifying any particular area as critical habitat. The Secretary may exclude any area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific and commercial data available, that the failure to designate such area as critical habitat will result in the extinction of the species concerned.<sup>204</sup>

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<sup>200</sup> NRDC Petition at 28-29; WEG Petition at 28.

<sup>201</sup> 16 U.S.C. § 1533(b)(3)(A), (D)(i) (listing, delisting, and changes in listing status and modification, respectively).

<sup>202</sup> NMFS/FWS, *Endangered Species Petition Management Guidance*, 3 (July 1996).

<sup>203</sup> 16 U.S.C. § 1533(a)(3)(A).

<sup>204</sup> 16 U.S.C. § 1533(b)(2).

The requirement to conduct an economic impact assessment of the effects of a critical habitat designation is not discretionary – it is mandatory.<sup>205</sup> The costs in the economic impact assessment are weighed against the benefits of the critical habitat designation. With respect to the dusky sharks, those benefits are, at best, marginal. Threats from commercial and recreational fishing (which are considered to be the most significant threats to dusky sharks) are already being addressed through federal catch prohibitions, seasonal closures, and fisheries management plans, as well as numerous state protective programs.<sup>206</sup>

These programs will not be considered “benefits” against which to weigh the costs of the critical habitat designation because they are “baseline” economic impacts that are already in place. This lack of “benefit” must then be weighed against the economic impacts of the critical habitat designation, which, as discussed further below, could potentially be very large.

*i. Economic Impact of Designation Could Be Substantial*

While a critical habitat designation would likely have significant economic impacts in the NW Atlantic, from an energy perspective, the most significant economic impacts would be in the GoM. The scope and magnitude of the economic activity in the northern GoM is huge and mostly, but not exclusively, attributable to energy exploration and development. Currently, the GoM accounts for over a quarter of all U.S. domestic oil production, and the new five-year drilling program is expected to expand the economic benefits the industry already provides. For example, BOEM has determined that over a 40-year period, this new drilling plan will result in an *annual* “addition of between 20,025 and 51,825 jobs” and that “[b]etween \$1,050 million and \$2,180 million in income would be produced.”<sup>207</sup>

The following table, reproduced from a report prepared in 2011 by Quest Offshore Resources, Inc. for API and NOIA,<sup>208</sup> shows the vast economic importance of this industry, both regionally and nationally:

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<sup>205</sup> See *Bennett v. Spear*, 520 U.S. 154, 172 (1997) (“[T]he fact that the Secretary’s ultimate decision is reviewable only for abuse of discretion does not alter the categorical requirement that, in arriving at his decision, he ‘tak[e] into consideration the economic impact, and any other relevant impact,’ and use ‘the best scientific data available.’”) (quoting 16 U.S.C. § 1533(b)(2)) (second alteration in original).

<sup>206</sup> 78 Fed. Reg. 29108.

<sup>207</sup> OGLP PEIS at 4-488.

<sup>208</sup> Quest Offshore Resources, Inc., *United States Gulf of Mexico Oil and Natural Gas Industry Economic Impact Analysis: The Economic Impacts of GOM Oil and Natural Gas Development on the U.S. Economy*, i (June 2011), available at <http://www.api.org/~media/Files/Policy/Jobs/QuestGoMEconomicAnalysis7-11-2011.pdf>.



**Table 1: Estimated Historical and Projected Capital and Operational Spending, GDP Impacts, and Employment<sup>1</sup> Supported by the Offshore Gulf of Mexico Oil and Natural Gas Industry (2008-2013)\***

(\$billions)	Historical			Projected		
	2008	2009	2010	2011	2012	2013
Operating Expenditures	\$16.7	\$17.2	\$17.7	\$21.6	\$25.0	\$25.7
Capital Expenditures	\$11.9	\$9.7	\$6.5	\$8.9	\$10.4	\$15.7
GDP Impacts	\$30.8	\$29.1	\$26.1	\$32.9	\$38.2	\$44.5
Total Employment	306,870	285,042	242,317	311,023	356,174	429,208

\*Projected spending, GDP, and employment contingent on returning to pre-Macondo permitting rates.

Source: Quest Offshore Resources, Inc.

These impacts are the result not just of activities occurring on the water but of the myriad shore-based businesses that offshore energy exploration and development support. These include everything from refineries and pipeline operations, metal superstructure and pipe fabricators, analysts, parts and goods suppliers to small-scale “mom-and-pop” marine transport companies. All told, some 72 percent of oil and gas companies’ spending and capital investments in 2010, or about \$17.5 billion, occurred in Texas, Louisiana, Mississippi, and Alabama.<sup>209</sup>

While improper designation of critical habitat for dusky sharks in the NW Atlantic/GoM will not “zero out” all the economic benefits of the offshore oil and gas industry in the GoM, it will trigger the need for consultation on all federally-permitted activities, such as the leasing program or routine amendments to federal fishery management plans, under Section 7 of the ESA to determine if the activity will result in “adverse modification of critical habitat.”<sup>210</sup> These determinations are particularly susceptible to legal challenge by eNGOs like the Petitioners in this instance.<sup>211</sup> Both consultation and litigation will undoubtedly result in delay in future oil and gas development – and more litigation, permitting costs and associated transactional costs – with little or no added conservation benefit to dusky sharks.

*ii. Impacts on Small Business Need to be Considered Carefully*

In addition to the required economic analysis under the ESA, the Regulatory Flexibility Act (“RFA”) also requires assessment of such impacts that disproportionately impact small businesses for actions, like a critical habitat designation, that require notice and comment under the Administrative Procedure Act (“APA”).<sup>212</sup> Within the oil and gas industry, numerous

<sup>209</sup> *Id.* at 8.

<sup>210</sup> 16 U.S.C. § 1536(a)(2), (4).

<sup>211</sup> *See, e.g., WildEarth Guardians v. Salazar*, 880 F. Supp. 2d 77 (D.D.C. 2012) (challenging a coal leasing program on critical habitat grounds, among others).

<sup>212</sup> 5 U.S.C. Chapt. 6.

businesses meet the Small Business Administration's ("SBA") size standards as small entities in their respective fields. These include firms operating offshore supply vessels, geophysical engineering firms, exploratory companies, and many others. Beyond this industry, fishermen, marine transportation companies, and others likewise qualify as small entities under SBA guidelines.

Similarly, in his memorandum of January 18, 2011, on Regulatory Flexibility, Small Business and Job Creation, President Obama declared that his "Administration is firmly committed to eliminating excessive and unjustified burdens on small businesses, and to ensuring that regulations are designed with careful consideration of their effects, including their cumulative effects, on small businesses."<sup>213</sup> This memorandum emphasized the importance of regulatory flexibility and the need for careful analysis and clear justifications of need in the rulemaking context. These considerations echoed the provisions of Executive Order 13563, Improving Regulation and Regulatory Review, which was issued the same day.<sup>214</sup> Executive Order 13563 provides that the regulatory system must "promote predictability and reduce uncertainty ... and take into account benefits and costs, both quantitative and qualitative."<sup>215</sup>

The ESA, RFA, and Administration policy all require that economic impacts of the critical habitat inquiry, particularly on small business, be considered carefully and justified. In the context of the GoM oil and gas industry, these entities will likely suffer the most from projects delayed or forgone. As such, the resource agencies must fully and thoroughly assess the universe of impacted small entities and the impacts a dusky shark critical habitat designation will have on their operations. Under any thorough and critical assessment, the marginal benefits such designation will have for dusky sharks in the NW Atlantic/GoM will not outweigh those impacts.

As the Service's 90-day notice has found that there is no evidence that the oil and gas industry is negative affecting dusky sharks and in light of the numerous and largely effective fisheries management strategies already in place to protect dusky sharks, the Associations request that NMFS reject the Petitioner's request to designate critical habitat for dusky sharks.

### **III. CONCLUSION**

Dusky sharks in the NW Atlantic/GoM do not meet any of the elements of a DPS under the Service's DPS Policy. Even if they did, dusky sharks in the NW Atlantic/GoM, or elsewhere, are not threatened or endangered under the ESA. Petitioners' allegations regarding threats from the Deepwater Horizon incident and climate change are wholly unsupported. Petitioners' request for designation of critical habitat is impermissible, misplaced, and premature. NMFS should therefore deny all aspects of the WEG and NRDC petitions, find that the NW Atlantic/GoM is not a DPS, and that listing the dusky sharks as threatened or endangered is not warranted.

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<sup>213</sup> 76 Fed. Reg. 3827, 3827 (Jan. 21, 2011).

<sup>214</sup> 76 Fed. Reg. 3821 (Jan. 21, 2011)

<sup>215</sup> *Id.* at 3821.

The Associations appreciate the opportunity to provide comments on these petitions. Should you have any questions on these comments, please feel free to contact Andy Radford, API, as radforda@api.org or by phone as 202.682.8584.

Sincerely,



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Jeffery Vorberger, NOIA



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Andy Radford, API



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Sarah Tsoflis, IAGC