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GOBI REVIEW OF EBSAS AND MARINE MIGRATORY SPECIES: PRELIMINARY SUMMARY OF INITIAL FINDINGS

Summary

The Global Ocean Biodiversity Initiative (GOBI) has initiated a review of the Convention on Biological Diversity's process on Ecologically or Biologically Significant Marine Areas (EBSA) with respect to marine migratory species. The aim is to determine how marine migratory species have factored into the scientific description of EBSAs and whether EBSAs could contribute to the conservation of migratory species in marine areas within and beyond the limits of national jurisdiction, particularly with respect to ecological networks and connectivity.

The 18th Meeting of the Scientific Council is invited to consider the attached Preliminary Summary of Initial Findings, as well as an oral presentation to the Council, as a contribution to advance the Convention's work with respect to ecological networks and migratory species.

GOBI Review of EBSAs and Marine Migratory Species

Preliminary Summary of Initial Findings

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Overview

1. The review of ecologically or biologically significant marine areas (EBSAs), as described by the Convention of Biological Diversity (CBD), and migratory marine species involves two major project components:

(a) Component 1: For the 208 EBSAs described to date: (a) Undertake an assessment of the contribution and significance of marine migratory species to the description of EBSAs; and (b) Identify and analyze data and other needs in relation to marine migratory species that affected the description of EBSAs.

(b) Component 2: Undertake a study on cetaceans, seabirds and marine turtles, to preliminarily investigate the potential of EBSAs to contribute to meeting the needs of marine migratory species by contributing to ecological networks and connectivity.

2. For this preliminary summary of findings, we present the methods and initial results for project component 1a, which will lay the foundation for the rest of the project components. Methods for assessing marine migratory species involve two approaches: 1) a broad overview assessing the original intent and/or target species as described for each EBSA, and 2) a more fine-scale, systematic approach to capture all named migratory species within each EBSA description. Taken together, these approaches can assess the contribution and significance of marine migratory species, along with giving insights as to how the data and other marine migratory species' needs affected EBSA descriptions and how EBSAs can contribute to ecological networks and connectivity of marine migratory marine mammals, seabirds, and sea turtles.

Methods

3. In order to determine how migratory species have been involved in EBSA descriptions and the degree that EBSAs support migratory species (Project Component 1a), we approached this assessment with two methods: a broad overview and then a finer scaled assessment.

4. For the broad overview, we categorized EBSAs on three levels, based on their primary purpose usually stated within the abstract and/or introduction text sections of the descriptions within the annexes of each of the 9 CBD regional workshop reports. When one or more marine mammal, seabird, sea turtle, shark, and ray migratory species listed under the Convention of Migratory Species (CMS; Appendix I and II) were stated as clearly the primary purpose for the EBSA, this was categorized as "Principle." EBSAs that were identified for many reasons, one of which included migratory species (usually these were described as highly productive and/or highly diverse areas that included migratory species) were categorized as "Contributory." Finally, EBSAs that were described with reasons other than migratory species were categorized as "Not Mentioned." "Not Mentioned" EBSAs may yet contain key habitats for migratory species, though this was not described in the regional report text sections.

5. For the fine-scale assessment, all sections within the annexes of the regional workshop reports were reviewed in greater detail. Reports from three regional workshops (CBD 2012a;

CBD 2012b, CBD 2013) were initially reviewed to extract information on the extent to which marine mammal, seabird, sea turtle, shark and ray migratory species listed under the Convention of Migratory Species (CMS; Appendix I and II) were involved in describing EBSAs. The Western South Pacific (WSP), Wider Caribbean and Western Mid-Atlantic (WCWA), and Eastern Tropical and Temperate Pacific (ETTP) were assessed here. Both the WSP and WCWA reports have been submitted to the United Nations General Assembly at COP 11 (Convention of Biological Diversity [CBD] Conference of the Parties in 2013), while the ETTP and the remaining six regional reports will go through review at COP 12 (October 2014). A total of 69 areas meeting EBSA criteria and agreed upon by the individual workshop plenaries were assessed for this preliminary report (WSP = 26; WCWA = 22; ETTP = 21; Figure 1). Areas that were listed for future consideration were not included in this assessment and source information came directly from the annexes describing the areas.

6. Within each report, each EBSA considered was described with an introductory text section of general information, followed by tables for ranking the area (high, some, low, don't know) relevant to seven EBSA criteria: 1) Uniqueness or rarity; 2) Special importance for life-history stages of species; 3) Importance for threatened, endangered or declining species and/or habitats; 4) Vulnerability, fragility, sensitivity, or slow recovery; 5) Biological productivity; 6) Biological diversity; and 7) Naturalness. In some cases, EBSAs had additional criteria customized for the particular area that were ranked (high, some, low, don't know). All criteria had a section for the explanation for ranking (references), where marine mammal, seabird, sea turtle, shark and ray species could be mentioned and noted.

7. There are a total of 145 species listed (147 when subspecies/populations were included for one marine mammal and one seabird) within the CMS Appendices I and II that were considered in this assessment (marine mammals = 63, seabirds = 68, sea turtles = 6 species, sharks/rays = 8 species; Table 1). Marine mammals were defined as mammals listed under Cetacea, Carnivora (with the exception of Felidae), and Sirenia; seabirds were defined as birds from the Families Alcidae, Spheniscidae, Diomedeidae, Procellariidae, Pelecanoididae, Pelecanidae, Laridae (with the exception of two sandpipers); sea turtles were listed under Testudinata (with the exception of Pelomedusidae); sharks/rays were listed under Elasmobranchii. All 145 species were considered potential contributors to the description of EBSAs. To be more inclusive, when animals named within reports were only to species level, these were noted even if the CMS listing was for a subspecies or population delineation. Likewise, species mentioned in the report at population or subspecies level were matched to the species level of animals that were listed under the CMS, to be conservative.

8. In order to assess the level at which all CMS listed species were included in the description of EBSAs, three possible metrics were calculated. First, the number of migratory species listed under the CMS Appendices that were mentioned in any section of the description was summed over each EBSA. Second, migratory species level (MSL) of influence was quantified by scoring EBSAs based on the notation of at least one species of interest within the appendix sections: high level (4) = species were named within EBSA criteria 1, 2, and 3; medium level (2) = species were named within criteria 4, 5, 6, 7; low level (1) = species were named in the text. All scores were summed to give a maximum of 7 (where species were named in all sections) and a minimum of 0 (no species were named at all). The MSL score was

quantified to highlight migratory species prominence within the EBSA description. Finally, the number of CMS listed species mentioned to reproduce plus the number of species mentioned to feed or forage within the EBSA were summed for a "Use Score." This "Use Score" mainly emphasized the extent of dependence upon an area, as opposed to merely being present in the area (without much more information) or passing through during migration to other destinations.

9. All three metrics were used to assess EBSAs within regions, in this preliminary assessment. While the first method takes into account the original intent of EBSA designation, the second method focuses mainly on assessing EBSAs in relation to all CMS listed species mentioned within the workshop report. Each metric score was normalized by ranking EBSAs (tied scores received the same rank) within each region to evaluate their relationship.

Results

10. There were a total of 27 migratory marine species named as the major reason for EBSA designation (marine mammals = 11, seabirds = 10, sea turtles = 5, sharks/rays = 1; Table 2). Green and leatherback sea turtles were mentioned in the most number of EBSAs, followed by loggerhead sea turtles, humpback whales, and bottlenose dolphins (Figure 2). There were 20 out of 208 (about 10%) EBSAs that had migratory species as the principle justification in its description, with the main purpose primarily for CMS listed migratory species. In addition, 83 EBSAs (about 40%) had marine mammal, seabird, or sea turtle migratory species as a contributory role as described in the text sections of the workshop reports (Figure 3). Shark and ray migratory species will be further assessed as to their contributory roles within EBSA descriptions. Out of the 20 high priority EBSAs, 11 mentioned at least one marine mammal species as the primary purpose, 9 mentioned at least one sea turtle species, 6 EBSAs mentioned at least one seabird species, and 1 mentioned at least one shark/ray (Table 3; Figure 4). Furthermore, one EBSA in the Mediterranean mentioned marine mammal, seabird, and sea turtle species taxa as the major role, and five EBSAs within the ETTP, WSP, Mediterranean and Southern Indian Ocean mentioned two different taxa playing major roles in the purpose (Table 3).

11. For the first three regions assessed using the fine-scale approach, there were 55 out of 69 EBSAs with descriptions that could be matched with 72 of the marine mammal, seabird, sea turtle, shark/ray species listed under the CMS (marine mammals = 28, seabirds = 31, sea turtles = 6, sharks/rays = 7; Table 4). A total of 54 animals were identified to have ranges in areas beyond national jurisdiction (ABNJ), with 26 animals listed under Appendix I and 58 animals were listed under Appendix II (total number of animals listed under both appendices is greater than 72 because some animals are listed under both). Out of the 55 EBSAs with CMS listed species, the ETTP region had the most species mentioned (n=48) while the WSP had the least (n=17; Table 4). The greatest number of species mentioned within one EBSA was in the ETTP's West Wind Drift Convergence area (n=25), closely followed by the WCWA's Eastern Caribbean area (n=22), with the max number of migratory seabird species mentioned (n=15 each; Table 5). In addition to the WCWA's Eastern Caribbean, seven other EBSAs in the ETTP and WCWA had migratory species from all four taxa mentioned in their descriptions (Table 5).

12. EBSAs across regions had similar MSL score frequencies, with an almost bimodal distribution with most EBSAs scoring at a medium-high level (score=5, n=20), followed by high

level (score=7, n=16), and then with no influence (score = 0, n=14; Figure 5). EBSAs that scored a "5" represented those that had at least one species listed under the CMS mentioned in at least one of the first three criteria as well as in the text section (outside of the table sections with criteria rankings).

13. For most metrics, the ETTP and WCWA were most closely related with higher numbers than the WSP (Table 6.) In general, the number of species, MSL scores, and Use scores ranged widely within regions and were lower in the WSP than the other regions (Table 6). When compared together, each of the three metrics were significantly correlated ($p<0.0001$; Figures 6-8). Across regions, humpback whales were the most frequently mentioned species, followed by green, leatherback, and hawksbill sea turtles, respectively (Figure 9).

Preliminary Conclusions

14. While reviewing each of the nine regional workshop reports, it was apparent that EBSA descriptions varied with the amount of information and detail included on migratory species, which may be the result of many factors. Other than the fact that there were different authors for the reports, some inherent variations can be attributed to the unintentional evolution of EBSA workshop methods and strategies over time, the high dependence on participant knowledge/expertise, and differing degrees of reliance on outside reference (i.e., OBIS database, on-going current research), inferred common knowledge (i.e., unique, endemic, or rare species), or general taxa categories instead of identifying to species level (i.e., seabirds). For example, if descriptions included "cetaceans" or "seabirds" but did not identify the species, we could not assume accurately that these were migratory. However, given that the EBSA descriptions within regional reports were not intended to be used in a rigorous analysis in relation to migratory species, we still found the regional reports as useful tools for assessing migratory species' roles within and across regions.

15. Migratory species appeared to contribute to the description of EBSAs in two ways: 1) Some EBSAs were selected primarily because they support the life history requirements or are a globally unique location for a particular migratory species. Initially, we found that migratory marine species, particularly marine turtles, whales and seabirds, were important contributors to the primary intent within the description of about 50% of EBSAs. Of the 208 EBSAs described to date, 7% of EBSAs had marine mammals, seabirds, and sea turtles described as a principle or contributory role while 22% of EBSAs had more than one taxa mentioned as a principle or contributory role; 2) The more fine-scale analysis showed that other EBSAs were not defined primarily to support migratory species, but cite a large number of CMS listed migratory species as using the area. For the first three regions assessed (33% of the total number of EBSAs), migratory species were mentioned in the majority of areas, many of which were identified as significant sites for reproduction and foraging. The differences in EBSAs with respect to the number of migratory species or the importance of the site for a particular species may have implications for the conservation and management priorities of CMS listed migratory species. In addition the preliminary results suggest that most EBSAs could be important in meeting the needs of migratory marine species and contribute to ecological networks and connectivity for these species, which we will investigate in the next phase of work.

Next Steps

16. The project is still on-going. We foresee the following next steps in anticipation of a summary report provided to the CMS Conference of the Parties at its eleventh meeting:

Finish Project component 1a including: (a) Confirm principle, contributory, not mentioned categories using more than one independent reviewer; (b) Continue assessing the other seven regional reports to collect data for the number of species, migratory species level, and habitat use level to calculate scores; and (c) Summarize all EBSAs to compare within and across regions.

Project component 1b: Identify and analyze data and other needs in relation to marine migratory species that affected the description of EBSAs.

Project component 2: Preliminarily investigate the potential of EBSAs to contribute to meeting the needs of marine migratory species by contributing to ecological networks and connectivity.

References

Convention on Biological Diversity (CBD). 2012a. Report of the Western South Pacific Regional Workshop to Facilitate the Description of Ecologically or Biologically Significant Marine Areas. 22 – 25 November 2011, Nadi, Fiji. UNEP/CBD/SBSTTA/16/INF/6.

Convention on Biological Diversity (CBD). 2012b. Report of the Wider Caribbean and Western Mid-Atlantic Regional Workshop to Facilitate the Description of Ecologically or Biologically Significant Marine Areas. 28 February – 2 March 2012, Recife, Brazil, UNEP/CBD/SBSTTA/16/INF/7.

Convention on Biological Diversity (CBD). 2013. Report of the Eastern Tropical and Temperate Pacific Regional Workshop to Facilitate the Description of Ecologically or Biologically Significant Marine Areas. 28 to 31 August 2012, Galapagos Islands, Ecuador. UNEP/CBD/RW/EBSA/ETTP/1/4.

Tables and Figures

Table 1. Marine mammal, seabird, sea turtle, shark and ray species listed under the CMS (Appendix I and II), with ranges in areas beyond national jurisdiction (ABNJ) and mentioned in EBSA descriptions for the ETTP, WCWA, and WSP regions. To be more inclusive, listings were matched to those in EBSAs at the species level only, not subspecies/subpopulations.

Class	*Genus Species*	Common name	Population	Appendix I	Appendix II	ABNJ Range	EBSA
Aves	*Sterna bernsteini*	Chinese crested tern		1			
Aves	*Sterna lorata*	Peruvian tern		1			1
Aves	*Synthliboramphus wumizusume*	Japanese murrelet		1			
Aves	*Chlidonias leucopterus*	White-winged Tern	West Eurasian and African		1		
Aves	*Chlidonias niger niger*	Black Tern			1		
Aves	*Larus armenicus*	Armenian Gull			1		
Aves	*Larus atlanticus*	Olrog's Gull		1			
Aves	*Larus audouinii*	Audouin's Gull		1	1		
Aves	*Larus genei*	Slender-billed Gull			1		
Aves	*Larus hemprichii*	Sooty Gull			1		
Aves	*Larus ichthyaetus*	Great Black-headed Gull	West Eurasian and African		1		
Aves	*Larus leucophthalmus*	White-eyed gull		1	1		
Aves	*Larus melanocephalus*	Mediterranean Gull			1		
Aves	*Larus relictus*	Relict Gull		1			
Aves	*Larus saundersi*	Saunders's Gull		1			
Aves	*Sterna albifrons*	Little Tern			1		
Aves	*Sterna balaenarum*	Damara Tern			1		
Aves	*Sterna bengalensis*	Lesser Crested Tern	African and Southwest Asian		1		
Aves	*Sterna bergii*	Great Crested Tern	African and Southwest Asian		1		
Aves	*Sterna caspia*	Caspian Tern	West Eurasian and African		1		1
Aves	*Sterna dougallii*	Roseate Tern	Atlantic		1		1
Aves	*Sterna hirundo hirundo*	Common Tern	breeding in the Western Palearctic		1		

Class	*Genus Species*	Common name	Population	Appendix I	Appendix II	ABNJ Range	EBSA
Aves	*Sterna maxima albidorsalis*	Royal tern			1		1
Aves	*Sterna nilotica nilotica*	Gull-billed Tern	West Eurasian and African		1		
Aves	*Sterna paradisaea*	Arctic Tern	Atlantic		1		1
Aves	*Sterna repressa*	White-cheeked Tern			1		
Aves	*Sterna sandvicensis sandvicensis*	Sandwich Tern			1		1
Aves	*Sterna saundersi*	Saunders's Tern			1		
Aves	*Pelecanus crispus*	Dalmatian Pelican		1	1		
Aves	*Pelecanus onocrotalus*	Great White Pelican	only Palearctic	1			
Aves	*Pelecanus onocrotalus*	Great White Pelican	Western Palearctic		1		
Aves	*Diomedea amsterdamensis*	Amsterdam Albatross		1		1	
Aves	*Diomedea antipodensis*	Antipodean Albatross			1	1	1
Aves	*Diomedea chrysostoma*	Grey-headed Albatross			1	1	1
Aves	*Diomedea dabbenena*	Tristan Albatross			1	1	1
Aves	*Diomedea epomophora*	Royal Albatross			1	1	1
Aves	*Diomedea exulans*	Wandering Albatross			1	1	1
Aves	*Diomedea irrorata*	Waved Albatross			1	1	1
Aves	*Diomedea sanfordi*	Northern Royal Albatross			1	1	1
Aves	*Phoebastria albatrus*	Short-tailed Albatross		1		1	
Aves	*Phoebastria immutabilis*	Laysan Albatross			1	1	
Aves	*Phoebastria nigripes*	Black-footed Albatross			1	1	
Aves	*Phoebetria fusca*	Sooty Albatross			1	1	
Aves	*Phoebetria palpebrata*	Light-mantled Albatross			1	1	
Aves	*Thalassarche bulleri*	Buller's Albatross			1	1	1

Class	*Genus Species*	Common name	Population	Appendix I	Appendix II	ABNJ Range	EBSA
Aves	*Thalassarche carteri*	Indian Yellow-nosed Albatross			1	1	
Aves	*Thalassarche cauta*	Shy Albatross			1	1	1
Aves	*Thalassarche chlororhynchos*	Yellow-nosed Albatross			1	1	1
Aves	*Thalassarche eremita*	Chatham Albatross			1	1	1
Aves	*Thalassarche impavida*	Campbell Albatross			1	1	
Aves	*Thalassarche melanophris*	Black-browed Albatross			1	1	1
Aves	*Thalassarche salvini*	Salvin's Albatross			1	1	1
Aves	*Thalassarche steadi*	White-capped albatross			1	1	1
Aves	*Pelecanoides garnotii*	Peruvian Diving Petrel		1			1
Aves	*Macronectes giganteus*	Southern Giant Petrel			1	1	1
Aves	*Macronectes halli*	Northern Giant Petrel			1	1	
Aves	*Procellaria aequinoctialis*	White-chinned Petrel			1	1	1
Aves	*Procellaria cinerea*	Pediunker			1	1	1
Aves	*Procellaria conspicillata*	Spectacled Petrel			1	1	1
Aves	*Procellaria parkinsoni*	Black Petrel			1	1	1
Aves	*Procellaria westlandica*	Westland Petrel			1	1	1
Aves	*Pterodroma atrata*	Henderson Petrel		1		1	
Aves	*Pterodroma cahow*	Bermuda Petrel		1		1	1
Aves	*Pterodroma phaeopygia*	Galapagos Petrel		1		1	1
Aves	*Pterodroma sandwichensis*	Hawaiian Petrel		1		1	
Aves	*Puffinus creatopus*	Pink-footed Shearwater		1		1	1
Aves	*Puffinus mauretanicus*	Balearic Shearwater		1		1	
Aves	*Spheniscus demersus*	Jackass Penguin			1		

Class	*Genus Species*	Common name	Population	Appendix I	Appendix II	ABNJ Range	EBSA
Aves	*Spheniscus humboldti*	Humboldt Penguin		1			1
Chondrichthyes	*Cetorhinus maximus*	Basking Shark		1	1	1	1
Chondrichthyes	*Carcharodon carcharias*	Great White Shark		1	1	1	1
Chondrichthyes	*Isurus oxyrinchus*	Shortfin Mako			1	1	1
Chondrichthyes	*Isurus paucus*	Longfin Mako			1	1	1
Chondrichthyes	*Lamna nasus*	Porbeagle			1	1	1
Chondrichthyes	*Manta birostris*	Atlantic Manta		1	1	1	1
Chondrichthyes	*Rhincodon typus*	Whale Shark			1	1	1
Chondrichthyes	*Squalus acanthias*	Spiny Dogfish			1	1	
Mammalia	*Lontra felina*	Marine Otter		1			1
Mammalia	*Lontra provocax*	Southern River Otter		1			1
Mammalia	*Arctocephalus australis*	South American Fur Seal			1	1	1
Mammalia	*Otaria flavescens*	South American Sealion			1		1
Mammalia	*Halichoerus grypus*	Atlantic gray seal	only Baltic Sea		1		
Mammalia	*Monachus monachus*	Mediterranean Monk Seal		1	1		
Mammalia	*Phoca vitulina*	Harbor Seal	Baltic and Wadden Sea		1		
Mammalia	*Balaena mysticetus*	Bowhead		1		1	
Mammalia	*Eubalaena australis*	Southern Right Whale		1		1	1
Mammalia	*Eubalaena glacialis*	North Atlantic Right Whale	North Atlantic	1		1	
Mammalia	*Eubalaena japonica*	North Pacific Right Whale	North Pacific	1		1	

Class	*Genus Species*	Common name	Population	Appendix I	Appendix II	ABNJ Range	EBSA
Mammalia	*Balaenoptera bonaerensis*	Antarctic Minke Whale		1		1	
Mammalia	*Balaenoptera borealis*	Sei Whale		1	1	1	1
Mammalia	*Balaenoptera edeni*	Eden's whale			1	1	1
Mammalia	*Balaenoptera musculus*	Blue Whale		1		1	1
Mammalia	*Balaenoptera musculus brevicauda*	Pygmy Blue Whale				1	
Mammalia	*Balaenoptera omurai*	Omurai's Whale			1	1	
Mammalia	*Balaenoptera physalus*	Fin Whale		1	1	1	1
Mammalia	*Megaptera novaeangliae*	Humpback Whale		1		1	1
Mammalia	*Cephalorhynchus commersonii*	Commerson's Dolphin	South American		1		1
Mammalia	*Cephalorhynchus eutropia*	Black Dolphin			1		1
Mammalia	*Cephalorhynchus heavisidii*	Heaviside's Dolphin			1		
Mammalia	*Delphinus delphis*	Short-beaked Common Dolphin	North and Baltic Sea, Mediterranean, Black Sea and eastern tropical Pacific		1	1	1
Mammalia	*Delphinus delphis*	Short-beaked Common Dolphin	only Mediterranean	1		1	1
Mammalia	*Globicephala melas*	Long-finned Pilot Whale	only North and Baltic Sea		1		
Mammalia	*Grampus griseus*	Risso's Dolphin	only North Sea, Baltic Sea and Mediterranean		1	1	1
Mammalia	*Lagenodelphis hosei*	Fraser's Dolphin	Southeast Asian		1	1	
Mammalia	*Lagenorhynchus acutus*	Atlantic White-sided Dolphin	only North and Baltic Sea		1		
Mammalia	*Lagenorhynchus albirostris*	White-beaked Dolphin	only North and Baltic Sea		1		
Mammalia	*Lagenorhynchus australis*	Peale's Dolphin			1		1

Class	*Genus Species*	Common name	Population	Appendix I	Appendix II	ABNJ Range	EBSA
Mammalia	*Lagenorhynchus obscurus*	Dusky Dolphin			1		
Mammalia	*Orcaella brevirostris*	Irrawaddy Dolphin		1	1		
Mammalia	*Orcaella heinsohni*	Australian snubfin dolphin			1		
Mammalia	*Orcinus orca*	Killer Whale			1	1	1
Mammalia	*Sotalia fluviatilis*	Gray Dolphin			1		
Mammalia	*Sotalia guianensis*	costero			1		1
Mammalia	*Sousa chinensis*	Chinese white dolphin			1		
Mammalia	*Sousa teuszii*	Atlantic Humpback Dolphin		1	1		
Mammalia	*Stenella attenuata*	Pantropical Spotted Dolphin	eastern tropical Pacific population, Southeast Asian		1	1	1
Mammalia	*Stenella clymene*	Clymene Dolphin	West African		1	1	1
Mammalia	*Stenella coeruleoalba*	Striped Dolphin	eastern tropical Pacific population, Mediterranean		1	1	1
Mammalia	*Stenella longirostris*	Spinner Dolphin	eastern tropical Pacific populations, Southeast Asian		1	1	1
Mammalia	*Tursiops aduncus*	Indian Ocean bottlenose dolphin	Arafura/Timor Sea		1		
Mammalia	*Tursiops truncatus*	Bottlenose Dolphin	North Sea, Baltic Sea, Mediterranean and Black Sea		1	1	1
Mammalia	*Tursiops truncatus ponticus*	Black Sea Bottlenose Dolphin		1		1	
Mammalia	*Inia geoffrensis*	Amazon River Dolphin			1		
Mammalia	*Delphinapterus leucas*	Beluga			1	1	
Mammalia	*Monodon monoceros*	Narwhal			1	1	
Mammalia	*Caperea marginata*	Pygmy Right Whale			1	1	
Mammalia	*Neophocaena asiaeorientalis*	Yangtse River Porpoise			1		
Mammalia	*Neophocaena phocaenoides*	Finless Porpoise			1		
Mammalia	*Phocoena dioptrica*	Spectacled Porpoise			1	1	

Class	*Genus Species*	Common name	Population	Appendix I	Appendix II	ABNJ Range	EBSA
Mammalia	*Phocoena phocoena*	Harbor Porpoise	North and Baltic Sea, western North Atlantic, Black Sea and North West African		1	1	
Mammalia	*Phocoena spinipinnis*	Burmeister's Porpoise			1		1
Mammalia	*Phocoenoides dalli*	Dall's Porpoise			1	1	
Mammalia	*Physeter macrocephalus*	Sperm Whale		1	1	1	1
Mammalia	*Platanista gangetica gangetica*	Ganges River dolphin		1	1		
Mammalia	*Pontoporia blainvillei*	Franciscana		1	1		1
Mammalia	*Berardius bairdii*	Baird's Beaked Whale			1	1	
Mammalia	*Hyperoodon ampullatus*	North Atlantic bottle-nosed whale			1	1	
Mammalia	*Dugong dugon*	Dugong			1	1	1
Mammalia	*Trichechus inunguis*	Amazonian Manatee			1		1
Mammalia	*Trichechus manatus*	Caribbean manatee	populations between Honduras and Panama	1	1		1
Mammalia	*Trichechus senegalensis*	West African manatee		1	1		
Reptilia	*Caretta caretta*	Loggerhead		1	1	1	1
Reptilia	*Chelonia mydas*	Green Sea Turtle		1	1	1	1
Reptilia	*Eretmochelys imbricata*	Hawksbill		1		1	1
Reptilia	*Lepidochelys kempii*	Atlantic ridley		1		1	1
Reptilia	*Lepidochelys olivacea*	Olive Ridley		1		1	1
Reptilia	*Dermochelys coriacea*	Leatherback		1	1	1	1

Table 2. The number of EBSAs that migratory seabird, marine mammal, sea turtle, and shark/ray species were mentioned as the major component.

Class	Common Name	Species	EBSAs (number)
Aves	Antipodean Albatross	Diomedea antipodensis	1
Aves	Audouin's Gull	Larus audouinii	1
Aves	Balearic Shearwater	Puffinus mauretanicus	1
Aves	Black Petrel	Procellaria parkinsoni	1
Aves	Black-footed Albatross	Phoebastria nigripes	1
Aves	Buller's Albatross	Thalassarche bulleri	1
Aves	Laysan Albatross	Phoebastria immutabilis	1
Aves	Pediunker	Procellaria cinerea	1
Aves	Sooty Albatross	Phoebetria fusca	1
Aves	Wandering Albatross	Diomedea exulans	1
Chondrichthyes	Great White Shark	Carcharodon carcharias	1
Mammalia	Blue Whale	Balaenoptera musculus	1
Mammalia	Bottlenose Dolphin	Tursiops truncatus	4
Mammalia	Dugong	Dugong dugon	2
Mammalia	Fin Whale	Balaenoptera physalus	1
Mammalia	Humpback Whale	Megaptera novaeangliae	4
Mammalia	Long-finned Pilot Whale	Globicephala melas	1
Mammalia	Mediterranean Monk Seal	Monachus monachus	2
Mammalia	Risso's Dolphin	Grampus griseus	1
Mammalia	Short-beaked Common Dolphin	Delphinus delphis	2
Mammalia	Sperm Whale	Physeter macrocephalus	2
Mammalia	Striped Dolphin	Stenella coeruleoalba	1
Reptilia	Green Sea Turtle	Chelonia mydas	5
Reptilia	Hawksbill	Eretmochelys imbricata	3
Reptilia	Leatherback	Dermochelys coriacea	5
Reptilia	Loggerhead	Caretta caretta	4
Reptilia	Olive Ridley	Lepidochelys olivacea	1

Table 3. EBSAs (n=20) and migratory seabird, marine mammal, sea turtle, and shark/ray species mentioned as the major component (1 = present). EBSA number refers to the area described as listed within the regional report (see respective report for more details).

Region	EBSA Number	Marine Mammal	Sea Turtle	Seabird	Shark or Ray	Species
Eastern Tropical and Temperate Pacific	1				1	Great white shark
Eastern Tropical and Temperate Pacific	7	1	1			Blue whale, Leatherback sea turtle
Eastern Tropical and Temperate Pacific	21			1		Grey petrel
Mediterranean	1	1	1			Loggerhead sea turtle, Bottlenose dolphin
Mediterranean	6	1	1	1		Fin whale, Loggerhead sea turtle, Short-beaked common dolphin, Leatherback sea turtle, Long-finned pilot whale, Risso's dolphin, Audouin's gull, Sperm whale, Balearic shearwater, Striped dolphin, Bottlenose dolphin
Mediterranean	14	1	1			Loggerhead sea turtle, Green sea turtle, Mediterranean monk seal
Mediterranean	15	1				Short-beaked common dolphin, Mediterranean monk seal, Sperm whale, Bottlenose dolphin
North Pacific	20			1		Laysan albatross, Black-footed albatross
South-eastern Atlantic	16		1			Loggerhead sea turtle, Green sea turtle, Leatherback sea turtle, Hawksbill sea turtle, Olive ridley sea turtle
Southern Indian Ocean	8	1				Dugong
Southern Indian Ocean	17	1				Bottlenose dolphin
Southern Indian Ocean	25	1	1			Green sea turtle, Dugong, Humpback whale
Southern Indian Ocean	39			1		Wandering albatross, Sooty albatross
Western South Pacific	14	1	1			Sea turtle, Humpback whale

Western South Pacific	15			1	Antipodean albatross, Buller's albatross
Western South Pacific	21			1	Parkinson's petrel
Western South Pacific	26	1			Humpback whale
Wider Caribbean and Western Mid-Atlantic	4		1		Green sea turtle, Leatherback sea turtle, Hawksbill sea turtle
Wider Caribbean and Western Mid-Atlantic	5		1		Green sea turtle, Leatherback sea turtle, Hawksbill sea turtle
Wider Caribbean and Western Mid-Atlantic	9	1			Humpback whale

Table 4. The number of marine mammal, seabird, sea turtle, shark/ray species listed under the CMS mentioned within the ETTP, WCWA, and WSP regional reports (CBD 2012a, CBD 2012b, CBD 2013).

	Marine mammals	Seabirds	Sea turtles	Sharks/rays	Total spp.
Total unique	28	31	6	7	72
By region					
ETTP	21	20	5	2	48
WCWA	19	15	6	7	47
WSP	5	8	3	1	17

Table 5. EBSAs and number of marine mammals, seabirds, sea turtles, sharks/rays species listed under CMS mentioned within the description.

Region	EBSA Number	EBSA name	Marine mammals	Seabirds	Sea turtles	Sharks/rays	Total
ETTP	1	Northeast Pacific White-Shark Offshore Aggregation Area			1	1	2
ETTP	2	Clipperton Atoll			1	1	2
ETTP	3	Guaymas Basin Hydrothermal Vents Sanctuary	8	2			10
ETTP	4	Sipacate-Cañón San José Marine Ecosystem, Guatemala	8	2	4	1	15
ETTP	5	Gulf of Fonseca	2		3		5
ETTP	6	Malpelo Ridge	4	1	5	1	11
ETTP	7	Thermal Dome in the Eastern Tropical Pacific	4		1		5
ETTP	8	Marine Corridor Eastern Tropical Pacific	1		3		4
ETTP	9	Equatorial High-Productivity Zone	1				1
ETTP	10	Galapagos Archipelago and Western extension	4	2	4	1	11
ETTP	11	Carnegie Ridge – Equatorial Front	4	1	1	1	7
ETTP	12	Gulf of Guayaquil	2	2			4
ETTP	13	Humboldt Current Upwelling System in Peru	6	7			13
ETTP	14	Permanent Upwelling Cores and Important Seabird Areas of the Humboldt Current in Peru	3	6			9
ETTP	15	Northern Chile Humboldt Current Upwelling System					0
ETTP	16	Central Chile Humboldt Current Upwelling System	5	9			14
ETTP	17	Southern Chile Humboldt Current Upwelling System					0
ETTP	18	Salas y Gómez and Nazca Ridges	1		1		2
ETTP	19	Juan Fernandez Ridge Seamounts					0
ETTP	20	West Wind Drift Convergence	15	10			25
ETTP	21	Grey Petrel's feeding area in the South East Pacific Rise		3			3
WCWA	1	Mesoamerican Barrier Reef	1	1	4	1	7
WCWA	2	Cayos Miskitos	1		3		4
WCWA	3	Corn Island					0
WCWA	4	Tortuguero - Barra del Colorado	1		3		4
WCWA	5	Cahuita - Gandoca	3		3		6
WCWA	6	Pedro Bank, Southern Channel and Morant		2			2
WCWA	7	Navassa Island					0

Region	EBSA Number	EBSA name	Marine mammals	Seabirds	Sea turtles	Sharks/rays	Total
WCWA	8	Caracol/Ft. Liberté/Monte Cristi (Northern Hispaniola Binational Area)	1				1
WCWA	9	Marine Mammal Sanctuary Banco de la Plata y Banco de la Navidad	1				1
WCWA	10	Seaflower			4		4
WCWA	11	Saba Bank	4		3		7
WCWA	12	Eastern Caribbean	15	3	5	1	24
WCWA	13	Sargasso Sea	2	3	5	6	16
WCWA	14	La Región Talud Continental Superior del Sinœ					0
WCWA	15	La Región Talud Continental Superior del Magdalena					0
WCWA	16	Amazonian - Orinoco Influence Zone	3	3	5		11
WCWA	17	Parcel do Manuel Luiz e Banco do Alvaro					0
WCWA	18	Banks Chain of Northern Brazil and Fernando de Noronha	1		3	1	5
WCWA	19	Northeastern Brazil Shelf-Edge Zone	3		3	1	7
WCWA	20	Atlantic Equatorial Fracture Zone and high productivity system	1		2		3
WCWA	21	Abrolhos Bank and Vitória-Trindade Chain	4		4		8
WCWA	22	Southern Brazilian Sea	2	10	3	3	18
WSP	1	Phoenix Islands	1		2		3
WSP	2	Ua Puakaoa Seamounts					0
WSP	3	Seamounts of West Norfolk Ridge	1				1
WSP	4	Remetau Group: South-west Caroline Islands and Northern New Guinea	1		1		2
WSP	5	Kadavu and the Southern Lau Region	4		3	1	8
WSP	6	Kermadec-Tonga-Louisville Junction	2				2
WSP	7	Monowai Seamount					0
WSP	8	New Britain Trench Region	1		2		3
WSP	9	New Hebrides Trench Region	1		1		2
WSP	10	Rarotonga Outer Reef Slopes					0
WSP	11	Samoan Archipelago	1		2		3
WSP	12	Suwarrow Seabird Foraging Area	2		2		4
WSP	13	South of Tuvalu/Wallis and Fortuna/North of Fiji Plateau			1		1
WSP	14	Vatu-i-Ra/Lomaiviti, Fiji	3				3

Region	EBSA Number	EBSA name	Marine mammals	Seabirds	Sea turtles	Sharks/rays	Total
WSP	15	South Tasman Sea		7			7
WSP	16	Equatorial High Productivity Zone	1				1
WSP	17	Central Louisville Seamount Chain	1				1
WSP	18	Western South Pacific High Aragonite Saturation State Zone					0
WSP	19	Clipperton Fracture Zone Petrel Foraging Area					0
WSP	20	Northern Lord Howe Ridge Petrel Foraging Area		1			1
WSP	21	Northern New Zealand/South Fiji Basin		3			3
WSP	22	Taveuni and Ringgold Islands	2		2		4
WSP	23	Manihiki Plateau					0
WSP	24	Niue Island and Beveridge Reef	3				3
WSP	25	Palau Southwest			1		1
WSP	26	Tonga Archipelago	1		1		2

Table 6. Regional summary statistics for three metrics.

		Species (number)	MSL score	Use score
ETTP				
	Average	6.81	3.67	4.29
	Median	5	3	5
	Maximum	0	0	0
	Minimum	25	15	7
WCWA				
	Average	5.82	4.14	3.82
	Median	4	2.5	5
	Maximum	0	0	0
	Minimum	24	18	7
WSP				
	Average	2.12	0.96	3.73
	Median	2	0.5	4.5
	Maximum	0	0	0
	Minimum	8	4	7

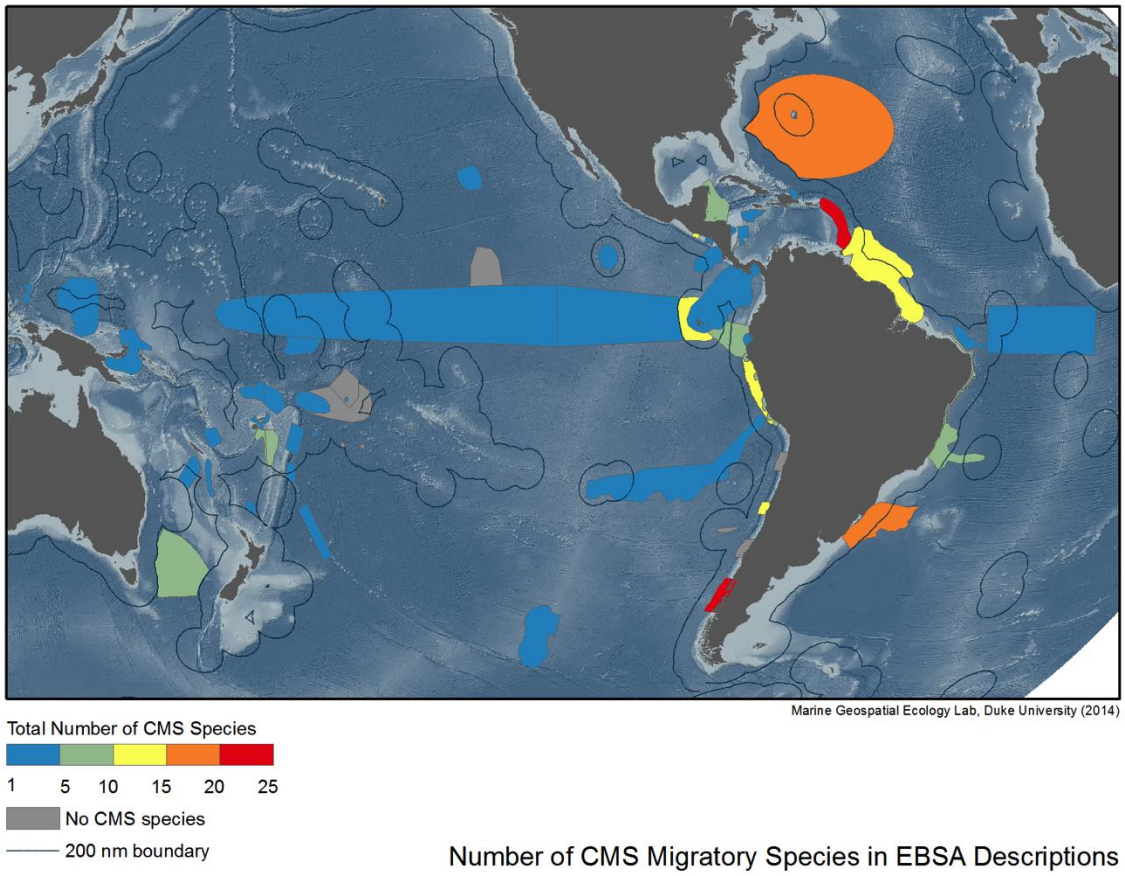

Figure 1. Eastern Tropical and Temperate Pacific (ETTP, n=21), Wider Caribbean and Western Mid-Atlantic EBSAs (n=22), and Western South Pacific EBSAs (n=26) EBSAs and the number of migratory marine mammals, seabirds, sea turtles, sharks and rays species.

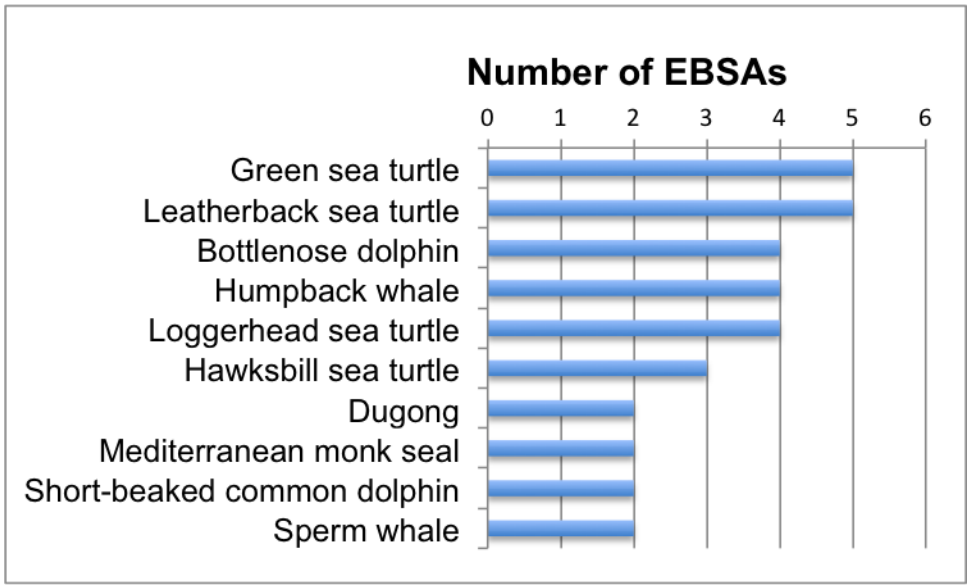

Figure 2. Migratory species that were mentioned as the principle justification in more than one EBSA.

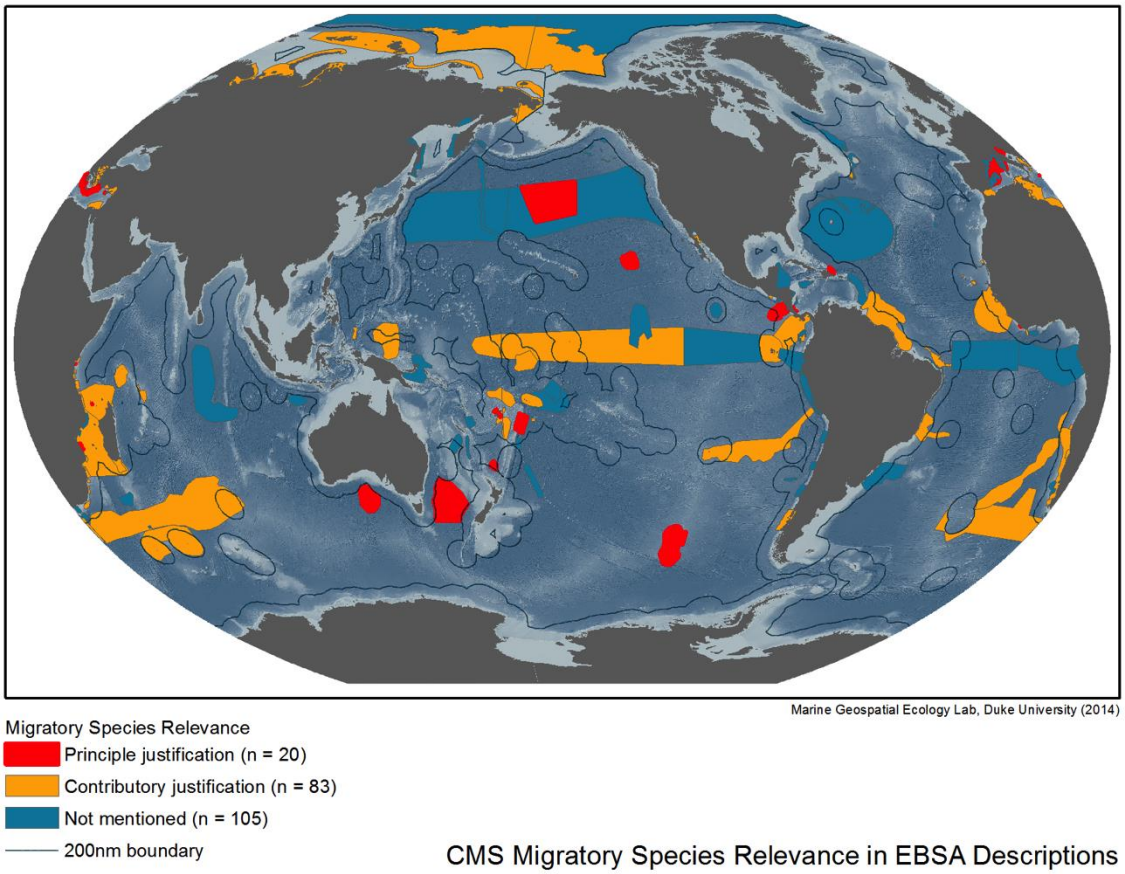

Figure 3. Global EBSAs and the migratory species role (Principle, Contributory, Not Mentioned).

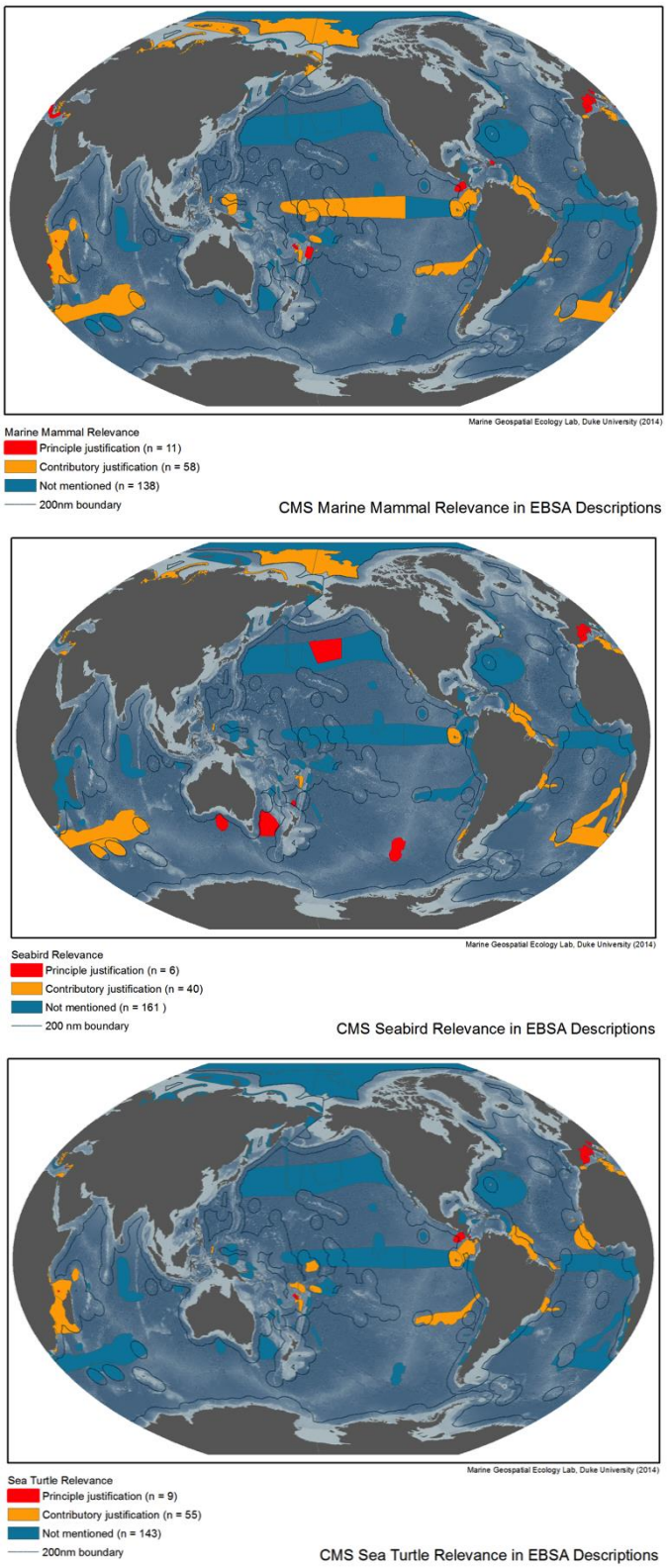

Figure 4. Global EBSAs and the migratory species role (Principle, Contributory, Not Mentioned) for marine mammals (top panel), seabirds (middle panel), and sea turtles (bottom panel). Sharks and rays were found to have a principle role in only one EBSA, and are in the process of being assessed more completely.

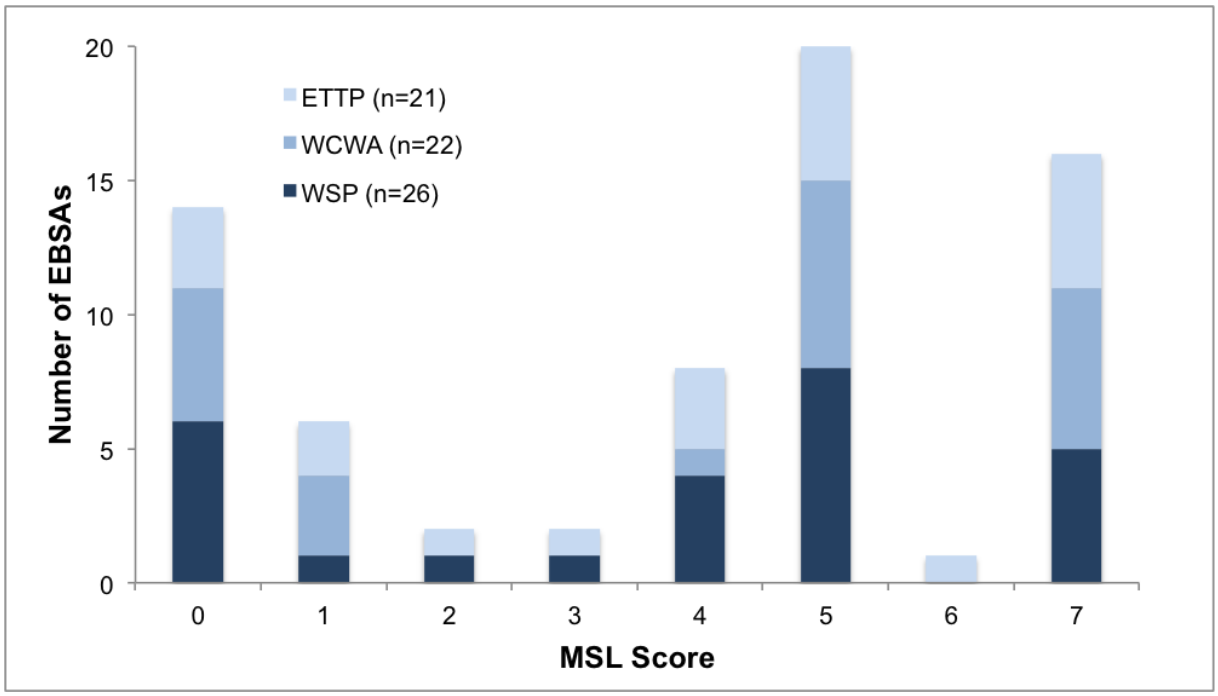

Figure 5. The number of EBSAs within the ETTP, WCWA, and WSP by migratory species level (MSL) score, based on named species within specific sections of the EBSA description.

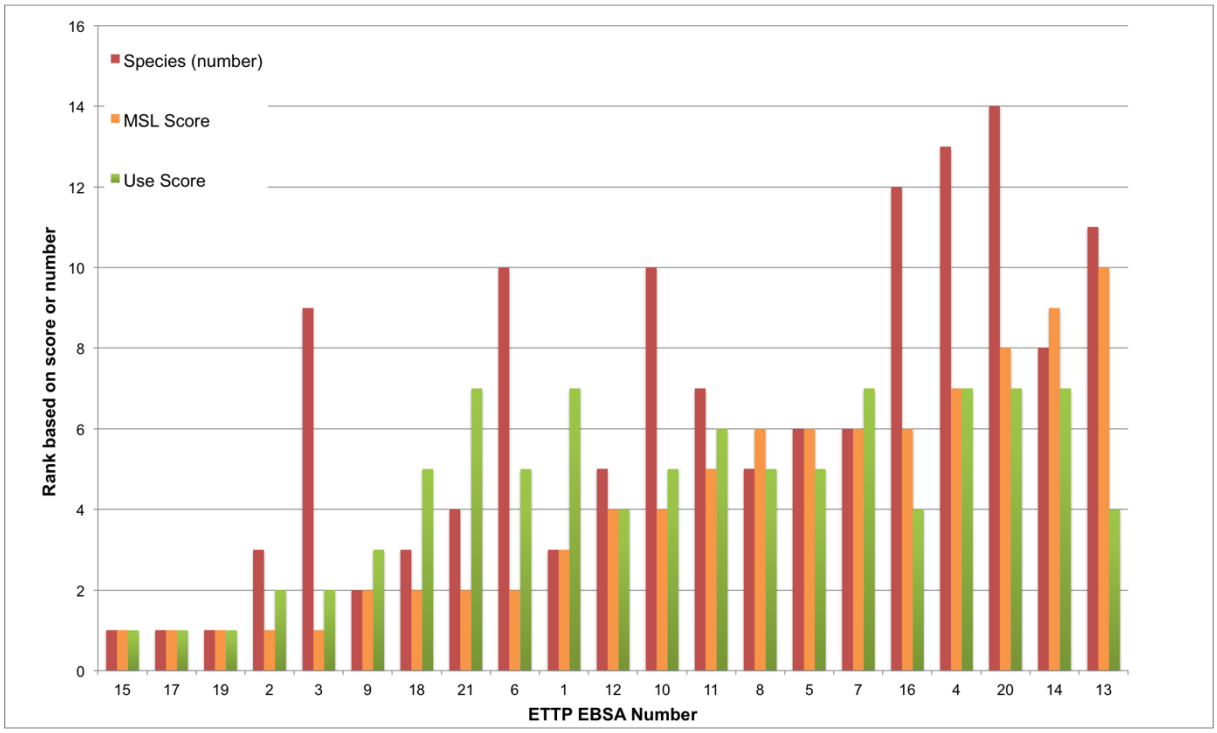

Figure 6. ETTP EBSAs (n=21) and their ranked numbers/scores for three metrics. ETTP EBSA numbers are ordered by MSL Score (least to greatest). For EBSA names, refer to Table 1.

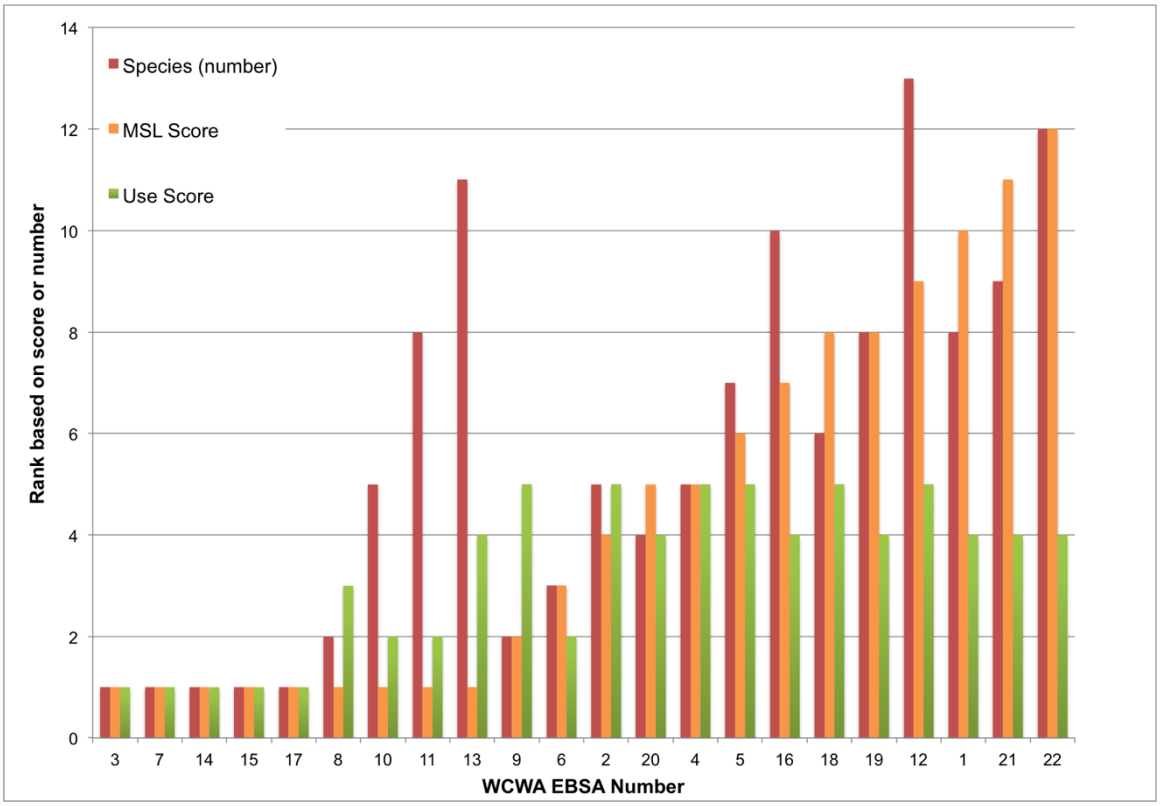

Figure 7. WCWA EBSAs (n=22) and their ranked numbers/scores for three metrics. WCWA EBSA numbers are ordered by MSL Score (least to greatest). For EBSA names, refer to Table 1.

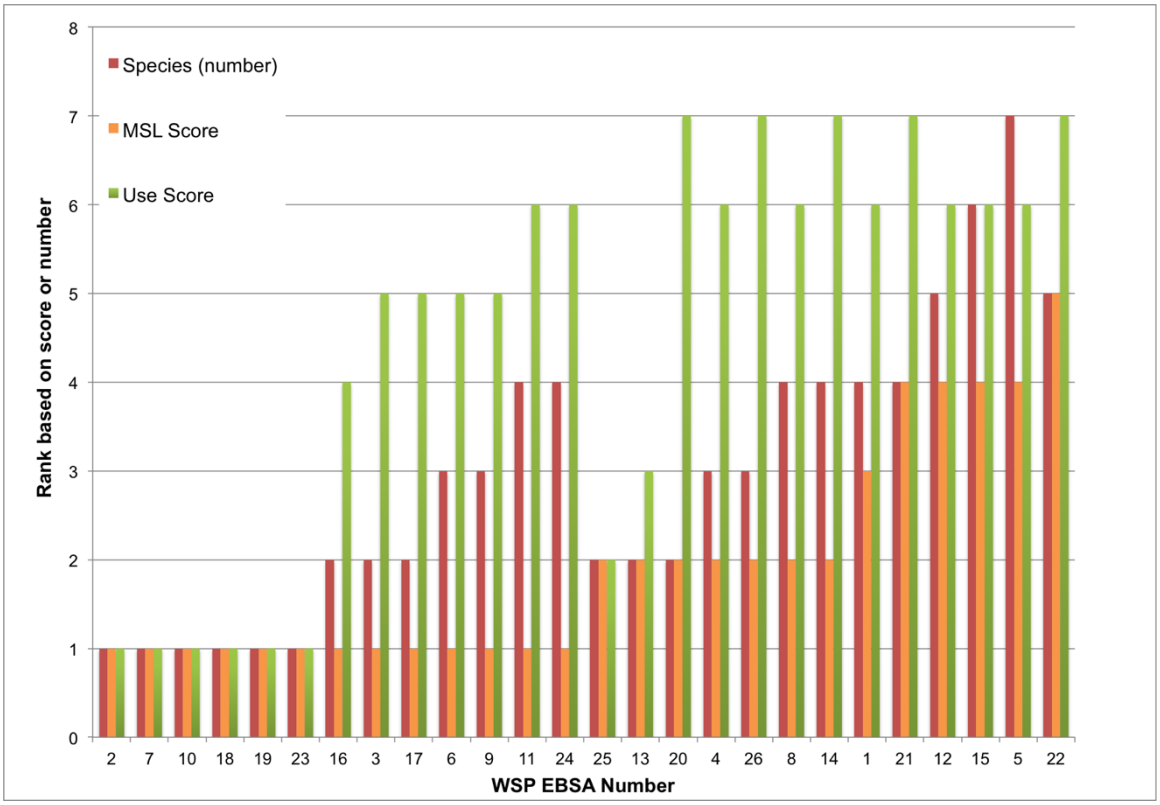

Figure 8. WSP EBSAs (n=26) and their ranked numbers/scores for three metrics. WSP EBSA numbers are ordered by MSL Score (least to greatest). For EBSA names, refer to Table 1.

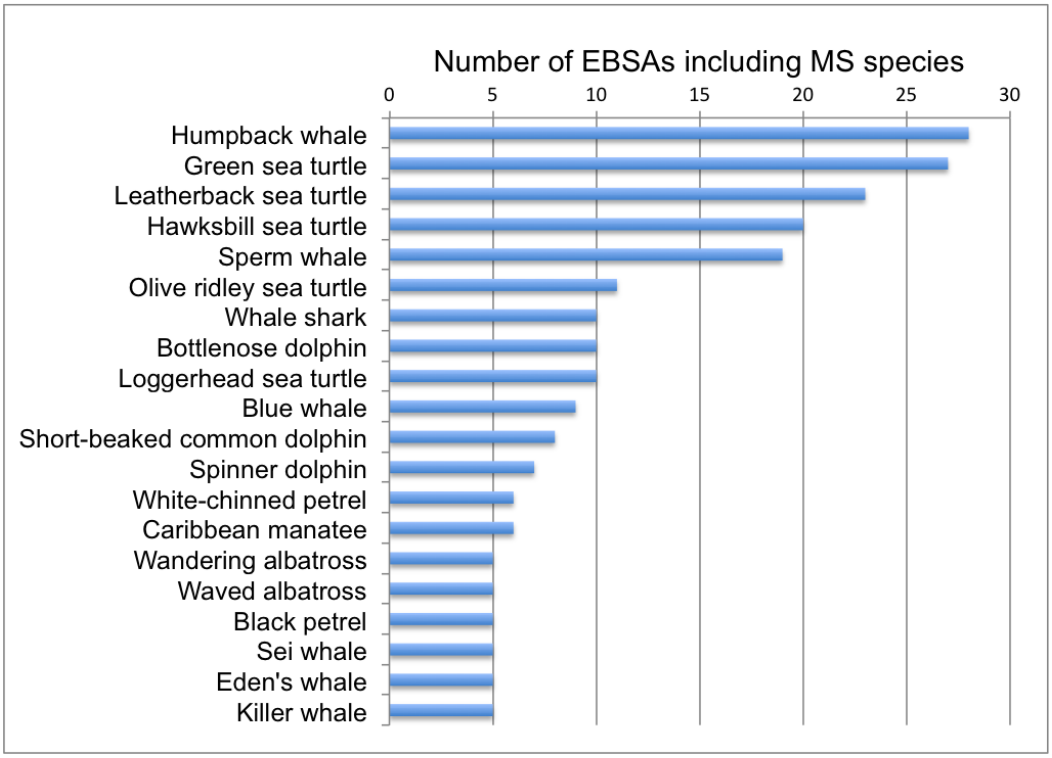

Figure 9. CMS listed marine mammal, seabird, sea turtle, and shark/ray species named in at least five different EBSAs and the total number included within EBSA descriptions in the ETTP, WCWA, and WSP (Marine mammal = 10 out of 28 total species; seabird = 4 out of 31 species; sea turtle = 5 out of 6 species; shark/ray = 1 out of 7 species).