

IUCN Global Species Programme

MBU

Marine Biodiversity Unit

in partnership with the Species Survival Commission and Old Dominion University

2016 in Review



HIGHLIGHTS

International Environmental Justice

Marine Red List assessments played a new role in international environmental justice when Dr. Kent Carpenter testified at the International Court of Justice. This year, the Tribunal unanimously ruled that recent activities in the pristine Spratly Islands destroyed coral reef and added further stress to the coral and reef-associated species found there. Furthermore, threatened species, such as giant clams, were unlawfully and irresponsibly harvested using habitat-destroying methods. This historic ruling on maritime rights and resource entitlements illustrates the dynamic applicability of Red List data to preserve and protect marine biodiversity.



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New Marine Fish Extinction Risk Initiatives

Two new marine Red List initiatives were funded in 2016. We will be completing global assessments for all clupeoid fishes (herrings, sardines and anchovies) and flatfishes. The order Clupeiformes encompasses small, schooling species, such as herrings, sardines, shads, menhaden and anchovies, which exhibit natural boom-bust population cycles. They are important forage fishes, key prey items for large fishes, marine mammals and sea birds. Furthermore, many species support major commercial fisheries, such as the Peruvian Anchoveta, which supported the largest single-species fisheries in the world. Population information is often lacking, due to a similarity in physical characteristics among species and an overlap in geographic distribution. A regional assessment in the Western Indian Ocean will also begin in 2017.



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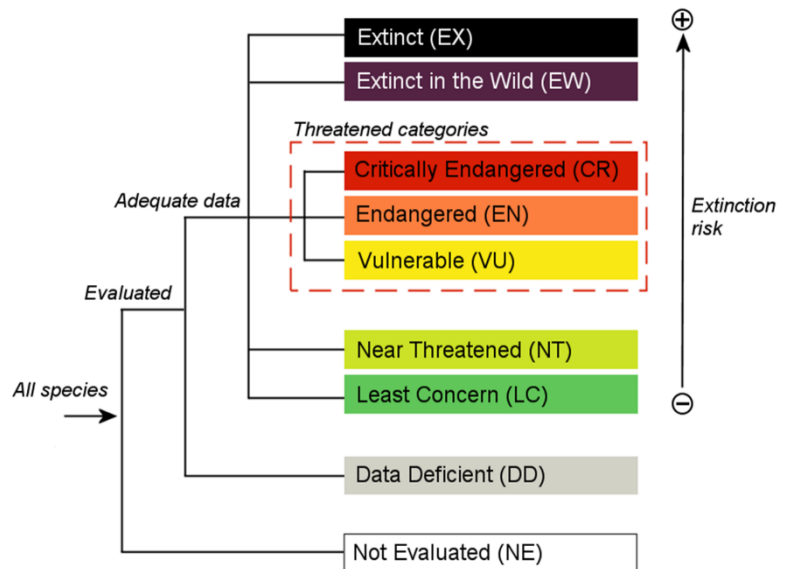
The Conservation Status of Sharks, Rays and Chimaeras in the Mediterranean Sea

Regional Red List assessments for all Chondrichthyes of the Mediterranean Sea were published in 2016, along with an informational [brochure](#). More than 50% of the 73 known species are of elevated conservation concern regionally, including all three species of Angel Shark, most as a result of overexploitation. Localized extinctions, particularly in the northwestern Mediterranean Sea, have substantially decreased the diversity of chondrichthyans in the region.

OVERVIEW & ACCOMPLISHMENTS

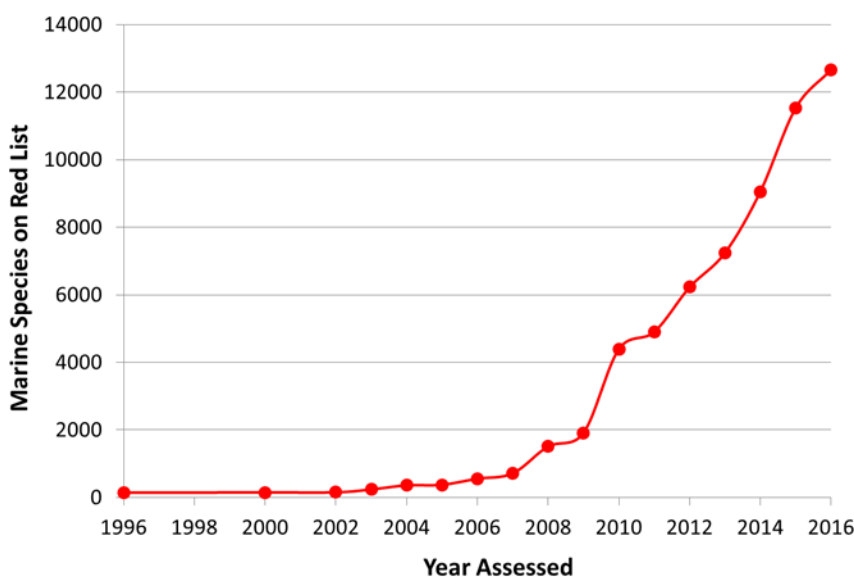
Our ocean, the largest ecosystem on Earth, supports life through its myriad atmospheric, geological and biological processes, supported by immense biodiversity. The provision of vital ecosystem services, livelihoods and food security for all humankind is threatened by our activities, and we now know that the threats to marine biodiversity rival those found in the terrestrial realm.

The IUCN Red List of Threatened Species – the global standard for determining the conservation status of species – categorizes species based on symptoms of extinction risk. The goal of the Global Marine Species Assessment (GMSA) project, the primary focus of the Marine Biodiversity Unit, is to synthesize the available data for 20,000 marine species and complete their IUCN Red List assessments. These comprehensive species assessments are informing conservation priorities at species and site levels, resulting in direct benefits to the ecosystem and the people relying on it.



IUCN Red List Categories

In 2016, the total number of species on the Red List exceeded 85,000 and marine representation increased to almost 15%. Over 2,000 marine species were published this year, including over 1,000 bony fishes. We facilitated regional Red List assessor training workshops in Argentina, Taiwan and Portugal; as a result, the 74 participants received tools and practical experience necessary to apply the Red List methodology to marine species.



Cumulative number of marine species published on the IUCN Red List

IUCN hosted the World Conservation Congress in Hawai'i in September 2016. The Congress, held every four years, is the largest recurring event for conservation practitioners to meet, collaborate and share best practices to address current environmental challenges. During a special session on "The Challenges and Successes of Marine Species Conservation", Dr. Carpenter provided an update on a decade of marine Red Listing, highlighting the petitions for protection of marine species under the U.S. Endangered Species Act and the Convention for International Trade in Endangered Species. The talk was well received and highlighted on Twitter via @IUCNShark.



In collaboration with the Decision Theater at Arizona State University, we finished a prototype spatial decision-support tool for the Gulf of Mexico in 2016. Using the results of our Gulf of Mexico Red List marine initiative, this tool will allow stakeholders to effectively prioritize geographic areas, ecosystems, and species for improved management, restoration, recovery, mitigation and research.

Marine conservation education continues at Old Dominion University, Arizona State University, Christopher Newport University and Texas A&M University. Six graduate students gained career-building experiences working on our Red List projects; two, Christi Linardich and Jack Buchanan, successfully defended their masters' theses in May 2016. The Conservation Scholars program, funded by the National Fish and Wildlife Foundation and run by Dr. Tom Lacher, supported an undergraduate summer internship, and many other undergraduate students contributed during the year, providing valuable Red Listing experience and contributing to our ongoing efforts.

We also saw the beginning of a unique partnership between IUCN and the zoo and aquarium community in 2016. The Deep aquarium in Hull, England created a full-time, permanent marine Red List Officer, establishing the first, of hopefully many, positions of its kind. Through this position, the Deep aims to foster partnerships with other institutions around the world that will build capacity for effective conservation.



Substantial progress has been made, but action is urgently needed in the face of many threats marine biodiversity, including overexploitation, habitat destruction and climate change. We thank all of those who have supported our efforts in 2016, and look forward to supporting marine biodiversity conservation in 2017.

MEET OUR STAFF

The passion and hard work of our dedicated team of professionals and students drive the success of the MBU. We also thank our undergraduate student workers based at ODU, ASU, CNU and Texas A&M, who have devoted their time and enthusiasm to our program.

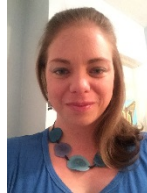
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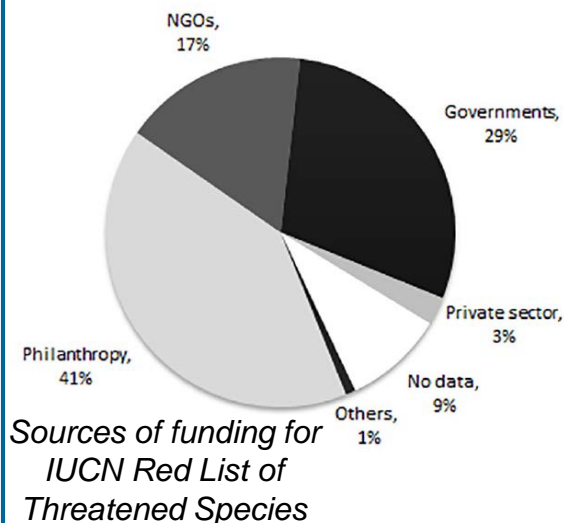
PUBLICATIONS & PRESENTATIONS

Our work has been broadly publicized to scientists, conservationists, managers and others at conferences and through peer-reviewed literature. For example, in June and September 2016, members of the MBU team presented our work at two international conferences in Hawai'i: the International Coral Reef Symposium and the World Conservation Congress.

25 PEER-REVIEWED PUBLICATIONS SINCE 2006

2 PEER-REVIEWED PUBLICATIONS IN 2016

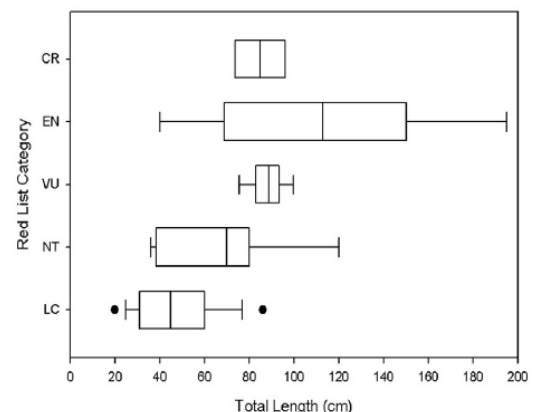
Juffe-Bignoli et al. (2016) Assessing the costs of global biodiversity conservation knowledge. *PLoS ONE*



We evaluated the costs and funding sources associated with four global biodiversity and conservation knowledge products to assess the long-term financial viability of these products. A total of US\$174 million was invested between 1979 and 2013. Over half of the funding was provided by philanthropic contributors and nearly three quarters was spent on personnel. Compared to other global knowledge products of similar importance, development and maintenance costs were much lower.

Comeros-Raynal et al. (2016) Key predictors of extinction risk in sea breams and porgies. *Biological Conservation*

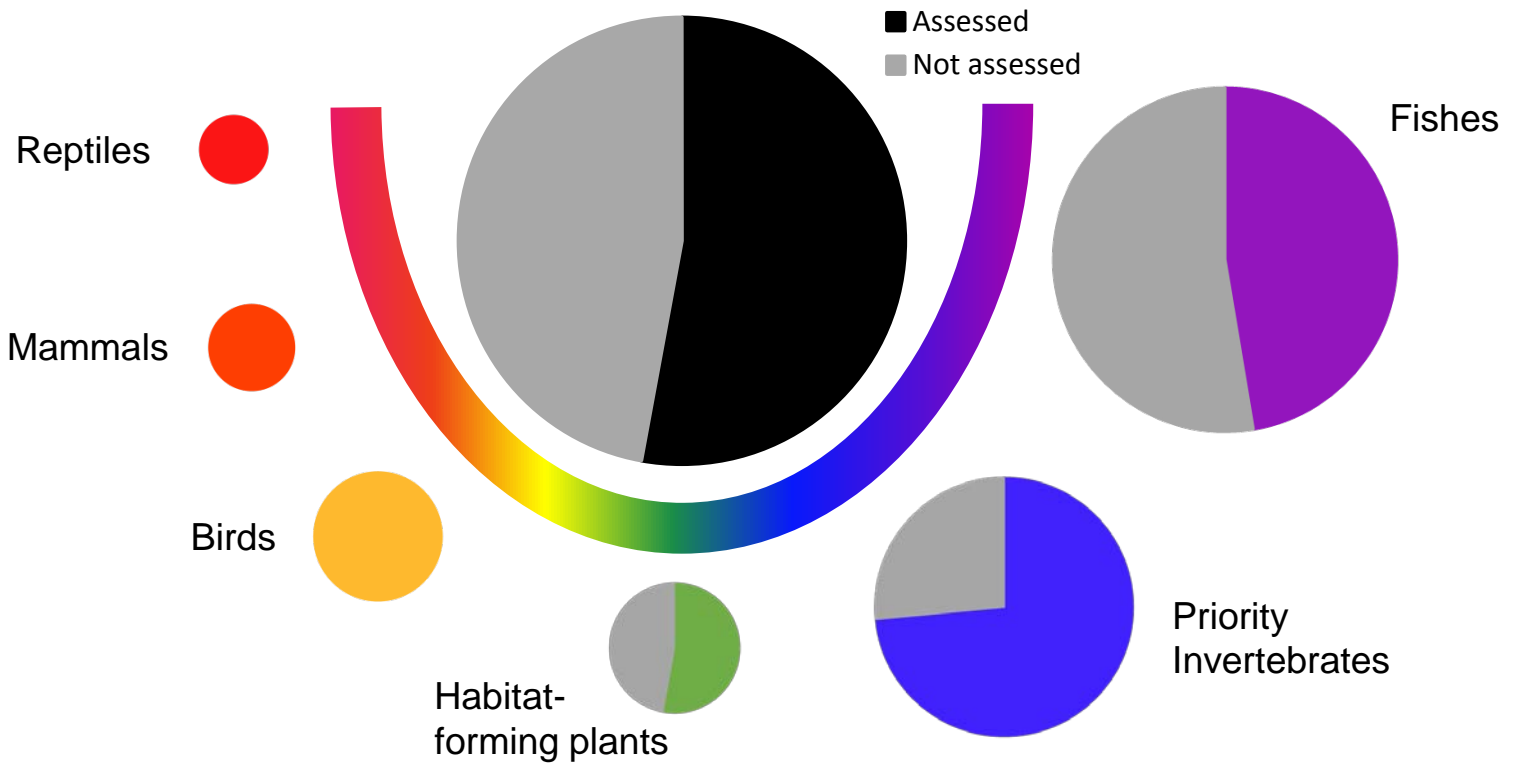
We investigated predictors of extinction risk in 151 exploited marine bony fishes (sea breams and porgies) to better understand the threats impacting these fishes. For threatened species, intense fishing pressure and habitat loss are the primary drivers of observed population declines. Larger-bodied species were most susceptible to the threats that drive elevated extinction risk in these fishes.



Differences in max size across Red List categories

STATUS TOWARDS OVERALL GOAL

Marine-associated species for assessment



To date, we have assessed the following marine clades and geographic regions:

Higher vertebrates	Fishes	Invertebrates	Plants	Regions
Mammals	Sharks, rays & chimaeras	Reef-building corals	Mangroves	Eastern Tropical Pacific
Birds	Coelacanths	Lobsters	Seagrasses	Mediterranean
Turtles	Hagfishes	Cephalopods	Selected macroalgae	Greater Caribbean
Iguana	Tarpons & bonefishes	Sea cucumbers		Europe
Snakes	Eels	Reef-building bivalves		Eastern Central Atlantic
	Selected Perciformes	Cone snails		Gulf of Mexico
	Puffer fishes			Persian Gulf
				Pacific Islands

ACKNOWLEDGEMENTS

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of Nature
IUCN Species Survival Commission
Conservation International
The Deep

Universities and Research Institutes:

Old Dominion University
Arizona State University
Harte Research Institute for Gulf for
Mexico Studies

Granting Agencies

Agence Française de Développement
MAVA Fondation pour la Nature
Moore Family Foundation
National Fish and Wildlife Foundation
New Hampshire Charitable Foundation
Ocean Park Conservation Fund, HK
Qatar National Research Fund
Thomas W. Haas Foundation
Total Foundation
Toyota Motor Corporation

