Mapping Life on Earth: Recent Progress with AquaMaps

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What are AquaMaps

- Computer-generated distribution maps
- Based on environmental preferences of species and known occurrences
- For eventually all species on Earth
Who Does AquaMaps

- Under the umbrella of the FishBase Consortium
- With data from FishBase, SeaLifeBase, GBIF and OBIS
- With support from Pew Charitable Trusts, European Commission, USGS, GBIF
Who Does AquaMaps

- Rainer Froese, IFM-GEOMAR, Coordinator
- Kristin Kaschner, UBC, model development
- Sven Kullander, NRM, extension to freshwater
- Jonathan Ready, formerly NRM, implementation
- Tony Rees, CSIRO, mapping tools
- Paul Eastwood, CEFAS, valuation
- Nina Garilao, IFM-GEOMAR, web programming
- Josephine Rius Barile, WFC, database programming
- Kathleen Reyes, WFC, map checking
>10,000 Species in 2010

- Half of all marine fishes (~7,000)
- All marine mammals
- All marine reptiles (turtles, snakes)
- Many seabirds (those that are predicted by the properties of the water)
- Over 1,000 invertebrates
- Important invasive species
Whale shark
(cosmopolitan)
Examples from AquaMaps
Whale shark (cosmopolitan)
Rhincodon typus  Smith, 1828
Whale shark

Catalog of Fishes (gen., sp.) | ITIS | CoL

Classification  Elasmobranchii | Orectolobiformes | Rhincodontidae
Synonyms  Rhiniodon typus, Micristodus punctatus, Rhinodon pentalineatus, ... more
Common names  Requin baleine, Tiburón ballena, Tofu sa, ... more

Upload your photos and videos
| All pictures | Google image | Stamps |

Add your observation in Fish Watcher
| Native range | All suitable habitat | PointMap | Year 2050 |

Picture by Postberg, J.

AquaMaps  Data sources: GBIF OBIS
Distribution
Circumglobal in tropical and warm temperate seas. Western Atlantic: New York, USA through the Caribbean to central Brazil. Eastern Atlantic: Senegal to Gulf of Guinea; St. Paul's Rocks (Ref. 13121). Indian Ocean: throughout the region, including the Red Sea and the Persian Gulf. Western Pacific: Japan to Australia and Hawaii. Eastern Pacific: California, USA to Chile. Identified as one of the species with an unfavorable conservation status in Appendix II of the Bonn Convention for the Conservation of Migratory Species of Wild Animals in 1999. Classified as a highly migratory species, in Annex I of the 1982 United Nations Convention on the Law of the Sea (UNCLOS) which called for 'coordinated management and assessment to better understand cumulative impacts of fishing effort on the status of the shared populations' of these sharks (Ref. 26139). Included in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) since May 2003 which regulates international trade of this species. This can partially implement the original objective of the FAO International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks). However, international trade still exists.

Countries | FAO areas | Ecosystems | Occurrences | Introductions
### Countries where *Rhincodon typus* is found

Point map (with point info) \( n = 163 \)

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Environmental Layers Used by AquaMaps

Depth | Temperature | Salinity | Primary productivity | Sea ice concentration

Depth (Mean, Minimum, Maximum)
Examples from AquaMaps
Blackfin spiderfish (continental shelves)
Examples from AquaMaps: Global Species Richness

www.aquamaps.org
Examples from AquaMaps

- Click anywhere in the Oceans
- Show Advanced Users list
- Show ‘potential invasives’
- Use *Gadus morhua* to show suitable habitat and 2050 range
Tools:
Equatorial Species Richness Transect across the Indo-Pacific
Tools:
Where to Place an MPA
Tools

*Mnemiopsis leidyi* (invasive Black Sea)
Tools

*Mnemiopsis leidyi* (invasive Black Sea)
Other Tools from AquaMaps

- What lives in my Bay?
- What species may invade my coast?
- Where shall I put an MPA?
- Deep-water biodiversity: Cold Spots
- Checklists by Ecosystem and Country
Latest Developments

- Include more species and improve automatic maps, e.g. through ‘country points’
- Move AquaMaps to a grid environment
- Add more GIS capabilities (move to MapServer)
- Add a ‘sandbox’ where advanced users can create their own maps and play with layers
- Increase resolution
- Add ‘qualified’ species richness maps, e.g. with phylogenetic uniqueness
No VaporWare

• www.aquamaps.org
• www.fishbase.org
• www.sealifebase.org
• www.speciesbase.mobi

Thank You