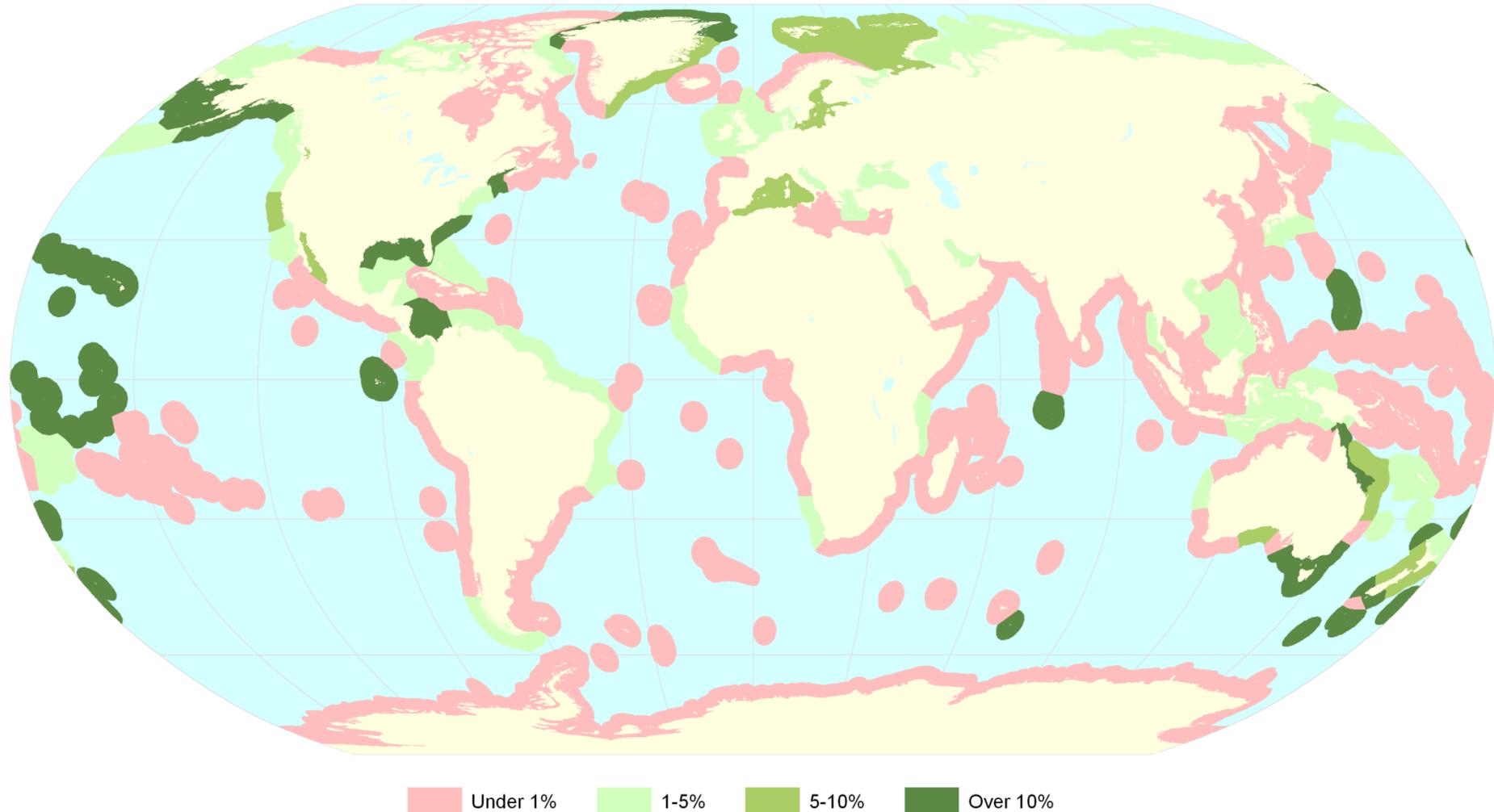


# Marine ecoregion protection



# Issues that influence the marine debate:

- Shorter history of protection
- Lack of data compared to terrestrial
- Some kind of inherent lack of empathy with marine organisms – “I am vegetarian but I eat fish” (defined as several phyla not merely Osteichthyes)
- **We do not commercially harvest on land**
- Shifting baselines – globally total fish biomass has declined about two-thirds from historical baselines as a result of fishing.
- Disjunct between science and public policy – more extreme in marine

# Available evidence for Marine Reserve Effectiveness

- 1) Reserves result in long-lasting and often rapid increases in the abundance, diversity and productivity of marine organisms.
- 2) These changes are due to decreased mortality, decreased habitat destruction and to indirect ecosystem effects.
- 3) Reserves reduce the probability of extinction for marine species resident within them.
- 4) Increased reserve size results in increased benefits, but even small reserves have positive effects.
- 5) Full protection (which usually requires adequate enforcement and public involvement) is critical to achieve this full range of benefits.
- 6) Harvested areas do not provide the same benefits as non-harvested.

# Scientific Consensus (Lubchenko et al)

- 1) Reserves (no harvest) conserve both fisheries and biodiversity.
- 2) Reserves must encompass the diversity of marine habitats in order to meet goals for fisheries and biodiversity conservation.
- 3) Reserves are the best way to protect resident species and provide heritage protection to important habitats.
- 4) Reserves must be established and operated in the context of other management tools.
- 5) Reserves need a dedicated program to monitor and evaluate their impacts both within and outside their boundaries.
- 6) Reserves provide a critical benchmark for the evaluation of threats to ocean communities.
- 7) Networks of reserves will be necessary for longterm fishery and conservation benefits.
- 8) Existing scientific information justifies the immediate application of fully protected marine reserves as a central management tool.

# Conservation benefits worldwide increase exponentially with - Edgar et al 2014

1. no take
2. well enforced
3. old (>10 years)
4. large (>100km<sup>2</sup>)
5. isolated by deep water or sand.

Geographical Space	The geographical space is well-defined. ✓ Charts updated? Notice to mariners	The geographical space is not well-defined.	
Scope of Conservation Objectives	The objectives are for the conservation of biodiversity as a whole, including ecosystems, species, and genetic diversity.	✓ Ecosystem level considerations must be part of species level objectives with explicit prediction of impacts and monitoring ✓ Vertical zones permitted but not recommended	The objectives are not for the conservation of any elements of biodiversity.
Primacy of Nature Conservation Objective(s)	Conservation of biodiversity is the primary overriding objective.	There are multiple objectives of equal priority in addition to the conservation of biodiversity. ✓ In cases of conflict, conservation of first priority	There are objectives that have primacy over the conservation of biodiversity, but conservation of biodiversity is still an objective.
Recognized	All relevant governing authorities recognize and abide by conservation of biodiversity as the primary objective for the area.	Some, but not all, relevant authorities recognize and abide by conservation of biodiversity as the primary objective for the area.	Relevant governing authorities do not recognize or abide by conservation of biodiversity as the primary objective for the area.
Effective means		The mechanism has the power and breadth to control some activities occurring within the area that could have impacts on biodiversity. ✓ Use known outcome data in OEARCMs	The mechanism does not have the power and breadth to control activities occurring within the area that could have impacts on biodiversity.
Long-term	The mechanism is intended to be in effect in perpetuity.	The mechanism is intended or expected to be in effect for the long term - i.e., indefinitely. ✓ Long term commitment equivalent in intent to terrestrial – legal not policy	The mechanism is not intended or expected to be in effect for the long term.
Dedicated	The mechanism can be reversed only with great difficulty.	The mechanism can be reversed with moderate difficulty.	The mechanism can be reversed without much difficulty.