

how do marine reserves fit into the big picture?

marine reserves work on many different levels of biological organization, affecting individual animals and plants, populations, communities, and ecosystems. The benefits of marine reserves can include:

- **protection of habitat**
- **conservation of plants and animals that live in protected habitats**
- **recovery of depleted populations of fished species that live in reserves**
- **movement of animals from reserves to surrounding fished waters**
- **insurance against environmental or management uncertainty**
- **provision of ecosystem services**
- **protection of places to provide baseline information**
- **provision of sites for enjoyment and inspiration**

Marine reserves produce this unique combination of benefits because they limit where fishing, drilling for oil or gas, and other extractive activities can occur, rather than how much or when those activities occur. Moreover, they prohibit other activities such as dumping, which can pollute or destroy habitat. By eliminating extractive and other destructive activities in particular locations, reserves can protect significant portions of entire ecosystems at once. Traditional approaches tend to focus on single species independent of other elements of the ecosystem. The most effective protection for even a single species requires an ecosystem approach, because every species interacts with numerous other species and the environment.

Reserves can protect habitat and produce dramatic increases in populations living inside their borders, offering insurance against local extinctions and declines. Marine reserves also may affect areas beyond their borders by supplying larvae, juveniles, and adults to adjacent waters.

Research demonstrates that marine reserves can be a useful management and conservation tool, if they are properly designed and enforced. However, other types of management are still critical. Traditional practices such as fishing quotas, seasons, and gear restrictions are important to achieve sustainable fisheries in surrounding waters. Scientists are developing fisheries management models that incorporate both marine reserves and more traditional methods of regulating fishing effort.

Marine reserves cannot address all that ails the oceans. Problems such as pollution, invasive species, disease epidemics, and climate change affect whole regions and require complementary solutions. However, by protecting critical habitats, reserves can contribute to the protection and restoration of healthy marine ecosystems.

