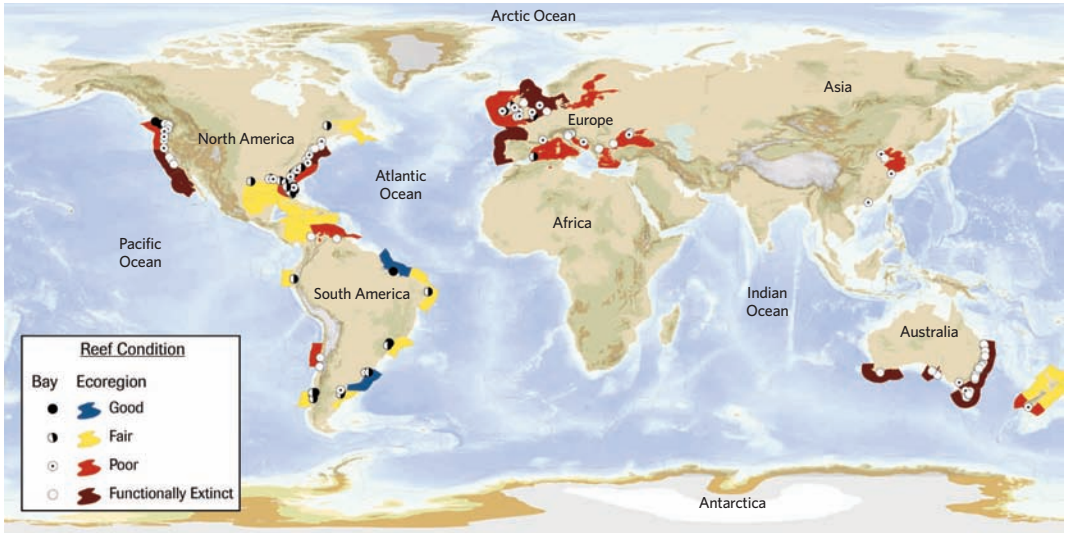
SHELLFISH REEFS AT RISK

A GLOBAL ANALYSIS OF **PROBLEMS** AND **SOLUTIONS**



The global condition of oyster reefs in bays and ecoregions. The condition ratings of Good, Fair, Poor, and Functionally Extinct are based on the percent of current to historical abundance of oyster reefs lost: < 50% lost (good); 50-89 % lost (fair); 90-99% lost (poor); > 99% lost (functionally extinct). © TNC

Native oyster reefs were once dominant features in many temperate estuaries around the world. Just as coral reefs are critical to tropical marine habitats, bivalve shellfish are the ecosystem engineers of bays and estuaries, creating habitats for a diversity of plants and animals. Reefs also provide important services to people and nature by filtering water, providing food and habitat for fish, crabs and birds, and serving as natural coastal buffers from boat wakes, sea level rise and storms.

Centuries of intensive fisheries extraction exacerbated by more recent coastal degradation have put oyster reefs near or past the point of functional extinction worldwide. **Globally, 85 percent of reefs have been lost**, making oyster reefs the most severely impacted marine habitat on the planet.

Shellfish reefs and beds are essential to the health of marine ecosystems, yet they are almost always solely managed as fisheries. There are many obstacles to successful management, but the greatest include the perception that a problem does not exist and that non-native shellfish can replace wild native species. Native oysters must be recognized for the reef habitat that they provide and managed as a habitat, not just as fisheries.

Recommendations: The Road to Reef Recovery

A major shift in management is needed to conserve and restore shellfish habitats to return a full array of critical ecosystem services to people and nature. Realistic and cost-effective solutions, however, in conservation, restoration, policy and management can help turn the tide for shellfish reefs. By implementing these solutions, we can work to stem reef loss and increase the viability of this critical habitat.

Key recommendations from the Shellfish Reefs at Risk report are:

- **Improve protection** for reefs of native shellfish;
- **Restore and recover reefs** back to functioning ecosystems that provide multiple services to humans;
- **Manage fisheries sustainably** for ecosystems and livelihoods;
- **Stop the intentional introduction and spread of non-native shellfish**; and
- **Improve water quality** in bays and estuaries.

Global Assessment: A Vanishing Ecosystem

Shellfish Reefs at Risk provides the first global view of the distribution and condition of oyster reefs—one of the most important and valuable marine resources for humans but the least well recognized as a habitat. Compiling published data as well as expert surveys and direct observations, this report provides condition estimates for oyster reefs in more than 144 estuaries in 44 ecoregions around the world. The report concludes that **shellfish reefs are the most imperiled marine habitat on earth**.

Healthy shellfish reefs are vital for functioning coastal ecosystems. Though many have been depleted, shellfish are slowly being seen as more than just food and managed accordingly. © Barry Truitt/TNC

Threats: The Decline of Shellfish Reefs

Many factors have contributed to the profound loss of reefs around the world. These threats continue largely unabated today and include:

- Destructive fishing practices and overfishing that directly alter the physical structure of reefs and health of oyster populations.
- The increase, incidence and severity of disease and parasite outbreaks due to the translocation of shellfish and introduction of non-native shellfish.
- Coastal development activities such as filling ("land reclamation") and dredging of shipping channels.
- Upstream activities such as altered river flows, dams, poorly managed agriculture and urban development that impact the quality and quantity of water and sediment.

The condition of bivalve shellfish habitats, especially oyster reefs, is generally poor and the challenges in revitalizing native reefs are great. Nevertheless, many reasonable actions can work across local, regional and global scales to improve their state and the report contains specific examples of places where such actions are being taken today. Fundamental to ensuring success of these actions, oyster reefs and other shellfish-dominated habitats need to be managed primarily as critical components of coastal ecosystems and the commitment must be made to restore their vital functions in coastal systems around the globe.

Oyster Reefs by the Numbers

- Globally **85%** of oyster reefs have been completely lost.
- In most bays and ecoregions, shellfish reefs are at less than **10%** of prior abundance.
- Reefs are **functionally extinct** in many areas, particularly in North America, Australia and Europe.
- Most of the world's remaining wild capture of shellfish comes from only **five** ecoregions (of 152 with reported catch) on the east coast of North America where conditions are poor or worse.
- Only **10** ecoregions in the world presently report wild capture rates above 1000 tonnes, down from millions of tonnes 50 to 100 years ago.
- There are a few places with **opportunities** for conservation on each continent.

Shellfish and People: More than Fisheries

Shellfish have supported civilizations for millennia from Romans to railroad workers in California in the 1800s. In 1864 alone, 700 million European flat oysters (*Ostrea edulis*) were consumed in London, employing up to 120,000 men in Britain to dredge oysters. Shell piles in the southwest of France contain over 1 trillion shells apiece, underscoring both the productivity of the native species and the scale of harvest. In the 1870s, intertidal reefs of the eastern oyster (*Crassostrea virginica*) extended for miles along the main axis of the James River in Chesapeake Bay but had largely disappeared by the 1940s. Roads in many coastal areas, including around Matagorda Bay, Texas, were often paved using oyster shells.

FOR MORE INFORMATION: MIKE BECK: mbeck@tnc.org or ROB BRUMBAUGH: rbrumbaugh@tnc.org

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