

## Healthy oysters for healthy oceans: a biomimetic approach

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Globally, oyster habitats are the most degraded habitats among coastal systems, with the loss of 99% in the last 150 years. These 350 million years old keystone species and their natural keystone habitats are at the brink of total collapse due to intensive human industrial harvesting and pollution of coastal areas, specifically estuaries where most of the harbors and human settlements evolved. Science has been acknowledging the ecological value of oyster habitats and their importance to coastal health, protection and intertidal engineering connectivity between lands and oceans. We now know that oyster habitats used to embrace coasts of all continents, protecting them and supporting life and water quality, often growing up to 10 cm/year, in comparison to coral reefs' 1 cm/year. This presentation will address the urgent need for oyster habitat restoration locally and globally in order to recover marine health. Through the work of the Green Harbors Project in the USA and Ireland, we accomplished several successful oyster restorations in urban areas that had lost this essential key stone habitat and related ecological functions and health. GHP designed a biomimetic plan for oyster habitat restoration throughout urban harbors, with the main goal to increase oyster population and biomass, improving water quality, biodiversity and seafood safety. Our biomimetic approach is based on integrated restoration of intertidal key stone habitats, oyster reefs, salt marshes and sea-grass beds. Coastal natural habitats have been evolving and adapting together for millions of years, collaborating and sharing water, energy and food nexus between the land and the sea, securing health of local ecosystems and human communities.

**Key words:** biomimetic oyster restoration, oyster reefs, ocean health, human health