

Restoring Oyster Reefs in New York City for People & Nature



Future Cities, Future Citizens
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New York City

- The largest metro area in the U.S
- Complex social and ecological systems
- Land 789.4 km² (65%)
- Water 428.8 km² (35%)



The Bronx

- Surrounded by several rivers
- Industrial development along waterways
- Underserved communities deprived of access to natural ecosystems
- Decreased ecosystem services
- Loss of biodiversity



Rocking the Boat

- After-school youth development through boatbuilding and on-water education
- Boatbuilding builds rowboats and sailboats for on-water program
- On-water is contracted by local scientists to perform restoration work



Rocking the Boat

- Job Skills Apprentice: learning professional development skills through advanced level boatbuilding and ecological restoration projects
- Program Assistant: Moved through student and Apprentice programs and now assists staff in running after-school program



Using Urban Planet Atlas

- Explore oyster projects using the framework of social-ecological systems
- Describe ecosystem services from oyster reefs
- Share information with other students, communities and organizations
- Explore future scenarios of oyster reef restoration
- Demonstrate a project contributing to ecosystem services and biodiversity in cities



Oysters in the Bronx River

- Oysters were abundant in pre-industrial times
- Oysters filtered water and were harvested for food
- They have disappeared from many waterways in NYC mainly because of pollution
- Oyster reintroduction



Restoring oyster reefs

- RTB and Parks Department constructing oyster reefs in the mouth of the Bronx River
- The first oyster reef built in 2006 (24 m²)
- RTB conducted more reef construction and oyster monitoring in the following years



Restoring oyster reefs

- 1 of 8 pilot oyster reef restoration projects in the NY Harbor organized by NY/NJ Baykeeper
- 24 square meters of rock, shell, and oyster spat on shell
- Encourage local government to allow widespread restoration of reefs for improved water quality



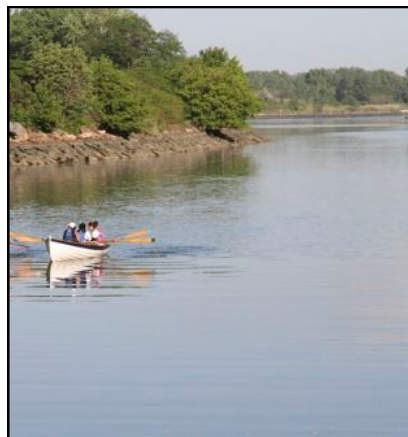
Education

- Educating urban communities about ecosystem services provided by oysters and about oyster restoration
- We teach that nature and society can live together in the urban environment, and benefit from each other
- New oyster reefs are used as outdoor labs to learn about environmental science





Oyster reefs: benefits for people

- Water filtration and visually more appealing river
- Education and stewardship
- Recreation
- Increased fishing capacity



Oyster reefs: benefits for ecosystems

- Habitat for other species
- Removed nutrients through filter feeding increases dissolved oxygen levels improving fish survival
- River bottom stabilization, reduced turbidity
- Increased biodiversity

Social Values \ Ecosystem values	Low	High
Low		
High		



Future Scenario

- Army Corp of Engineers Comprehensive Restoration Plan set goal of restoring 500 acres of reef by 2015 and 5,000 acres by 2050
- Ambitious goal of water improvement through oyster filtration to make it suitable for swimming, fishing, and recreation
- Urban communities a hub for knowledge and innovation related to the improvement of social-ecological systems

Potential Future Submissions to the Urban Planet from New York



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