

Protect and regulate China's oyster resources

China has at least 30 oyster species (1), all of which provide valuable ecosystem services. Oysters' filter feeding habit reduces suspended particles and nutrients. One hectare of oyster reef can clean a volume of water equivalent to nearly 15 Olympic swimming pools daily (2). Oysters' excrement can stimulate denitrification by removing nitrogenous organic matter, helping to mitigate eutrophication (3). Natural oyster reefs provide habitat for many species, enhancing biodiversity and increasing fisheries. Oyster reefs can reduce impacts of waves caused by hurricanes and typhoons, stabilizing shorelines (4). Despite their ecological importance, 85% of oyster reefs globally have been degraded since the 19th century by overharvesting, coastal development, water pollution, and disease (4). China's oyster reefs, especially those in Tianjin and Jiangsu (5, 6), have been seriously damaged during recent decades. Urgent action by Chinese authorities is required to protect these crucial species.

Extensive degradation of natural oyster reefs has been accompanied by rapid development of oyster aquaculture, driven by high profitability (7). China's oyster farming accounts for more than 80% of global production and covers more than 1400 km² (8). However, fewer than 10% of oyster farmers have aquaculture licenses or permits (9). Poor water-quality management within large aquaculture developments contaminates oysters with heavy metals, organohalogens, and viruses (10). Very high concentrations of cadmium, lead, inorganic arsenic, and polychlorinated biphenyl now occur in oysters in southern China, posing carcinogenic risks (10).

China should address the threats to natural oyster reefs by providing stronger protection, ceasing inappropriate coastal development, and reducing water contamination. Effective regulation of aquaculture must include exclusion of polluted waters and stringent depuration procedures. The Restorative Aquaculture Opportunity Index should be used to identify areas for oyster aquaculture (11). Finally, China can help protect oyster reefs as well as other kinds of aquatic life by promoting sustainable prawn-fish-shellfish-algae polyculture instead of single-species aquaculture (12).

Hong Yang^{1,2,*}, Mingguo Ma¹, Julian R. Thompson³, Roger J. Flower³

¹ Chongqing Jinpo Mountain Karst Ecosystem National Observation and Research Station, School of Geographical Sciences, Southwest University, Chongqing 400715, China.

² Department of Geography and Environmental Science, University of Reading, Reading RG6 6AB, UK.

³ Department of Geography, University College London, London, WC1E 6BT, UK.

Corresponding author. Email: hongyanghy@gmail.com

References and Notes

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