



Highlights of [GAO-08-594](#), a report to the Chairman, Committee on Natural Resources, House of Representatives

## Why GAO Did This Study

U. S. aquaculture—the raising of fish and shellfish in captivity—has generally been confined to nearshore coastal waters or in other water bodies, such as ponds, that fall under state regulation. Recently, there has been an increased interest in expanding aquaculture to offshore waters, which would involve raising fish and shellfish in the open ocean, and consequently bringing these types of operations under federal regulation. While the offshore expansion has the potential to increase U.S. aquaculture production, no comprehensive legislative or regulatory framework to manage such an expansion exists. Instead, multiple federal agencies have authority to regulate different aspects of offshore aquaculture under a variety of existing laws that were not designed for this purpose. In this context, GAO was asked to identify key issues that should be addressed in the development of an effective regulatory framework for U.S. offshore aquaculture. In conducting its assessment, GAO administered a questionnaire to a wide variety of key aquaculture stakeholders; analyzed laws, regulations, and key studies; and visited states that regulate nearshore aquaculture industries.

Although GAO is not making any recommendations, this review emphasizes the need to carefully consider a wide array of key issues as a regulatory framework for offshore aquaculture is developed. Agencies that provided official comments generally agreed with the report.

To view the full product, including the scope and methodology, click on [GAO-08-594](#). For more information, contact Anu K. Mittal at (202) 512-3841 or [mittala@gao.gov](mailto:mittala@gao.gov).

## OFFSHORE MARINE AQUACULTURE

### Multiple Administrative and Environmental Issues Need to Be Addressed in Establishing a U.S. Regulatory Framework

#### What GAO Found

In developing a regulatory framework for offshore aquaculture, it is important to consider a wide array of issues, which can be grouped into four main areas.

*Program administration:* Addressing the administration of an offshore program at the federal level is an important aspect of a regulatory framework. Stakeholders that GAO contacted and key studies that GAO reviewed identified specific roles and responsibilities for federal agencies, states, and regional fishery management councils. Most stakeholders and the studies agreed that the National Oceanic and Atmospheric Administration (NOAA) should be the lead federal agency and emphasized that coordination with other federal agencies will also be important. In addition, stakeholders and some of the studies recommended that the states play an important role in the development and implementation of an offshore aquaculture program.

*Permitting and site selection:* It will also be important to establish a regulatory process that clearly identifies where aquaculture facilities can be located and for how long. For example, many stakeholders stated that offshore facilities will need the legal right, through a permit or lease, to occupy an area of the ocean. However, stakeholders varied on the specific terms of the permits or leases, including their duration. Some stakeholders said that longer permits could make it easier for investors to recoup their investments, while others said that shorter ones could facilitate closer scrutiny of environmental impacts. This variability is also reflected in the approaches taken by states that regulate aquaculture in their waters. One state issues 20-year leases while another issues shorter leases. Stakeholders supported various approaches for siting offshore facilities, such as case-by-case site evaluations and prepermitting some locations.

*Environmental management:* A process to assess and mitigate the environmental impacts of offshore operations is another important aspect of a regulatory framework. For example, many stakeholders told GAO of the value of reviewing the potential cumulative environmental impacts of offshore operations over a broad ocean area before any facilities are sited. About half of them said that a facility-by-facility environmental review should also be required. Two states currently require facility-level reviews for operations in state waters. In addition, stakeholders, key studies, and state regulators generally supported an adaptive monitoring approach to ensure flexibility in monitoring changing environmental conditions. Other important areas to address include policies to mitigate the potential impacts of escaped fish and to remediate environmental damage.

*Research:* Finally, a regulatory framework needs to include a federal research component to help fill current gaps in knowledge about offshore aquaculture. For example, stakeholders supported federally funded research on developing (1) alternative fish feeds, (2) best management practices to minimize environmental impacts, (3) data on how escaped aquaculture fish might impact wild fisheries, and (4) strategies to breed and raise fish while effectively managing disease. A few researchers said that the current process of funding research for aquaculture is not adequate because the research grants are funded over periods that are too short to accommodate certain types of research, such as hatchery research and offshore demonstration projects.