

# The makeup of mariculture: Researchers examine global trends in seafood farming

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FSU postdoctoral researcher Rebecca Gentry. Credit: Rebecca Gentry

When Florida families settle down to enjoy a seafood dinner they may not realize the main dish wasn't freshly caught in the nearby Gulf of Mexico, but rather farmed off the coast of Panama.

The process of farming [seafood](#) in the ocean, known as mariculture, is a growing trend yet little is known about the trajectories of its development. That's why a team of Florida State University researchers set out to shed some light on the industry.

FSU postdoctoral researcher Rebecca Gentry, doctoral student Elizabeth Bess Ruff and Assistant Professor of Geography Sarah Lester examined more than 50 years of data from 1950 to 2016 from more than 100 countries around the world.

Their study, published in *Nature Sustainability*, outlined several consistent patterns of mariculture taking place globally.

"Aquaculture is an increasingly important component of global food production," Gentry said. "Therefore, understanding patterns of development has important implications for managing our changing global food systems and ensuring [economic development](#), food security and [environmental sustainability](#)."

Gentry and her team examined different development trajectories of mariculture production overall and that of specific groups of species, such as fish and crustaceans. They found that countries with relatively stable production farmed a greater diversity of species than countries with other development trajectories.

For example, stable countries produced 15.2 species on average, compared to 6.5 for countries who have experienced a crash in production. Lester pointed out that this result suggests that increasing the diversity of mariculture crops could support more robust and resilient seafood production.

Additionally, researchers found the type of species grown had a positive connection with a country's development trajectory. Specifically,

countries that initially farmed molluscs, such as oysters or mussels, were more likely to have stable production than countries that started with farming fish.

Researchers also found that governance and economic indicators were related to trajectories of mariculture production. For instance, low production countries tended to have lower annual gross domestic product (GDP) scores, lower governmental regulatory quality and lower levels of internet connectivity. Further, the team demonstrated that many countries had stabilized their mariculture production at a level far below their potential productivity.

"This indicates that governance, regulatory or economic changes could unlock further opportunities for growth," Gentry said. "Environmental regulations are important for preventing significant environmental decline, local over-development and unsustainable [farm](#) practices. However, for those countries currently failing to meet their mariculture potential, policies to encourage thoughtful growth may be worth considering."

The study is just one part of a larger National Science Foundation-funded project led by Lester that is examining the socioeconomic and ecological drivers of mariculture development.

"This type of multidisciplinary research is essential for better understanding the current effects and future potential of marine aquaculture—which will be all the more important as the global human population continues to increase and we reach the sustainable limits of other types of food production," Lester said.

**More information:** Rebecca R. Gentry et al, Temporal patterns of adoption of mariculture innovation globally, *Nature Sustainability* (2019). [DOI: 10.1038/s41893-019-0395-y](https://doi.org/10.1038/s41893-019-0395-y)

Provided by Florida State University

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