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# How spotted wolffish could be the 'whitefish of the future'

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By Bonnie Waycott

**Norway, looking to ensure the continued growth of global aquaculture, eyes spotted wolffish farming as a new candidate species**



Spotted wolffish is a candidate as a new farmed species in Norway, which seeks to ensure the continued growth of global aquaculture.

Photo by Willy K.M. Sandaa, courtesy of Aminor.

Atlantic salmon production dominates marine aquaculture in Norway – in 2020, the country produced nearly 1.4 million metric tons (MT). Trout, shellfish and seaweed are also produced commercially, but there is a growing focus on farming other marine species that are adapted to cold-water environments in order to ensure the continued growth of aquaculture.

One species that is drawing attention is the bottom-dwelling spotted wolffish (*Anarhichas minor*), which is harvested in the eastern Atlantic, primarily by Norway and Iceland. Because it isn't typically found in dense concentrations, it mostly occurs as bycatch in trawl and longline fisheries. But efforts to farm it suggest that it could become prominent as a new farmed species.

Located in Meløy municipality along the Norwegian coast of Helgeland, **Aminor** (<https://gar-falcon-2tnp.squarespace.com/en/home/>) is the world's only commercial producer of spotted wolffish. According to Managing director Willy Sandaa, the species exhibits many traits that make it suitable for aquaculture, such as high growth rates at low temperatures, few signs of stress under culture conditions and others.

"It produces big eggs of around five to six millimeters in diameter," he said. "When the larvae hatch, they are fully developed with a functional digestive system and can be fed immediately on dry pellets. A species that doesn't require live feed like rotifers or algae is very unique, as it's possible to avoid the labor-intensive and costly use of live feed. The spotted wolffish also tolerates fluctuations in parameters such as temperature, oxygen and [carbon dioxide]. It's sturdy with no known diseases and doesn't have a swim bladder, so it's not expending energy by going up and down in the water column."



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Aminor's farming method involves a series of three-meter-deep indoor grow-out tanks with shelves that take up one full side of the tank. Here, the fish stack on top of each other and can behave as they would in their natural habitat (caves or rocky hiding places). The water temperature is a consistent 4 degrees-C (39 degrees-F) and the fish are given pellets containing fishmeal, fish oil and vegetable and microalgae components. They are then reared to 3–3.5 kg (6.6–7.7 pounds) when they are ready for market. The fat content of farmed species is also higher than those in the wild (8–11 percent, compared to 2–4 percent).

Polly Legendre of **Buena Vista Seafood** (<https://buenavistaseafood.com>), imports spotted wolffish for wholesale markets in San Francisco, New York and Miami. She says that with its high fat and connective tissue content, mild flavor and firm texture, the species could see great success in the U.S. market.



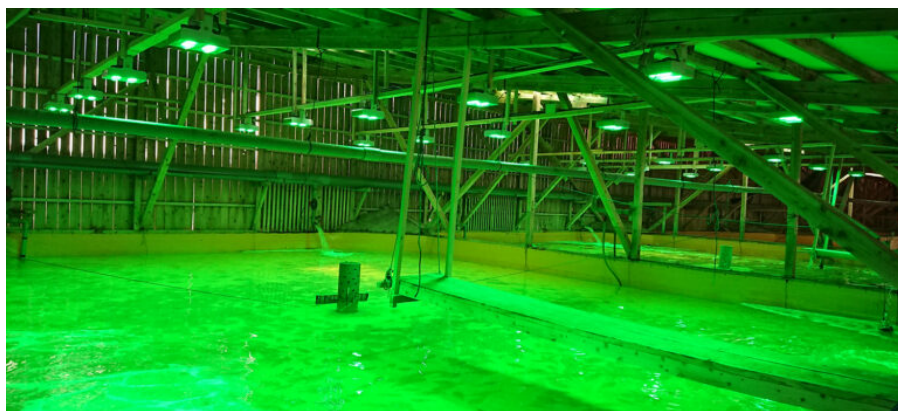
With its high fat content, mild flavor and firm texture, wolffish could find success in the U.S. market. Photo by Polly Legendre.

“From a chef’s point of view, it has so many positive attributes that I think they would love it,” she said. “It’s incredibly versatile. The fillets are firm, the meat holds together on skewers and the high fat content means that it’s virtually impossible to overcook it. It’s easy to eat and can be pan-fried, grilled, steamed or eaten raw. It has such a high degree of success potential that things could really take off. I think it could be the white fish of the future.”

Legendre has also been impressed by Aminor's efforts to reduce plastic pollution during shipping by using double-sided, double-bottom recyclable cardboard boxes containing pelleted dry ice. Dry ice reduces carbon footprint significantly because it's lighter than wet ice, reducing the weight of the boxes and leading to efficient transportation.

"This speaks volumes about taking all the steps in aquaculture correctly," said Legendre. "This kind of commitment in the packaging and shipping stage is something that we don't often look at enough."

Another reason for the focus on spotted wolffish farming in Norway is the diversification of aquaculture. In 2019, the Norwegian Research Council prioritized the subject in a report on the potential of **new species** (<https://www.akvaplan.niva.no/en/projects-networks/nye-arter/>). Hopes are high that diversification will better equip Norwegian aquaculture to address challenges like market changes, resource fluctuations and food security issues.



## Green-lighting growth: Green LED light shows promise in flounder farming

Japanese researchers say that deploying green LED light above flounder grow-out tanks encourages rapid growth and feed intake among the fish.



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Spotted wolffish farming also offers other opportunities. For example, consumer attitudes highlight the need for aquaculture to be flexible, develop continuously and focus on species like seaweed or shellfish while incorporating new selective breeding programs could help farmed fish adapt to climate change. With ideal farming conditions, Norway's aquaculture has huge potential for diversification, but R&D investments are key, says Sandaa.

"Nobody predicted that Norway would establish the full-scale production of lumpfish in less than 10 years," he said. "But the funding was there for investments in infrastructure, and knowledge transfer from cod and halibut research played a part. It also took a long time for salmon farming to become

profitable but the R&D was there. The world needs food, and people are asking questions, for example how to reduce CO<sub>2</sub> footprint or shorten transportation distances. Now is a good time to look into other possibilities for aquaculture.”

Sanaa believes that farmed spotted wolffish could be one such possibility.

“The feedback we get on quality, texture and taste are better than our expectations,” he said. “The markets are there and the product is cherished. We are all positive about the future. The big challenge is that everything that we have been working on since day one hasn’t been done before. Our main focus is to start a new breeding program and establish a strong foundation before scaling up.”

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### **BONNIE WAYCOTT**

Correspondent Bonnie Waycott became interested in marine life after learning to snorkel on the Sea of Japan coast near her mother’s hometown. She specializes in aquaculture and fisheries with a particular focus on Japan, and has a keen interest in Tohoku’s aquaculture recovery following the 2011 Great East Japan Earthquake and Tsunami.

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