

**Buena Vista Seafood presents**  
**Aminor Spotted Wolffish**

**Site Visit to the Aminor facility**

August 10, 2022

Polly Legendre - Buena Vista Seafood

Michael Lee - California State University and Moss Landing Marine Laboratory

**Species behavior and suitability for aquaculture**

Spotted wolffish have many traits that make them a very suitable species for aquaculture. They are calm, docile and highly social. They do best when living in dense populations, in fact they do best when at the maximum legal density limit for aquaculture. The farm has tried to reduce the pen density but the fish responded unfavorably by changing color, refusal to eat and showing signs of wasting and stress. When the density is high, they thrive. In fact, most of the time the spotted wolffish are laying on top of each other.

**Tank structure**

The indoor grow-out tanks are 3 meters deep equipped with a “shelving” system taking up one full side of the tank. These shelves are where most of the wolffish stay all day. They lay on them piled up in a giant mass of fish. The fish that are positioned on the edge of the shelf seem to point towards the outside, looking down into the rest of the tank. This structure allows the wolffish to behave as it would in the wild where its natural habitat is in caves or rocky hiding places. The wolffish also congregate at the bottom of the tank, again laying on top of each other.



## Water

This is a tank/land based system located in the remote village of Halså, Norway. Halså is set on a deep fjord and the water is pumped to the farm from 60 meters deep. The water is consistently 4 C (39 F). The water is not treated in any way and is a flow-through system. Sea cages were tried during initial spotted wolffish farming experiments but the water temperature fluctuation in the sea cage was not suitable for the wolffish. They require consistently cold water all year round.

## Feeding

Spotted wolffish are given pelleted feed that is a mix of fishmeal, fish oil and vegetable and microalgae components. They are not greedy or fast paced feeders as they do not have a swim bladder. This means that pursuing food requires more energy than a fish with an inherent buoyancy regulator, or swim bladder.

Feed conversion data is being gathered for all stages of spotted wolffish rearing. **Currently the FCR range goes from 0.6:1 to 1:1.** There is evidence that this particular species will consistently achieve less than 1:1 FCR over the entire process from hatchery to harvest, making it a prime responsible candidate for responsible aquaculture.

## Innovation

Aminor is the first commercial spotted wolffish farm in the world. They have worked with university researchers in Norway in the past but as far as commercial scale is concerned, they are the ones developing, documenting and learning the most about the spotted wolffish. The farm team is diligently documenting all the progress and setbacks so that they can learn and eventually expand the operation.



## **Broodstock**

During the visit we were able to see some of the oldest broodstock at the farm. These fish were trapped in the wild at a depth of 300m. Within less than 1 week in captivity, the broodstock were being hand fed by the farmers.

The populations are mixed, with male and female wolffish lounging together in the holding tank. This population of wolffish have been at the farm for over 12 years. The farm is also growing a population of broodstock from their own hatchery. It takes approximately 8 to 10 years for spotted wolffish to reach sexual maturity.



## **Hatchery**

We did not get to go inside the hatchery since the farm was waiting on a batch of eggs to hatch. The eggs are very sensitive to light, sound and all vibrations so a physical visit would have been very risky to the eggs. The farmers told us a story about one of their on-site experiences where this happened. An adjacent building was undergoing a light remodel and one of the workers accidentally dropped a piece of lumber. The next day the eggs that were situated along the closest wall all started to hatch. Unfortunately the eggs were not old enough to be viable and they lost them. The hatchery stage is one of the most vulnerable steps in rearing wolffish.

## Harvest

Aminor harvest wolffish with a stun and bleed system. This process is highly regulated and the fish must be dispatched within 8 seconds of stunning. The fish is then immediately chilled and goes to processing.



## Packing - **NO STYROFOAM!!!**

Aminor has committed to eliminating styrofoam from the packaging for all domestic and international sales. They use a specially designed box that is packed with a super chilled fish, dry ice pellets and a few gel packs. This has been pioneered in Norway and will hopefully be a game changer in fresh fish packing.

**WWF recommendation:**

Unregulated fishing and lack of research about stock status means that you should avoid eating catfish until there is more knowledge. The catfish species are vulnerable to overfishing because the reconstruction of the species takes a long time.

Consuming spotted wolffish from Aminor has **no influence** on the wild species



**WWF**

The World Wildlife Fund (WWF) has come out with a statement that by choosing Aminor wolffish eliminate pressure on vulnerable wild wolffish stocks. This is because the wolffish takes so long to reach sexual maturity and overfishing can harm the wild wolffish population. In the wild, wolffish are responsible for keeping certain populations in check, notably urchin and sea stars.

