

Spotted Wolffish – “Anarhichas Minor”

Spotted Wolffish is a Premium cold seawater fish that is well known by chefs around the world for its delicate shining white filets. The taste can be reminiscent of lobster and the texture makes the fish suitable for traditional fish dishes as well as sushi, Wok, Asian cooking, grilled or baked in the oven.

Habitat	The North Atlantic and adjacent parts of the Arctic Ocean Deep Salt water 50–800 m (160–2,620 ft). Cold water below 5 °C (41 °F)
Diet	Hard-shelled invertebrates found on the bottom.
Age, Size, Maturity	Up to 45 yo. Mature at about 5 years. Up to 180 cm, 26 Kg
Social living	Social in clusters
Main attributes	Extremely robust, High density thrive, Few diseases, no antibiotics, no maturity
Conditions	Eggs: 4-5°C Water, 5-6 mm, 950 daytime degrees Fry: 5-8°C Water 20mg -10 grams. 4 months Growth: 6-9°C Water, 0,005 – 4,5 Kg. 2,5 years
Expected Market	20.000 – 40.000 tons today but rising. 5- 10 Mill Fry per year per.
Farming tech	Land based farming. Flowtrough, UV-, Micron- and drumfilter, Raceway
Broodstock	Broodstock can be reused for over 20 years. Generation 3 established.

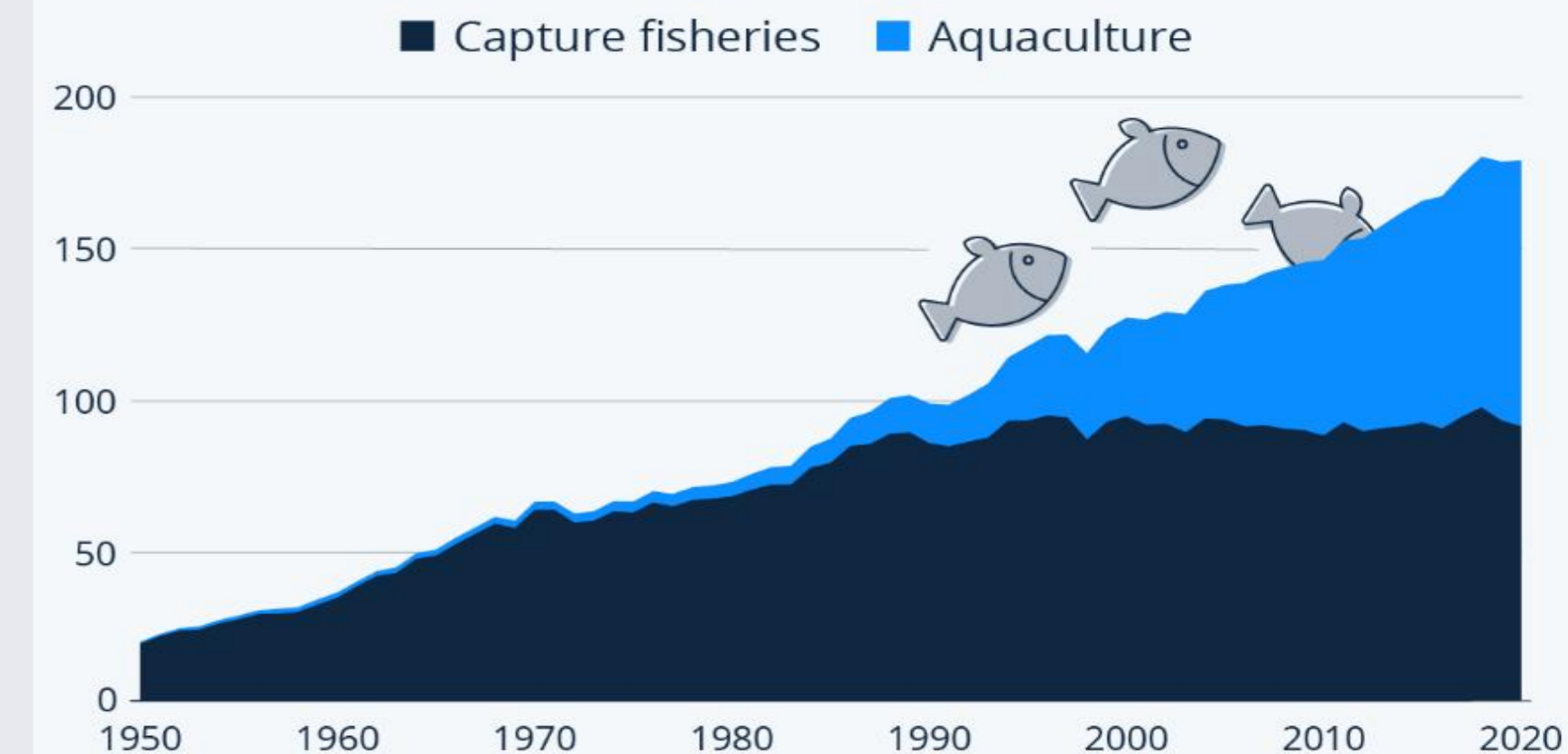


– Spotted Wolffish – Sustainable farmed

Premium Fish with significant marked potential	Rich in protein and B12 rich 15 licences for foodfish production approved in Norway
Sustainable farming	0.7 kg feedfactor 53 - 55% fillet Cold water without need of warming Closed facility without risk of escape High density Up to 300 kg per m3 with good growth Low activity gives good growth No use of freshwater Extremely robust species Wild fishing Red-listed species in several countries – the demand remains
Over 20 years of research - Ready for commercialization	Easy to farm from 5 grams Denovo Wolffish Norway has expertise- and biology/Biomass advantages in brodstock development and early stages of fry
Sjømat Norge	The Norwegian seafood council has established Wolffish in their plans 15.000 tons stable distributed to scandinavian countries
Low technology risk	Use of proven Flowtrough systems Proven use of hatching tanks with 2 waterchanges per minutes Proven use of low waterleveled startfeeding tanks Raceway has been used for Wolffish since about 2003
Diversification of the farming industry of Norway	The Spotted Wolffish came out as one of the absolute favorites in the "New Marine Species" evaluation in 2019

Aquaculture Accounts for Half of the World's Fish Supply

Estimated global fisheries and aquaculture production* (in million tonnes live weight equivalent)



* excluding aquatic mammals, crocodiles, caimans and algae
Source: UN Food and Agriculture Organization

[Norway](#)

Aftenposten

[Research and science](#)

Wolffish farming: Move over cod, here comes this gang

Wolffish are very tasty, well suited as "livestock" and are swimming back in as Norway's new farmed fish.

Good breeding characteristics

Fisheries researcher Kjersti Eline T. Busch in Lofoten highlights wolffish, mussels and seaweed/kelp as new aquaculture products. **Spotted wolffish** is both tasty and very suitable, she believes, and has support from a broad research community.

Busch has a doctorate in aquaculture and has researched cod fry quality in particular. In an article in the University of Tromsø's journal "Ottar", she argues strongly in favor of wolffish farming.

Along the coast and out at sea, there are three different types of wolffish: gray, blue, and spotted wolffish.

"Wolffish is easier to farm than other species. The goal is for more farms to get started, and for spotted wolffish to become a major player in a profitable industry," says senior advisor Lars Olav Sparboe at Akvaplan-niva.

Since wolffish stay on the bottom, they are not dependent on deep cages. Experiments have been done with wolffish in long channels in land-based facilities. The channels can be in several levels, and the water flow allows the fish to swim. The feed is distributed evenly through the water masses.

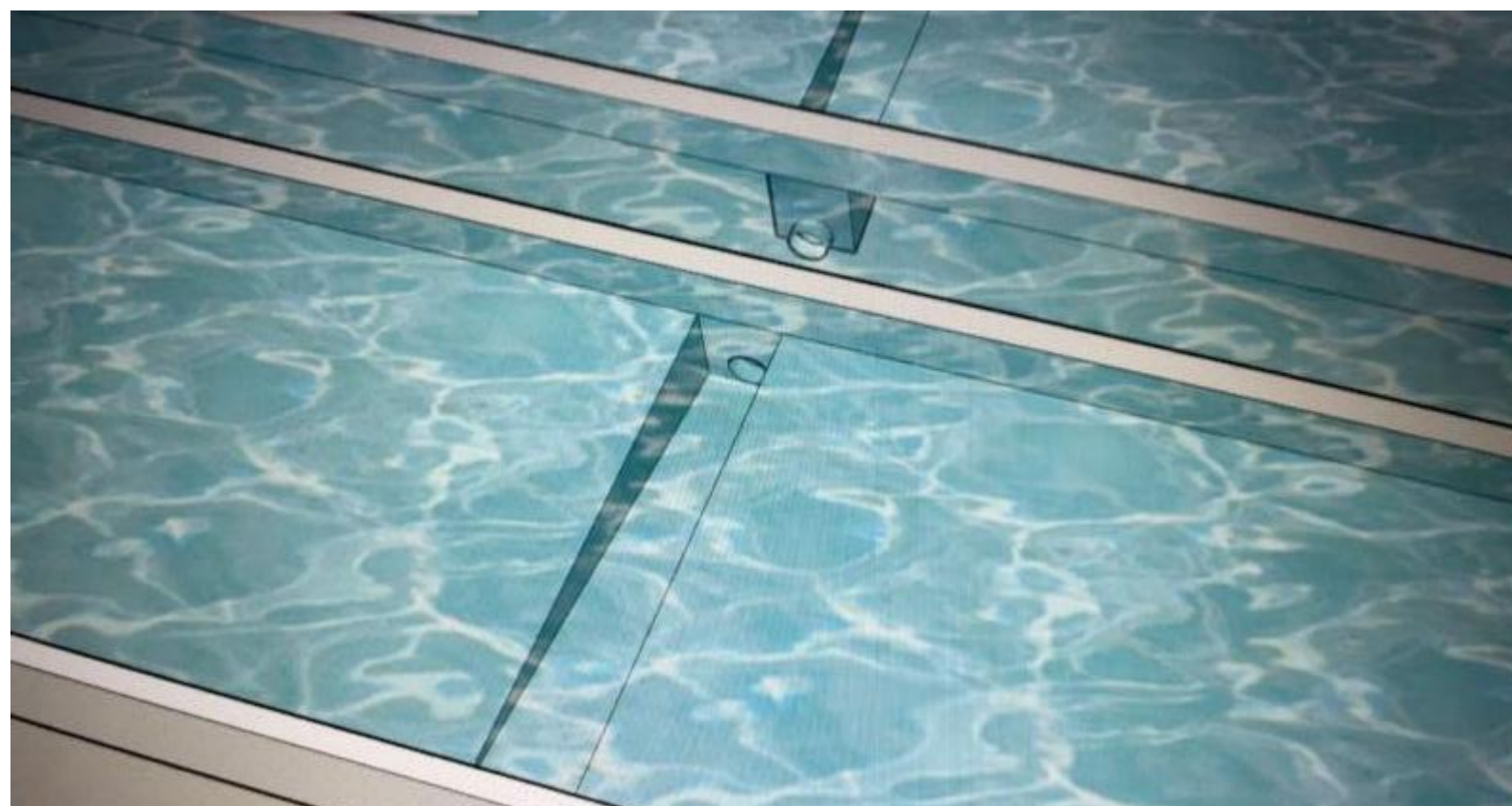
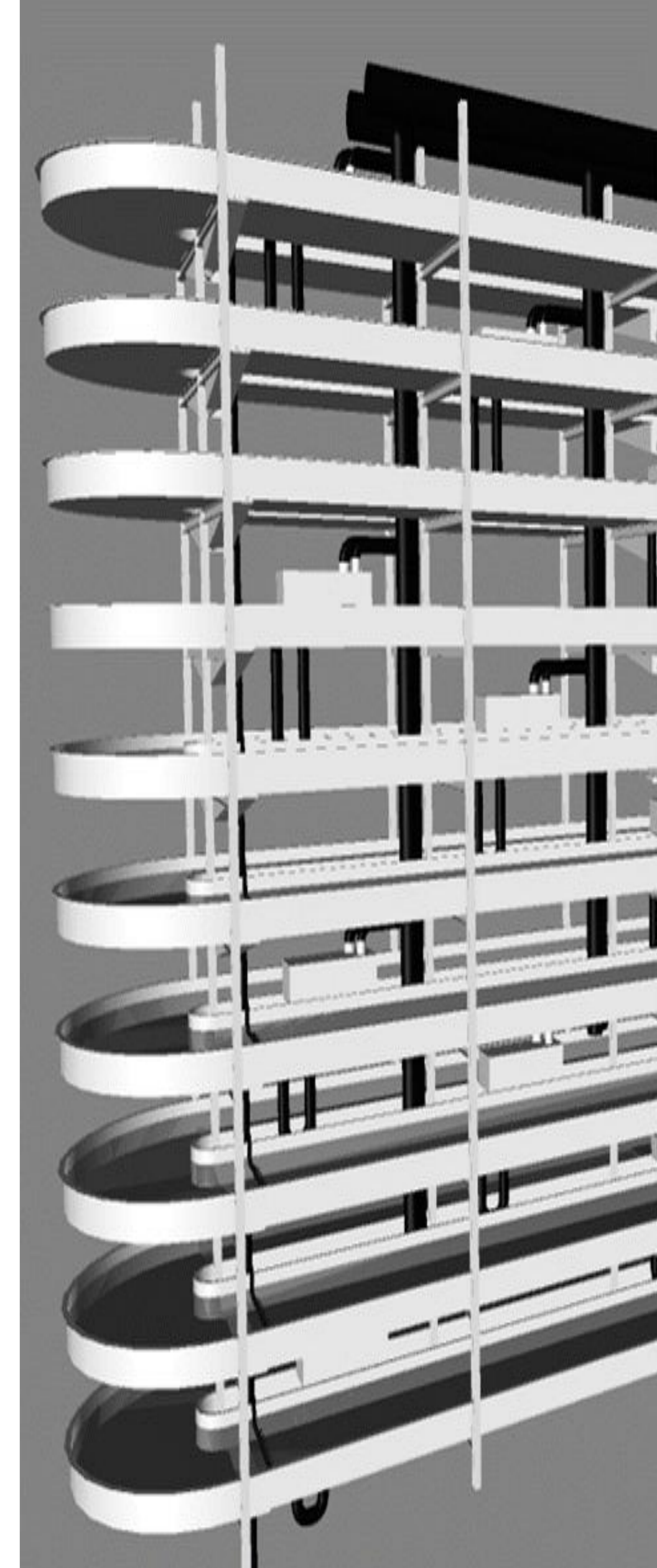
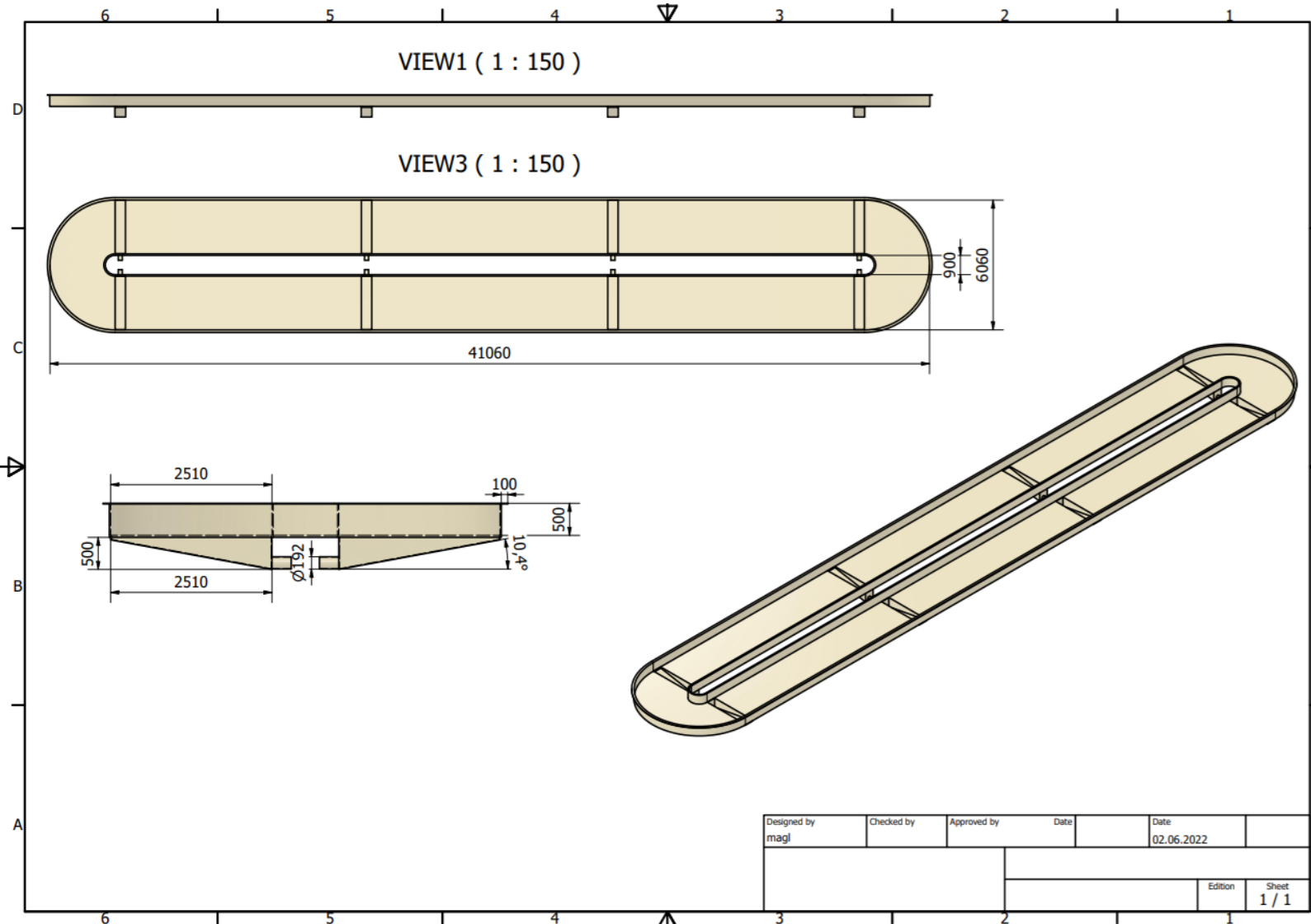
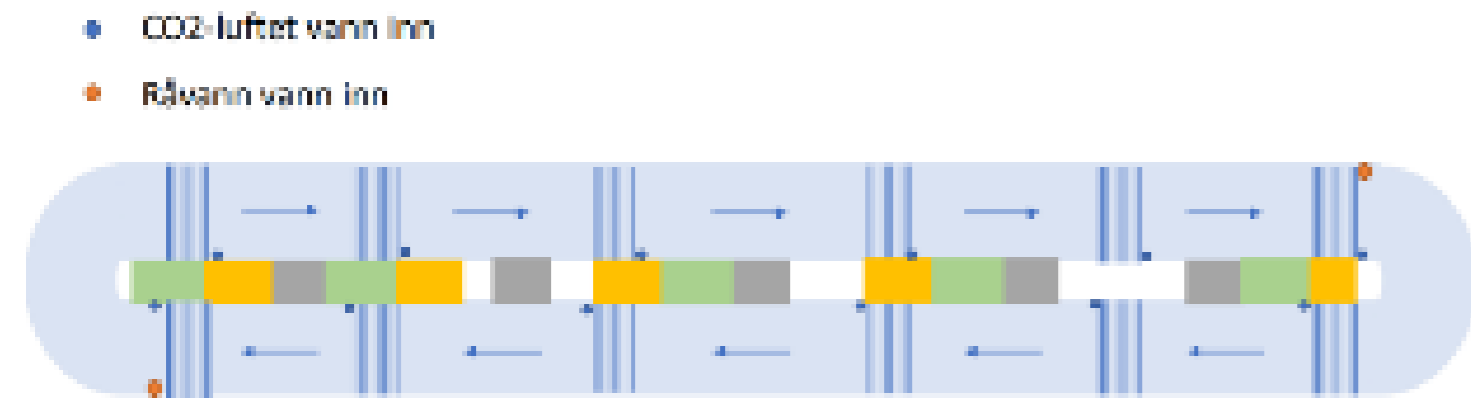


TECHNOLOGY

Shallow Raceway with flowtrough water system

The system is experience-based and the growth conditions and the construction of test facilities is done in collaboration between Denvo Wolffish Norway and partners.

1. Low tech-risk compared to RAS
2. Full landbased valuechain
3. Optimized quality of fish.
4. Optimized growth
5. Optimized thrive
6. Optimize density

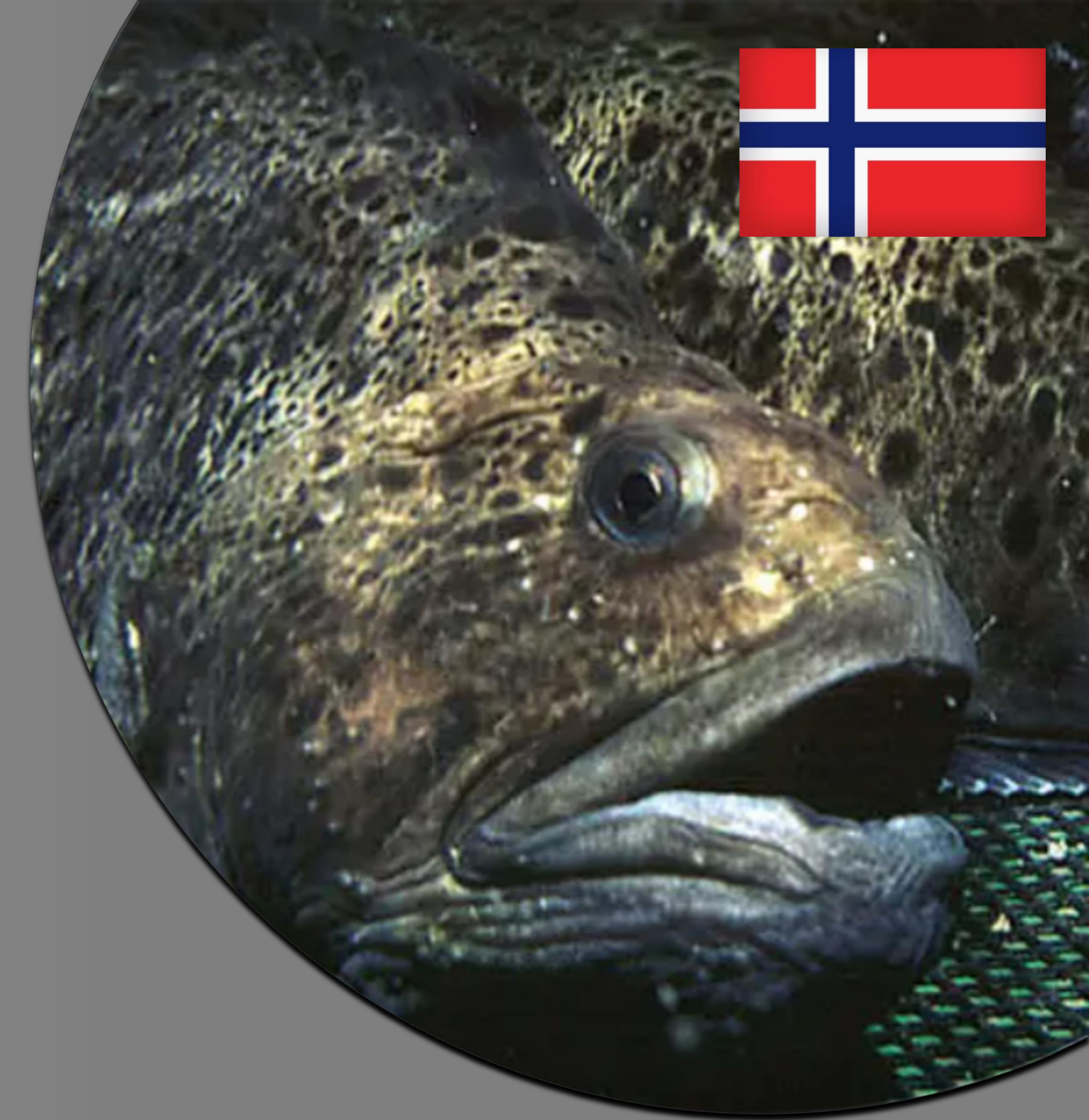


Conservation status – “Anarhichas Minor”

This species has been identified as threatened by the COSEWIC. It is listed under the Canadian federal Species at risk act and was afforded protection under it as of June 2004. The IUCN assess it as Near Threatened in Europe.

[spotted wolffish](#)

The link above take you to Havforskningsnstituttets climate report for spieces of spotted wolffish



Anarhichas minor, Cycle of farming

First-generation broodstock is caught by fishing boats and transported to DenVo Wolffish's facilities for habituation.

Number of eggs per female fish: 7,000 - 25,000. Through the breeding program, the strongest individuals are developed into new broodstock



Spotted wolffish produce large egg grains and the larvae hatch at 950 daydegrees Celsius. That is, about 150 days in Arctic seawater for the best possible development.

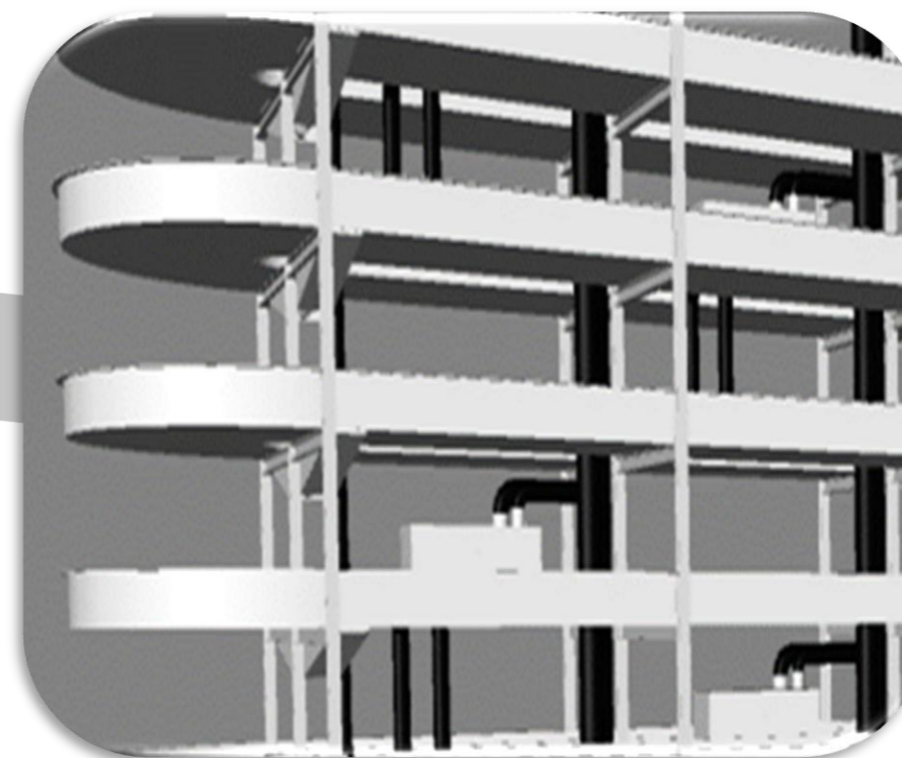
Dag 0



months after fertilization, the larvae hatch and we start feeding.

The larvae develop from 20 milligrams to 10 grams in 4 months.

Dag 120-330



Fry develop gradually and are moved into suitable tanks according to size.

Dag 1080



After 3 years the wolffish is ca 4,5 kg



Spotted Wolffish

Premium seafood of Norway

Made by fry from Denvo Wolffish Norway