ICE FISH FARM

# *Expansion of Rifós*

October 2021

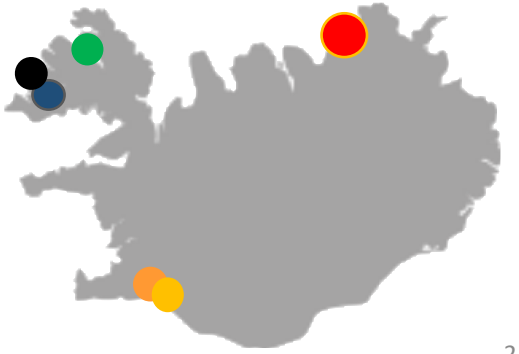
# Smolt farming in Iceland

## Smolt production in Iceland

- Estimated for each 1th tons 250.000 smolt are needed.
- Total production currently in Iceland is around 14m smolts per year.
- Total smolt needed is 26m smolts for 106,5$^{th}$ tons production.
- Smolt need is therefore only 50% supplied by current smolt stations.

| Landsvæði | Hámarkslífmassi samkvæmt Áhættumati erfðablöndunar (tonn) |
|---|---|
| **Vestfirðir** | |
| Patreksfjörður, Tálknafjörður og Patreksfjarðarflói | 20.000 |
| Arnarfjörður | 20.000 |
| Dýrafjörður | 10.000 |
| Önundarfjörður | 2.500 |
| Ísafjarðardjúp | 12.000 |
| **Vestfirðir samtals:** | 64.500 |
| **Austfirðir** | |
| Berufjörður | 7.500 |
| Stöðvarfjörður | 0 |
| Fáskrúðsfjörður | 12.000 |
| Reyðarfjörður | 16.000 |
| Seyðisfjörður | 6.500 |
| **Austfirðir samtals:** | 42.000 |
| **Samtals:** | 106.500 |

Risk assessment from Hafró.
https://www.hafogvatn.is/is/midlun/frettir-og-tilkynningar/radgjof-um-endurskodun-ahaettumat-erfdablondunar-vegna-laxeldis-i-sjokvium



# Winning GIGA formula

- 4 million big healthy high quality 400gr smolt.
- Use Icelandic natural hot water, 12-14 degrees after start feeding.
- Tested area.
- Short distance from tanks to well boat.
- Fast build up time 12 months.
- Shorten time in sea.
- Increase utility of licenses in sea by 20%

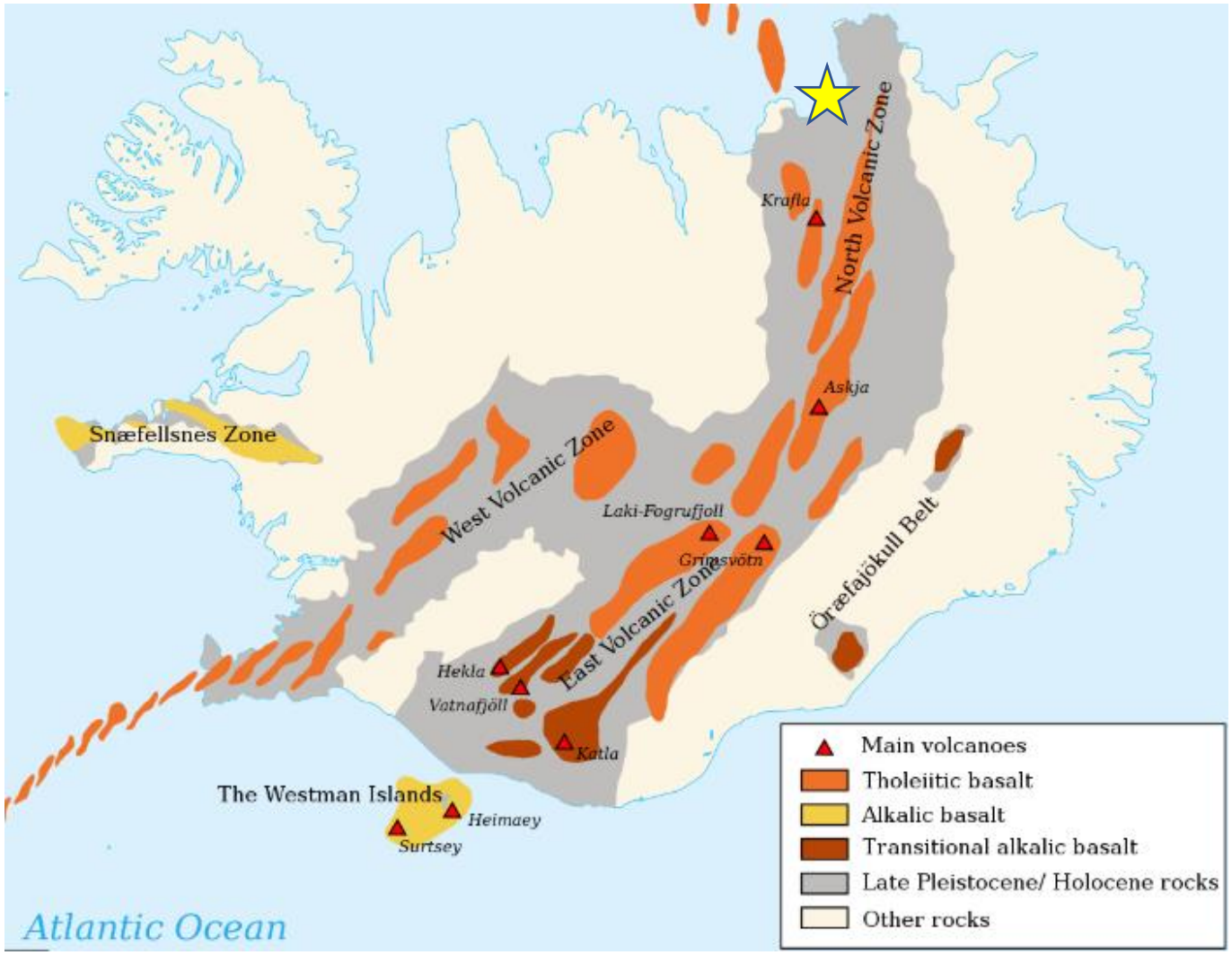
- Rifós is the most productive and biggest smolt station in ICELAND on phase 1.

- Phase 2 then we triple output of biomass.

# History of Rifós

- Salmon farming started at Rifos location Lón in the year 1971. Norwegian investors (Mowis predecessors) had 50% of the shares in a company called ÍSNO.
- The operation was farming salmon in the lagoon.
- In 2012 Rifos started farming Arctic charr in the lagoon.
- In 2018 Ice Fish Farm acquires 70% of the shares and starts planning expansion of post smolt site in Kopasker.
- The year 2020 was the most eventful year in Rifos history when constructions of 4 buildings started in Rifos and Kopasker.
- Today Rifós employs 21 people.

# Location is everything.

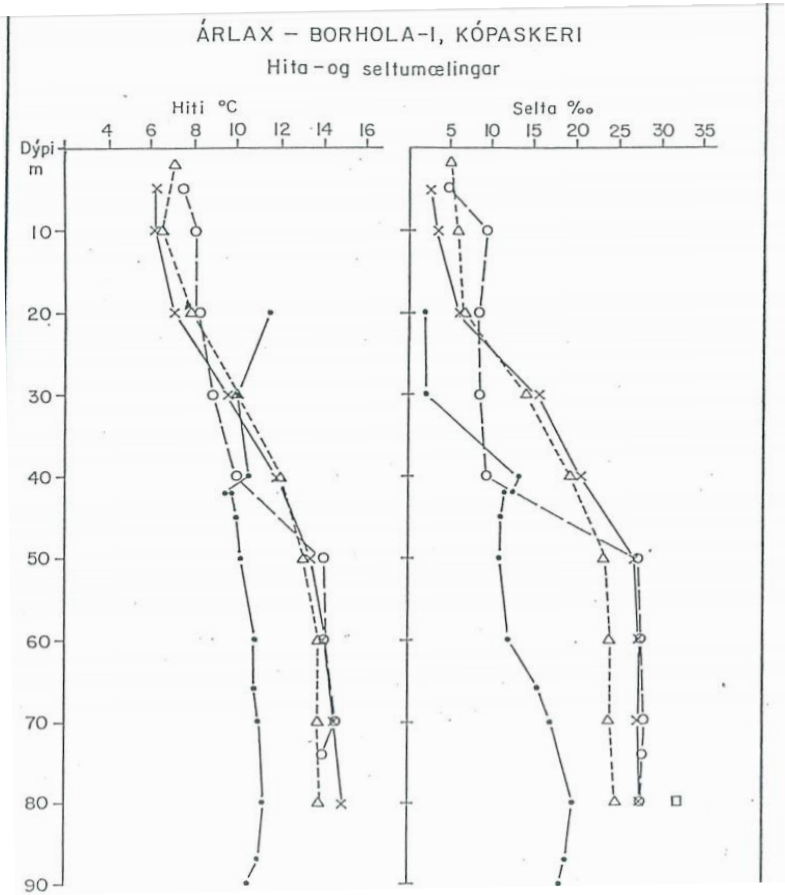



## Right Area

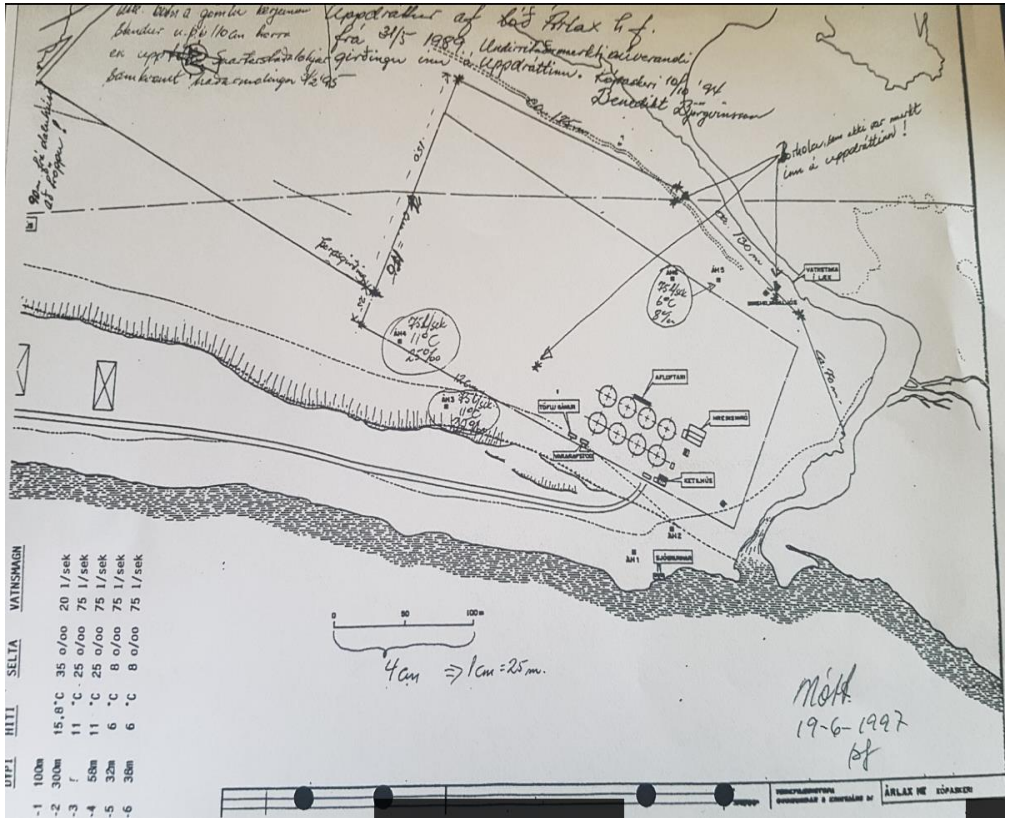
- The Mid-Atlantic Ridge (MAR) is a mid-ocean ridge, a divergent or constructive plate boundary located along the floor of the Atlantic Ocean, and part of the longest mountain range in the world.
- In the area of north of Iceland where Rifos and Kópasker is located there is plenty of warm fresh water and warm sea water in the ground.
- In this area Samherji has been operating land-based salmon farming for 25 years with great result. Stable water supply and good quality of the water. Producing now 1.500 tons of 5kg salmon.
- Only 50 km away from Rifós is the newest thermo powerplant Þeistareykir, producing 90 MW of power per year.
- In the area we have experienced fish farmers.

# Kópasker boreholes and old station. Prior farm operated boreholes for several years

## Winning formula: Borhole log




## Existing boreholes



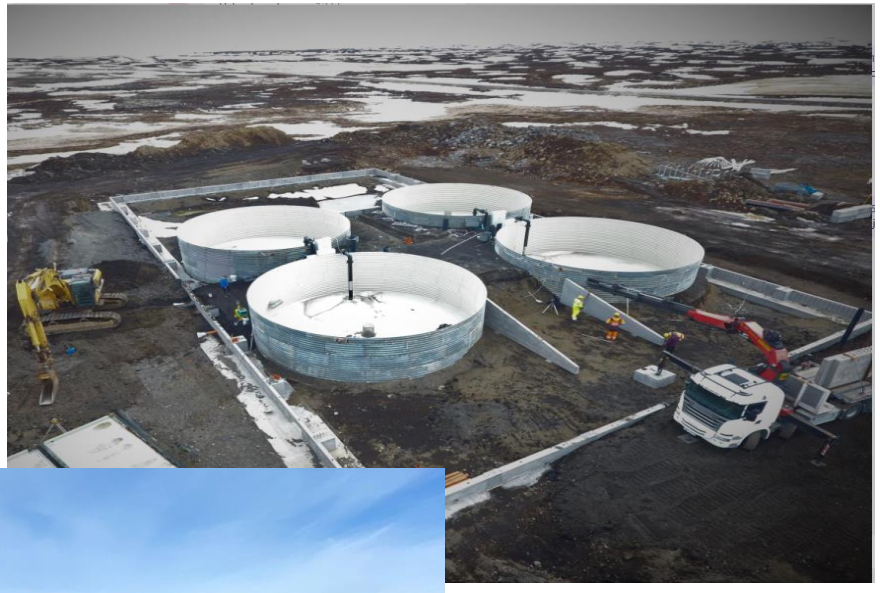
Handy Salinity
35.1 PPT
41.6 mS/cm 13.6 °C
Esc
OK
www.oxyguard.dk
OxyGuard
Handy Polaris
91.4 % SAT
7.74 mg/L 14.4 °C
Esc
OK
www.oxyguard.dk
OxyGuard

# Rifós – fresh water station

# Kópasker – Post smolt station

# Construtions





# Constructions

# Kópasker station 8000 cubic tank capacity

Important factor is having house over the tanks.

- better growth
- less stress
- better for equipment and working conditions
- better control of health before transport
- less risk of getting external issues

# There is plenty of hot water in Rifós

- At Rifos there is a well with 40 degrees hot water of 40l per sek.

- We use this water to heat up 8-9 degrees water to bring temp in station up to 13 degrees.

# UV lights on all water for our salmon

# Aerations and degassing

- 70% of water is recycled
- Drum filter and degassing capacity per tank is 250l.

# Cooling unit

- Before delivery we cool the tanks for 7-14 days down to current ocean temperature.
  - For example now sea is 6,5 degrees then we cool the tank down to 6,5 degrees.
- This makes the smolt window longer from April to December
  - 8 months
  - Normally in Iceland 4-5 months
- Manage to utilize station better and licenses in sea and lower risk for operations.

# Waste water treatment

- All waste water is treated before releasing to the sea.
- Waste is used for fertilizer in the area by Landgræðslan and local farmers.