

Pilot: Stickleback harvesting on Åland

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Why stickleback?

CHALLENGES

- Very small fish
⇒ hard to catch
- Thorny fish
⇒ lumps together and gets stuck in the net



Photo: Ulf Bergström

Why stickleback?

ECOLOGY

Stickleback populations in the Baltic Sea is estimated to have increased fifty-fold in the last 30 years (SLU)

- Adult sticklebacks predate on the juveniles of perch and pike

Many stickleback = fewer perch and pike

- Sticklebacks predate on benthic fauna and zooplankton, thereby decreasing the predation pressure on phytoplankton

More stickleback = more algae blooms

Photo: Ulf Bergström



Why stickleback?

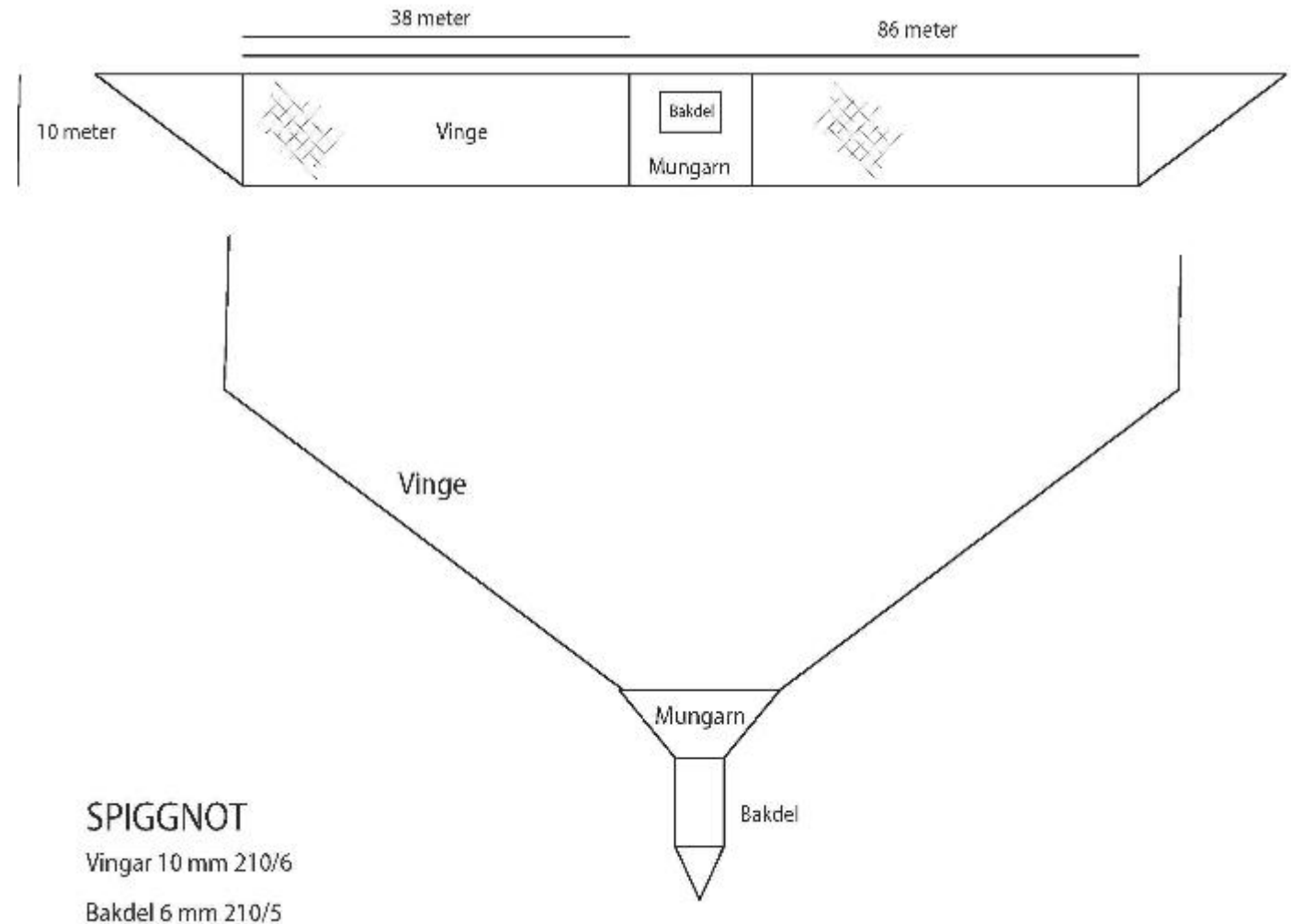
SOCIOECONOMICS

- A new potential niche for small scale coastal fishermen, that offers job opportunities and income without increasing pressure on the commercial fish populations
 - Sustainable yield: At least 25 500 tonnes/yr (SLU)
- A new, high quality ingredient for fish feed
 - marine raw materials are a limited resource
 - recycling of nutrients within the Baltic Sea



Equipment: Custom made stickleback seine

- Size of seine is customized to match size of fishing boats on Åland
- Smaller mesh size to catch sticklebacks
- Less tangling and clumping together compared to trawling



Modifications of fishing equipment

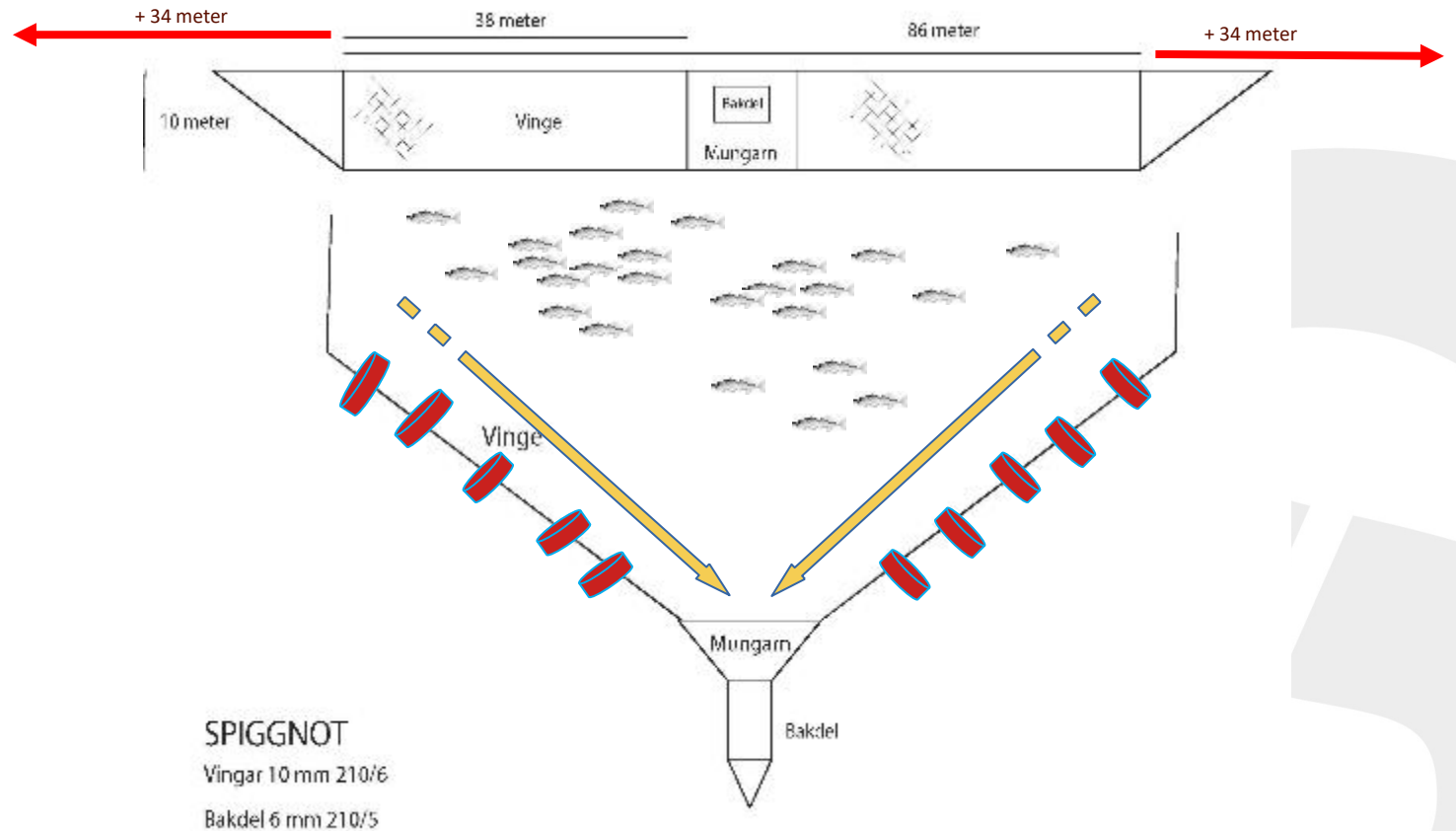
By recommendation from the fishermen that have participated in the trials:

1) The arms have been extended with 34 m on each side

- Circumference: 86 m → 154 m

2) Rings and a purse line were added to the bottom

- Less fish can escape through the bottom of the net



Testing of equipment in the field



Results

- During the project, we had to tweak our fishing methods and make several modifications of the equipment before we got the equipment functional. Our main challenges were:
 - 1) hauling technique
 - 2) preventing fish from escaping
 - 3) finding the right time and place for fishing



Results (cont.)

1) Hauling technique

The small mesh size (10 mm) of the net creates a lot of friction, putting strain on the hauling machines, so it has to be assisted manually without causing entanglement.

2) Preventing fish from escaping

We caught many large schools of stickleback in the seine, but most of them escaped downwards, until we added rings and a purse line.

3) Finding the right time and place for fishing

Stickleback seems to be abundant from spring to autumn, but even with 10mm mesh, juvenile fish are too small to catch, hence April-June is the best period. Fishing close to shore prevented escapes but resulted in bycatches of perch which should be avoided.



What's next?

- A few more fishing trials will be done in winter/spring 2021.
- The method and fishing techniques developed in the project will be compiled in a manual, for future trials or projects.
- The stickleback population on Åland will hopefully be surveyed, to find out more about its ecological impacts and also where, when and in what amounts it can be found. This would be valuable information for future projects.



The future of stickleback fishing

- Commercial fishing of stickleback within the next 10 years?
- **In the Baltic Sea:** Trawling of stickleback, as a complementary to the declining fishing quotas of Baltic herring and sprat
 - compensation measure, fish feed ingredient
- **On Åland:** Small scale fishing of stickleback in the archipelago
 - fish habitat restoration, compensation measure, fish feed ingredient





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