

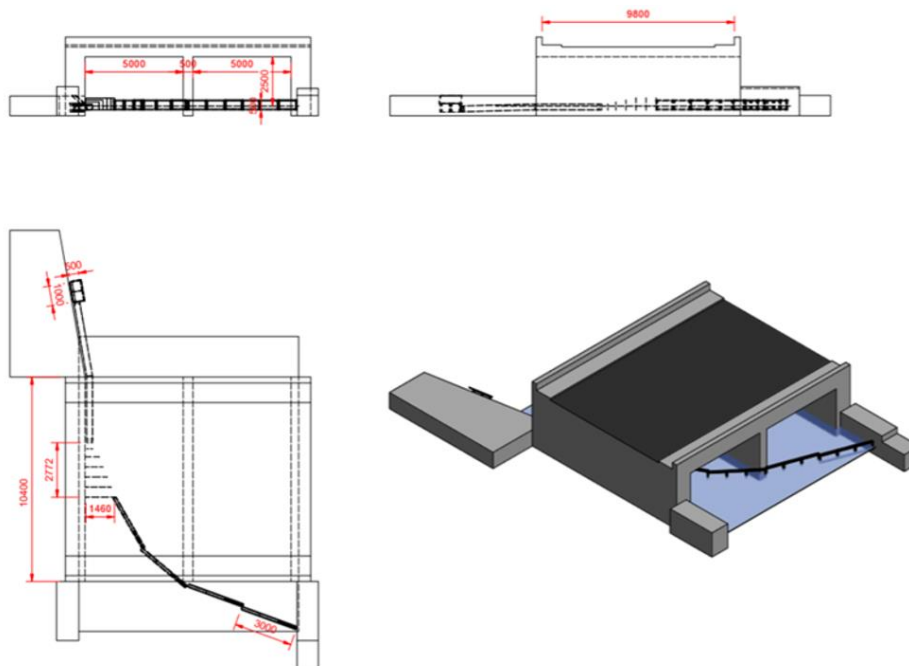
The sea trout project

The aim of the project is 1) to gain knowledge on when and under what circumstances the juvenile sea trout migrates to sea, and 2) to examine annual variations in the condition of adult sea trout at sea.

Project 1: Smolt migration to sea

Material and methods

A trap (Picture 1) was mounted in the river Sandá on the 22nd of April 2019 and demounted again on July 15th 2019. The trap had the height of 50 cm, covered the total width of the river, and led the downstream travelling trout into a sampling box. The trap was visited on a daily basis, where the sea trout caught were sampled, the water temperature measured, and the trap was cleansed to avoid clogging. After sedation, the sampled sea trout were weighed to the nearest gram and length measured to the nearest 0.1 cm. Scale was sampled from each fish and stored for later age and growth determination. After full recovery from the anaesthetics, the sea trout were released downstream.



Picture 1. The sea trout trap in Sandá.



Results

Unfortunately, there were days when the precipitation levels led to a rise in water levels too high for the trap, and these days sea trout escaped. However, a total of 700 fish were sampled, i.e. 675 sea trout, 23 brown trout, and two salmons. Although there were weeks with much precipitation, the number of sea trout migrating to sea continued to decrease after the major bulks in week 20 and 21, and at week 27 the number had become negligible, and it was thus decided to demount the trap. On average the sea trout sampled at Sandá weighed 117.7 g (max 780 g; min 15 g) and were 21.9 cm in length (max 52.0 cm; min 9.0 cm).

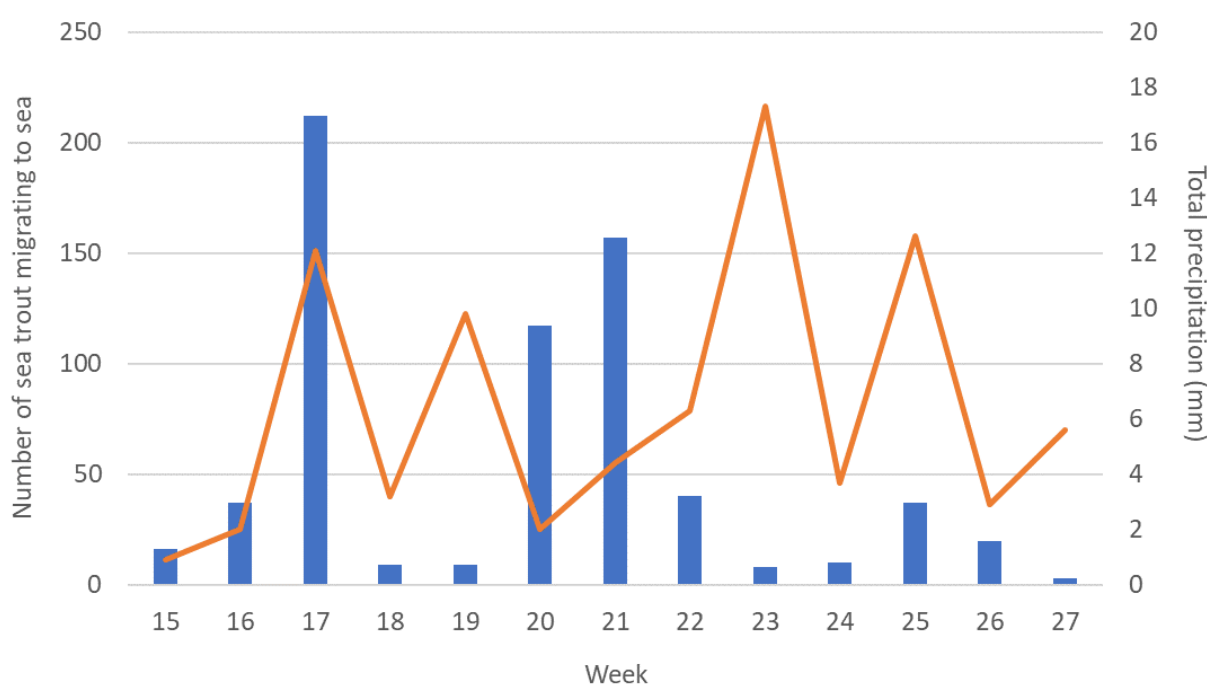


Figure 1. Number of sea trout caught in the trap (blue bars) and the total precipitation (mm, orange line) per week.

Precipitation data: www.dmi.dk.

Scales of 176 sea trout sampled in Sandá were read, however, 12 of the scales were not readable. The average length of 2-years-old was 16.3 cm (N = 111), 3-years-old was 19.0 cm (N = 50), 4-years-old was 29.0 cm (N = 2) and 5-years-old was 41.0 cm (N = 1). The 5- and 4-years-old specimens had had a previous occupation at sea, but only one of the 3-years-old showed sign of previous sea occupation.

Regarding the relative age distribution with size, all specimens 15 cm and smaller were 2-years-old, while specimens in the size range 15.1 to 20.0 cm were either 2- or 3-years-old, but with a majority of 2-years-old (Figure 2). In the size group 20.1 to 25.0 cm the 3-years-old were dominant, but here



were also 4-years-old found, as well as in the size group 25.1 to 40.0 cm. The only 5-years-old was in the size group >40.0 cm.

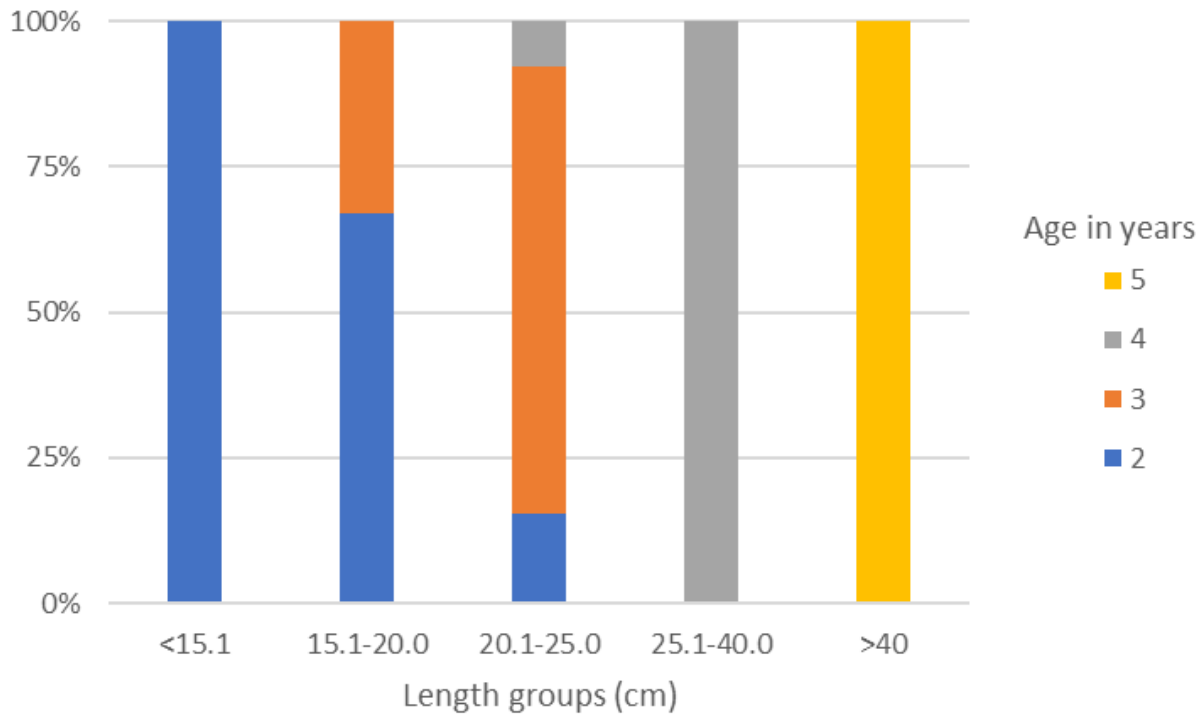


Figure 2. The relative distribution of age in relation to length groups.

Both in the 1st and 2nd year of growth generation 2016G had a lower growth rate compared to generation 2017G (Figure 3).

The condition (Fulton's *K*) of the younger sea trout seemed to be somewhat better than that of the older specimens, which appeared to decrease with age. The average condition of 2-years-old was 1.0 (N = 111), of 3-years-old 0.9 (N = 50), of 4-years-old 0.5 (N = 2) and of 5-years-old 0.8 (N = 1).

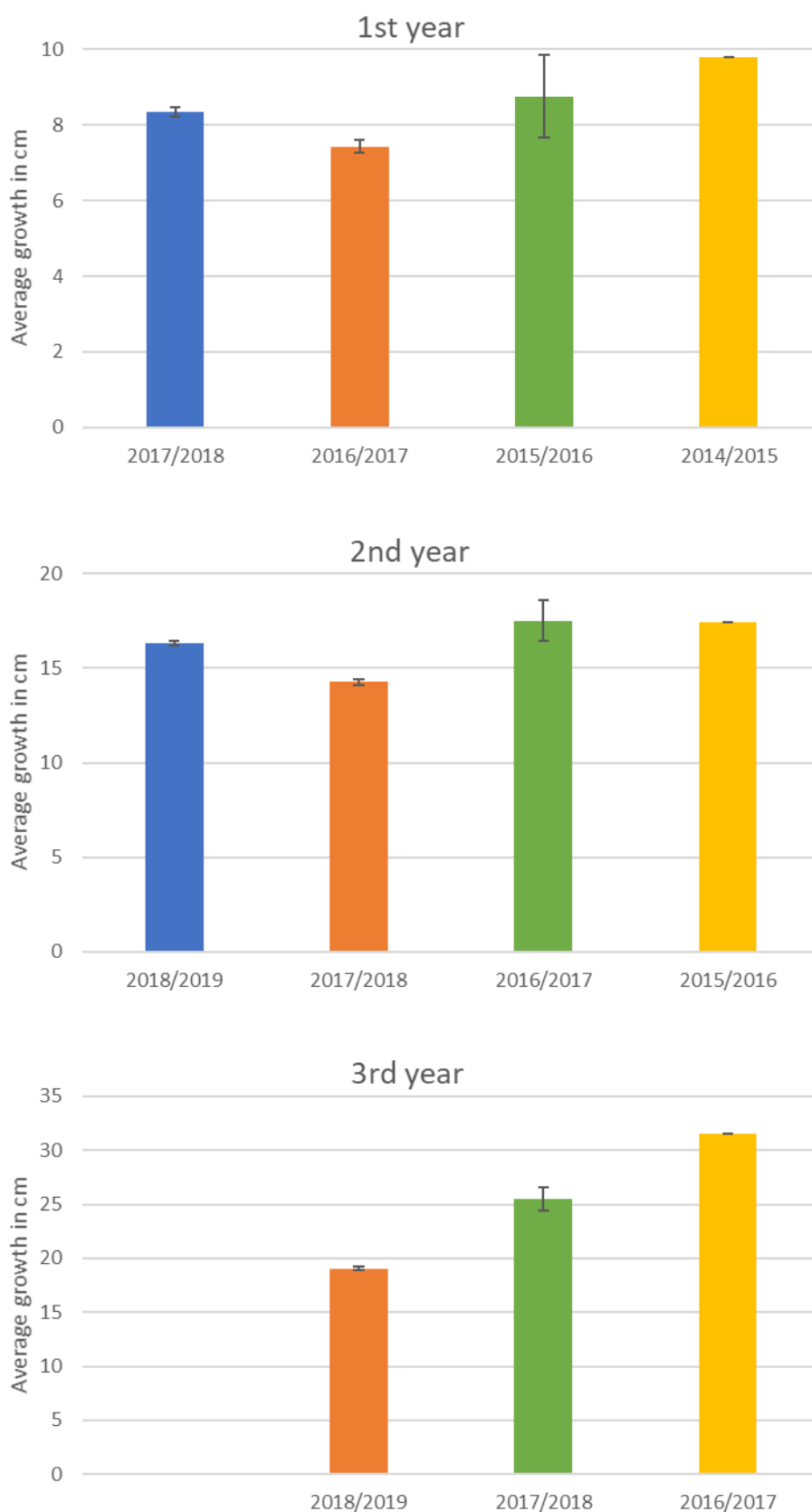


Figure 3. Average annual growth the 1st, 2nd and 3rd year of life. Colours indicate generations, where blue, orange, green and yellow represents generation 2017G, 2016G, 2015G and 2014G, respectively. Vertical lines indicate standard error.



In April 2019 the majority of sea trout travelling seawards were larger than 25 cm, which, according to our scale readings, are sea trout older than 3 years. May 2019 was the month with the highest frequency of seaward travelling sea trout, but here the vast majority were smaller than 20 cm, which most likely are 2- and 3-years-old specimens. In June the travelling sea trout were still dominated by young specimens, however, the number had decreased substantially. The number of sea trout travelling seawards was negligible in July (Figure 4).

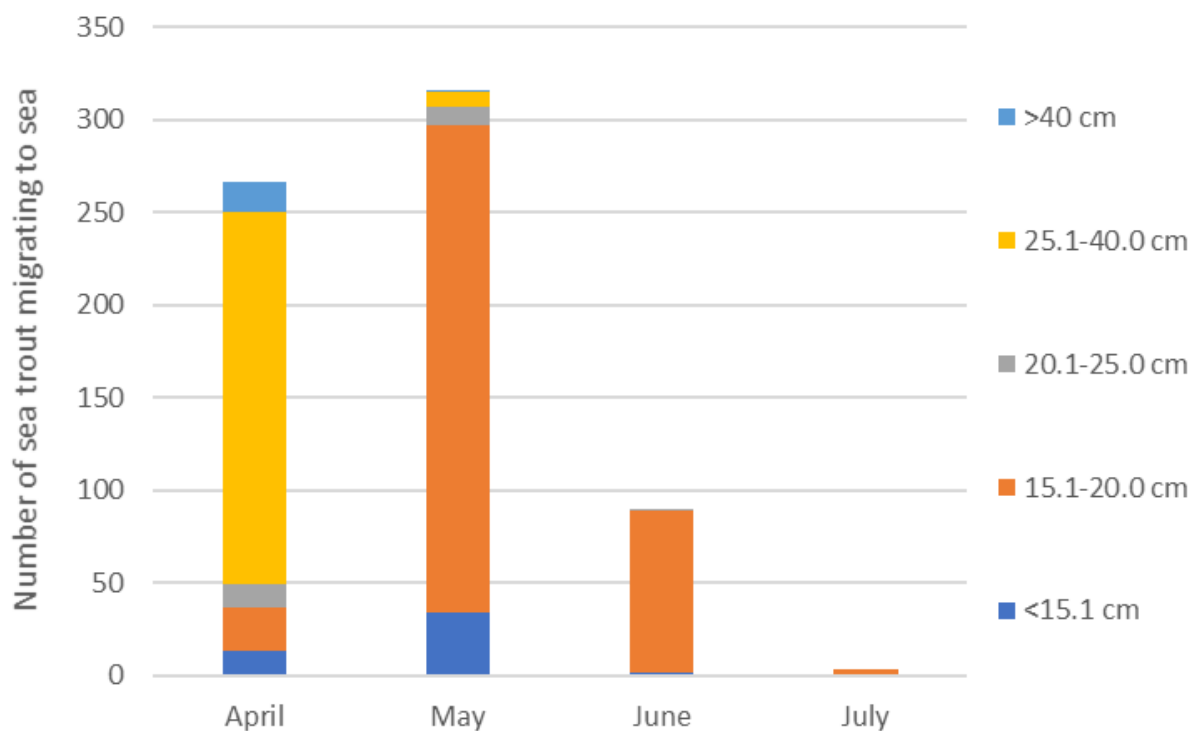


Figure 4. Monthly differences in the sea trout size groups travelling seawards in Sandá.

Project 2: The condition of sea trout at sea


Material and methods

The sea trout at sea was sampled in two ways. 1) sampling by gill nets (5 m width, 2 m height and 20 mm mesh size) and 2) by anglers donating sea trout scales and information such as length, weight and sea lice counts of the sea trout they caught by using envelopes designed for the purpose, participating in a drawing toss for 10,000 DKR in return (Picture 2).



Navn _____ Tíð _____
Stað _____ Dato _____
Slag: S L Æ K Ó
Longd _____ cm
Vekt _____ g H K
Fitifjødur manglar Ja Nei
Fiskurin merktur Ja Nei
Settur út aftur Ja Nei
Roðsla Ja Nei
Lús Ja Nei Tal _____
Kyn Kall Kvinn
Kynsbúgvín Ja Nei
Mynd Ja Nei
Vegleiðing til sýnistøku er at finna á Fiskaaling.fo
P/F Fiskaaling
Við Áir 11
430 Hvalvík

Tak roðsla bær



GG! Longdin er tann týðningarmiklasta
upplýsningin um fiskin, og skal altíð
verða givin.

TURKA SLIPUNA AV FISKINUM, ÆDRENN ROÐSLUPRÓVIN
VERÐUR TIKIN!
ROÐSLAN SKAL LEGGIAST BEINLEIÐIS Í BRÆVBJÁLVAN.

Vildmerkingar:



Picture 2. The envelope developed for anglers to donate sea trout scale and information (upper pictures), and the lucky angler with sons at the moment he won 10,000 DKR in the toss in December 2019 (lower picture).

Results

In total 32 sea trout were sampled by gill nets and 147 envelopes containing scales from sea trout caught by anglers were received. Measurements from sea trout at sea were sampled throughout the Faroe Islands (Figure 5).



Figure 5. Sampling sites (blue dots) using gill nets, and sites with samples from the local anglers (green dots).

On average the sea trout sampled at sea weighed 559.2 g (max 4200 g; min 55 g) and were 33.3 cm in length (max 79.0 cm; min 17.0 cm). Specimens larger than 40 cm were caught throughout the year, while sea trout smaller than 20.1 cm were only caught in the months May to August (Figure 6).

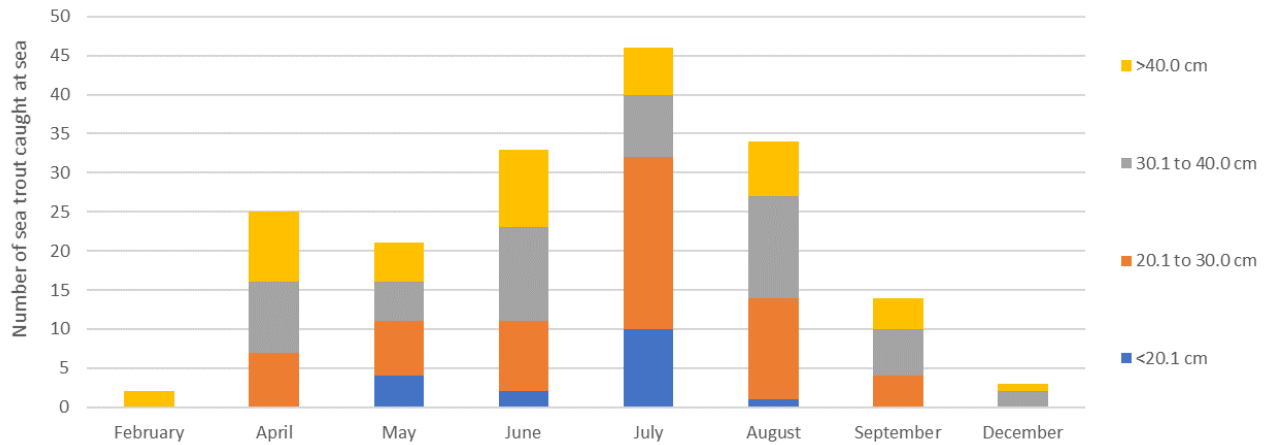


Figure 6. Length distribution of the sea trout caught at sea in relation to time.

Not all anglers supplied information on the weight, but overall, the average sea trout condition (Fulton's K) was 0.91 ($N = 108$), with the highest condition in the period from June to August (~1.0) and the lowest in December (~0.7) (Figure 7).

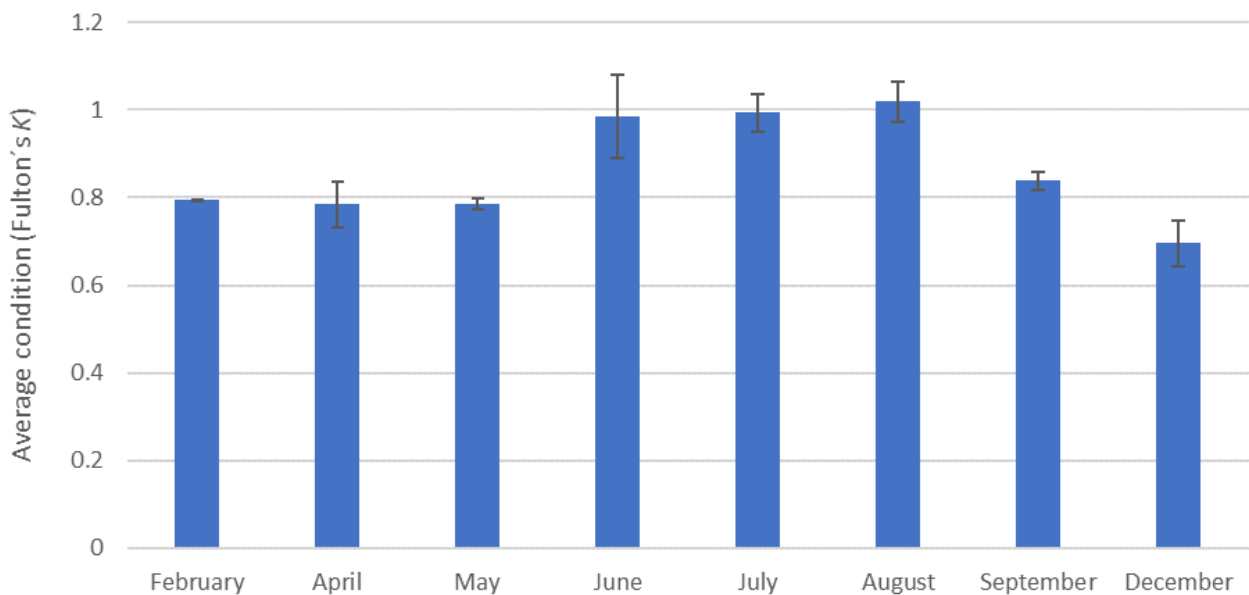


Figure 7. Average condition of sea trout caught at sea in relation to time.

As with the weight, not all anglers informed the number of lice on the sea trout they caught, however, the overall average number of sea lice was 7.3 per fish ($N = 153$). The average sea lice burden increased until June, when it was at its highest, and then decreased (Figure 8). No sea lice were found on the sea trout sampled in winter, i.e. February and December.

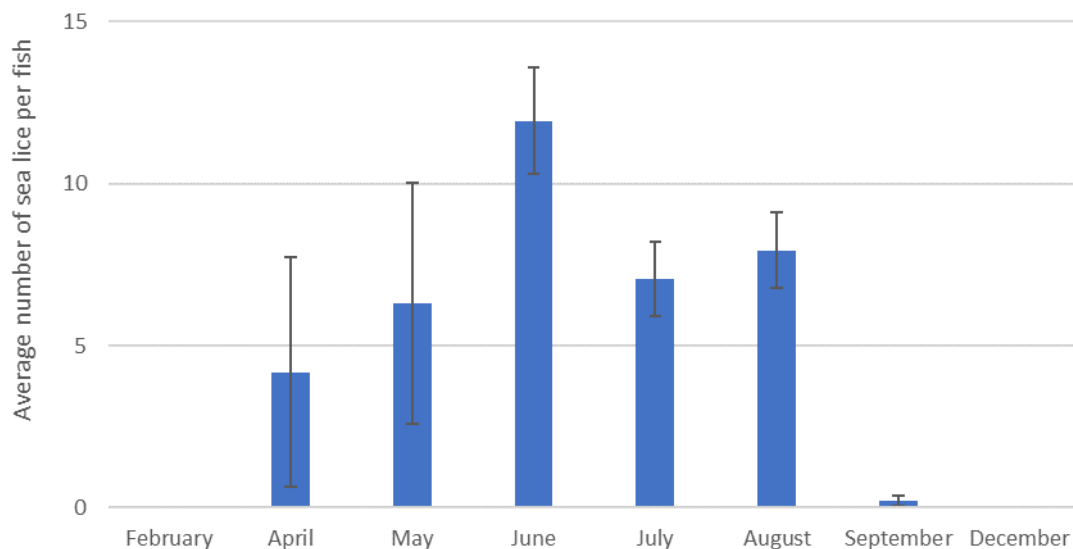


Figure 8. The average number of sea lice per sea trout. Vertical lines indicate standard error.

The sea lice burden seemed to have some annual variation, i.e. with it being lighter from late summer until spring (Figure 9).

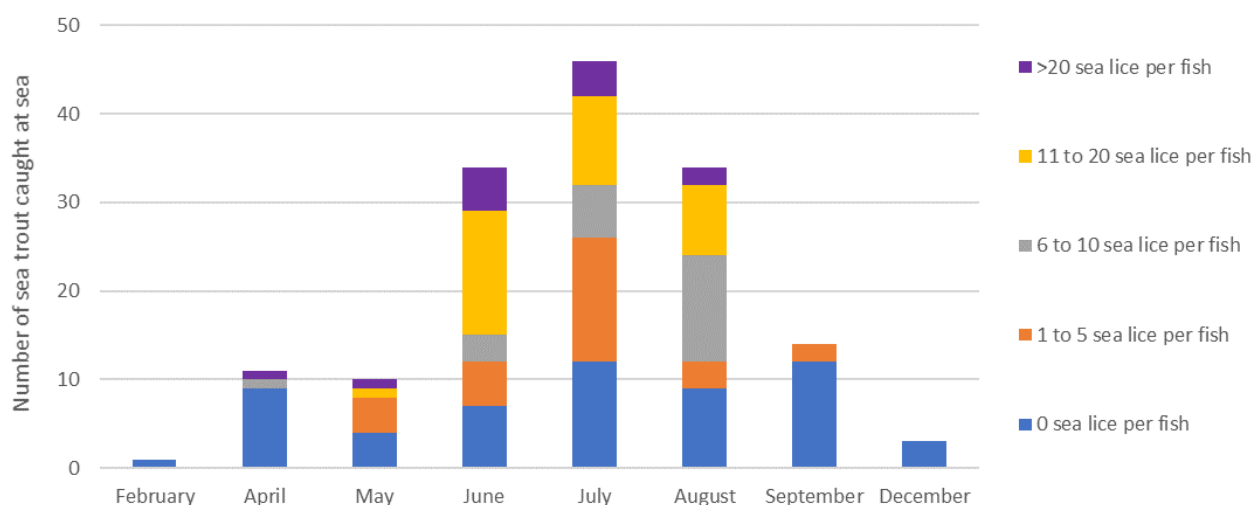


Figure 9. Annual variation in relation to sea lice burden categories.

The scale of 145 sea trout caught at sea were read, however, the scale from 14 of these were not readable. The results showed that the sea trout on average spends 2.24 years (Min 1 year and Max 5 years; N = 131) in freshwater before migrating to sea. The age distribution of the sea trout examined was 59 of 3-years-old, 49 of 4-years-old, 17 of 5-years-old, 4 of 6-years-old and 2 of 7-years-old. Only the scale from one of the 5-years-old indicated previous spawning, i.e. after its



second year at sea. On average, the sea trout had grown 9.4 cm the first year at sea, and 6.6 cm the second year at sea.

The condition seemed to decrease with age, i.e. the 3-years-old had a condition factor of approximately 1.0, the 4- and 5-years-old of approximately 0.9, and the 6- and 7-years old of approximately 0.8.

Concluding remarks

- In 2019 the vast majority of sea trout smaller than 20.1 cm (most likely smolt) travelled seawards in May (70%), second most travelled seaward in June (21%), and third most in April (9%).
- Bulks in seaward migration coincided with episodes of high precipitation levels.
- Preliminary results indicate that generic differences in the population might influence the annual differences in growth rate of sea trout in the fresh water phase.
- The results on the sea trout size distribution at sea were in concert with the findings in the river Sandá, i.e. sea trout less than 20.1 cm were only caught from May to August.
- The condition of the sea trout at sea was highest in the months June to August, coinciding with the period of high prey availability.
- The occurrence of sea lice, and it as a burden, was highest in the summer months, i.e. in the driest months, indicating that Faroese sea trout use fresh water for delousing.

Kirstin Eliassen, Ph.D.