

# Long-term life-history variation in the Teno river Atlantic salmon population complex

Czorlich Y<sup>1,2</sup>, Erkinaro J<sup>1</sup>, Niemelä E<sup>1</sup>, Orell P<sup>1</sup>, Pulkkinen H<sup>1</sup>, Falkegård M<sup>3</sup>, Kuusela J<sup>1</sup>, Länsman M<sup>1</sup> & Primmer CR<sup>2</sup>

<sup>1</sup>Natural Resources Institute Finland (Luke), Utsjoki, Finland; <sup>2</sup>Department of Biology, University of Turku, Finland; <sup>3</sup>Norwegian Institute for Nature Research, Tromsø, Norway

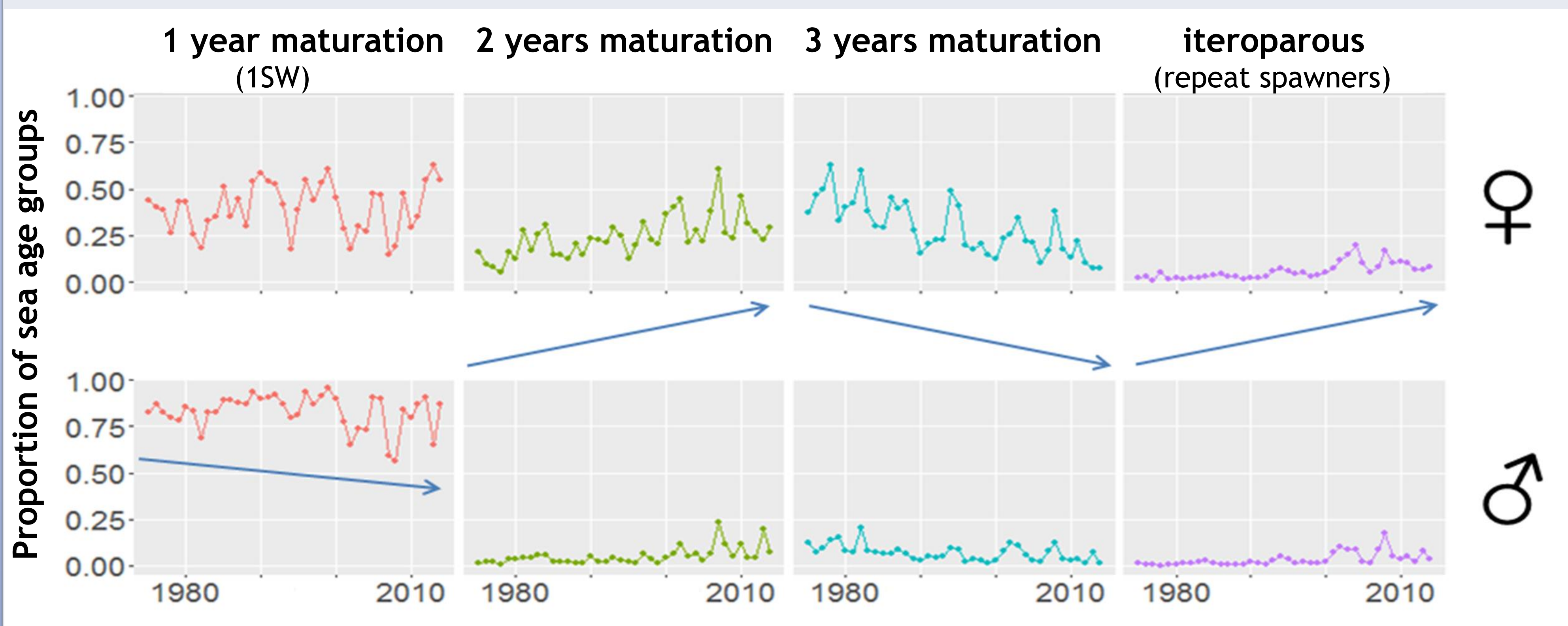
## Introduction

Atlantic salmon exhibit variation in the time spent at sea before maturation and the number of breeding events. Individual fitness may vary a lot depending on the life history strategy adopted. We characterized temporal and spatial change in age at maturity and iteroparity in the Teno river population, in northern Finland and Norway.

## Material and methods

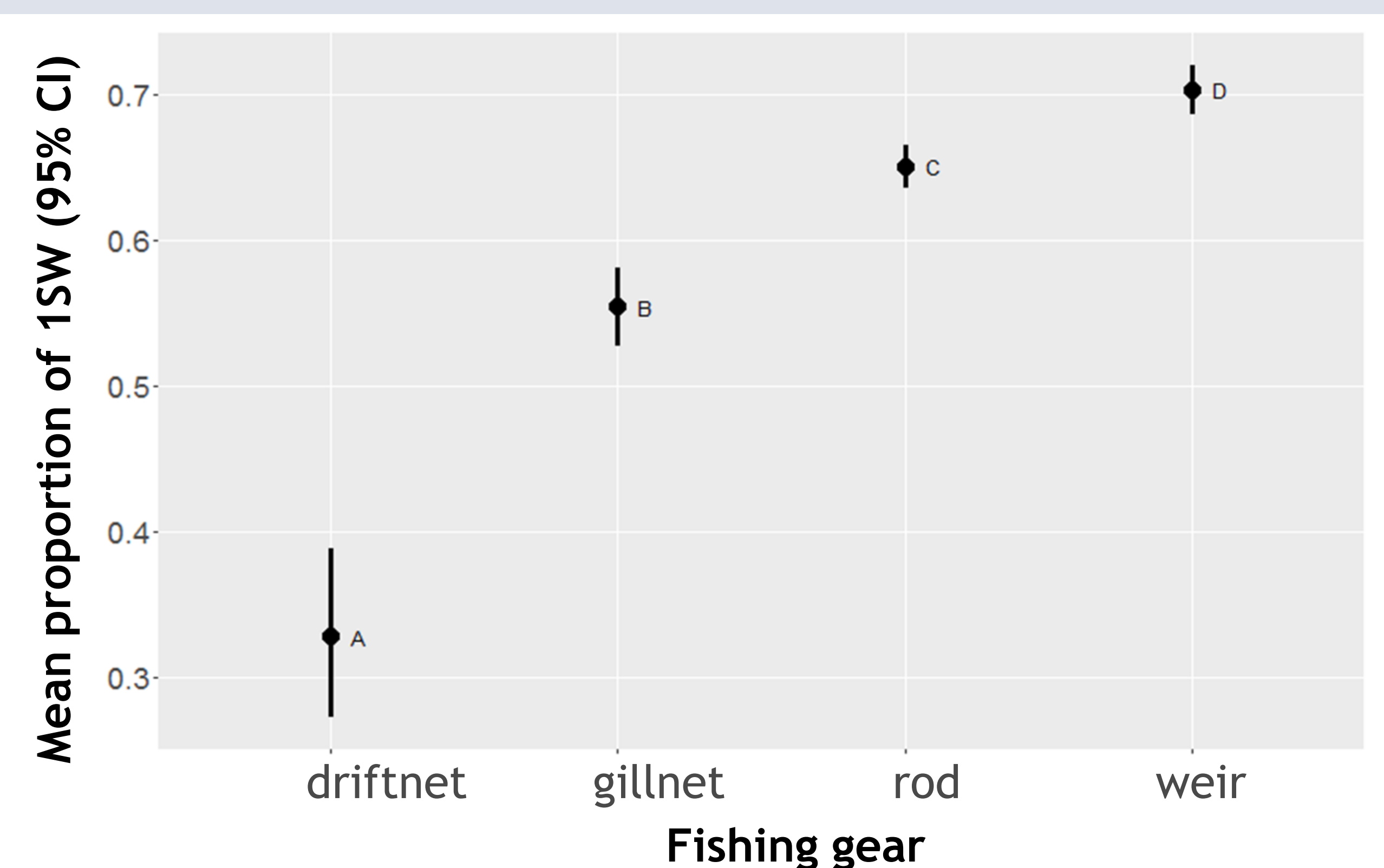
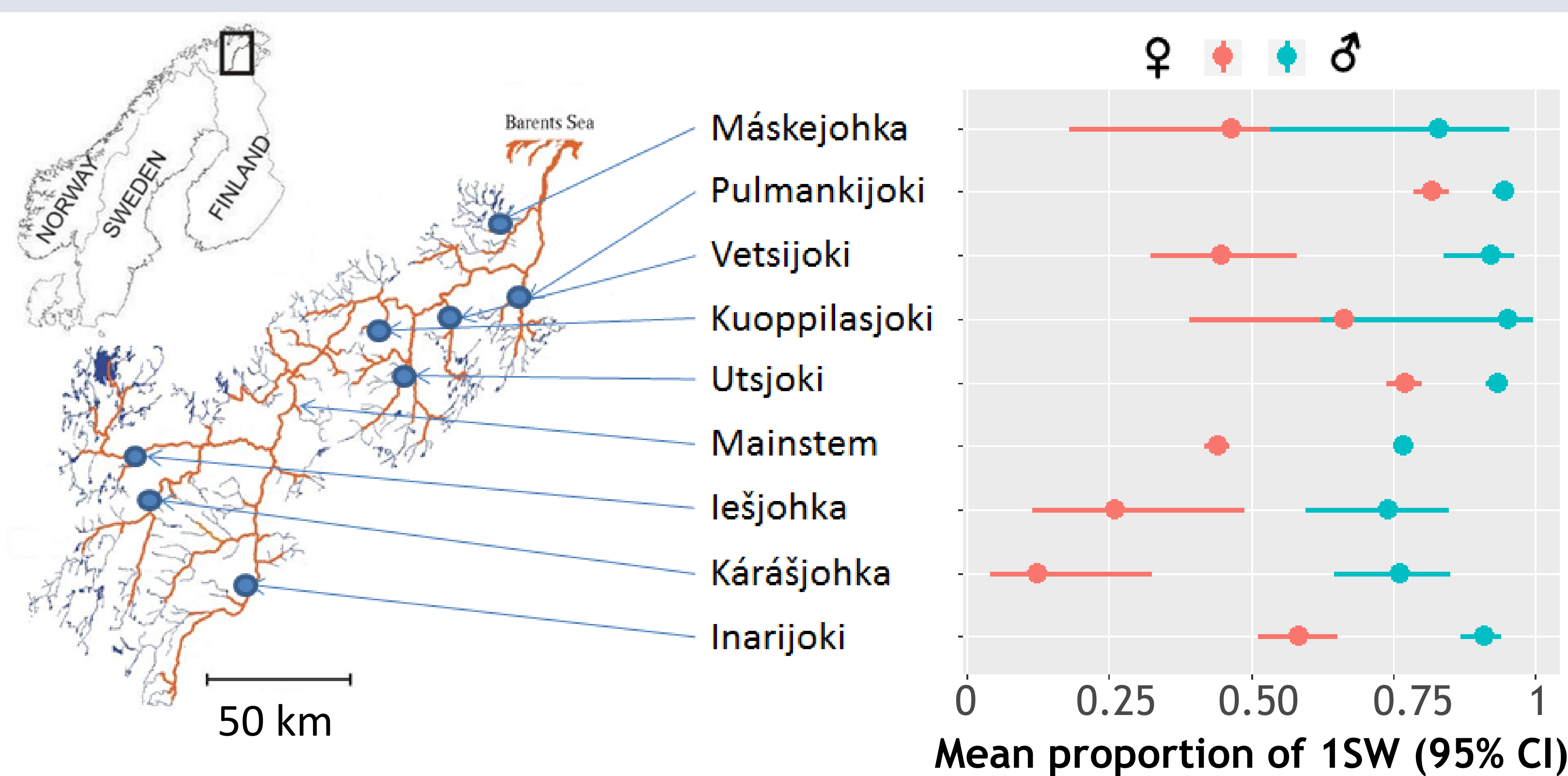
- Scales from 175 000 individual adult salmon collected from 9 locations between 1975-2014 provide information about the age at maturity and the number of breeding events.
- Analysis of proportions (GLM): Response = Age at maturity (1, 2 or 3 years at sea) and repeat spawners. Co-variables = Year, location, sex, fishing method, month of capture.

## Results



### Temporal variation:

- 1) Important changes in age at maturity and repeat spawners.
- 2) Trends similar for both sexes.



Spatial variation: Higher spatial heterogeneity for females with very large differences among locations.

High selectivity of fishing gear types: 1SW proportions vary by a factor of two.

## Conclusions

- Teno River has the most diverse salmon population in the world: 120 unique life-history strategies!
- High spatial and temporal heterogeneity in age at maturity and iteroparity.
- Fishing can directly affect the occurrence of the different strategies owing to gear selectivity.
- Potential causes and consequences of the observed variation should be explored because age at maturity and iteroparity can influence the dynamics and viability of salmon populations.