

# Integrative science for adaptive co-management in the Arctic: Teno Atlantic salmon as a model system (ISAMA)

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## Challenges in natural resource management

- Anthropogenic and environmental effects
- Evolutionary responses of populations
- Multi-level governance of Arctic natural resources and global megatrends

→ ISAMA will demonstrate how integrative science can promote adaptive co-management of Arctic natural resources

## Aims of the project

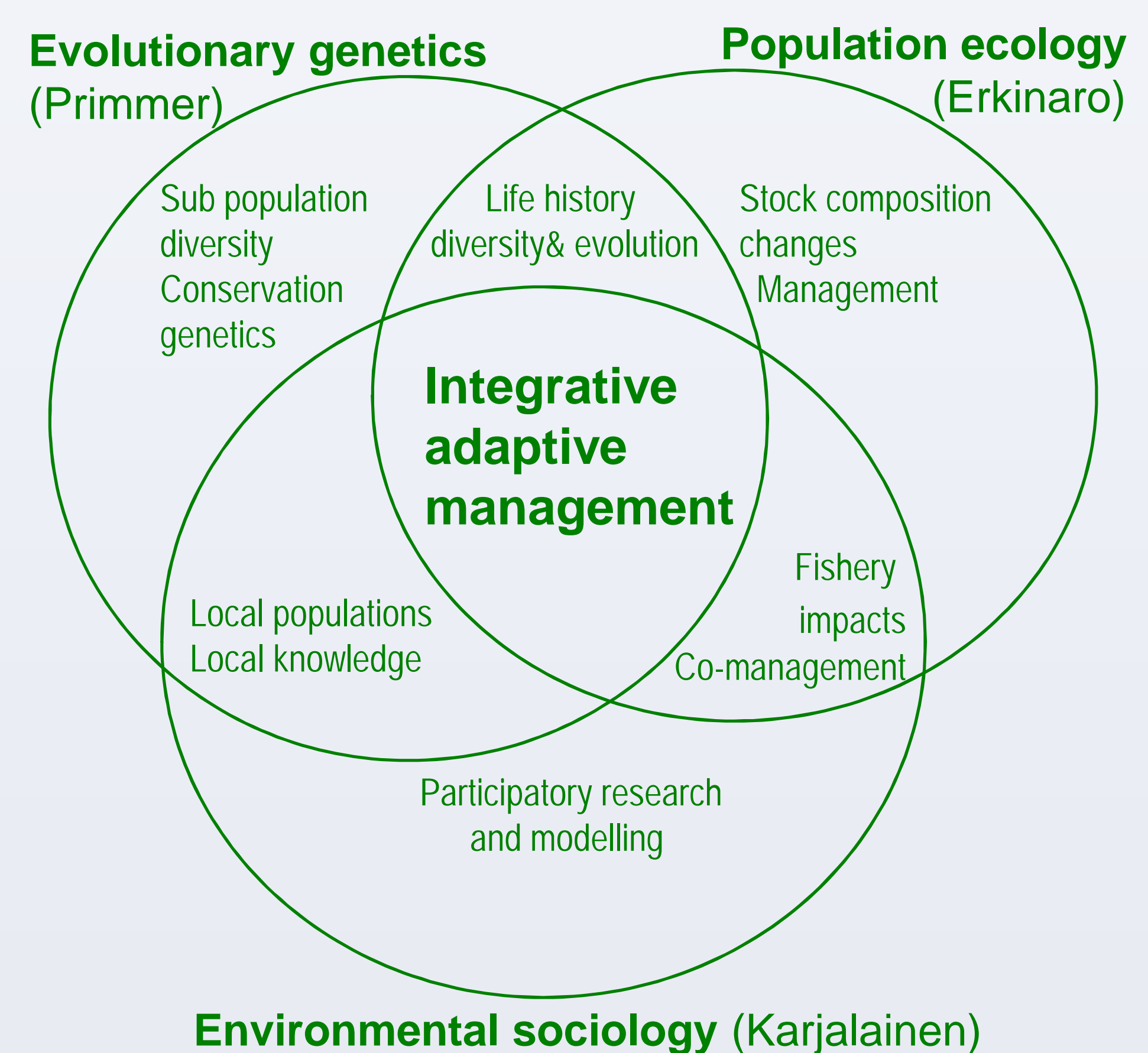
- 1) Utilize the long-term scale archive to characterize ecological and genetic changes in stocks since the '70s
- 2) Identify anthropogenic/climatic factors contributing to these changes, the relationships between them, and co-occurring societal and political changes
- 3) Understand the genetic basis of life-history traits important for maintaining stock diversity and stability and thus salmon related livelihoods
- 4) Develop an approach to combine local user and scientific knowledge to improve adaptive fisheries co-management practices
- 5) Use the Teno salmon case as a model of new knowledge interfaces needed for collaborative natural resource governance in the Arctic



Image credit: Panu Orell

Up to 50,000 Teno salmon are harvested annually

## The team



## Atlantic salmon

- A cornerstone of culture and livelihoods in the Arctic
- Abundance is declining for multiple reasons

## Teno River salmon

- One of the world's largest salmon populations  
>100,000 individuals return to spawn annually
- World's most biodiverse salmon population  
>100 different life-history strategies  
30 genetically distinct sub-populations
- Immense socioeconomic importance  
>10,000 recreational anglers annually  
Local fisheries and Arctic cultural heritage
- Long-term data-set thanks to fisher cooperation  
Trained local fishers have collected scales and fish measurements for > 40 years



Image credit: Eero Niemelä

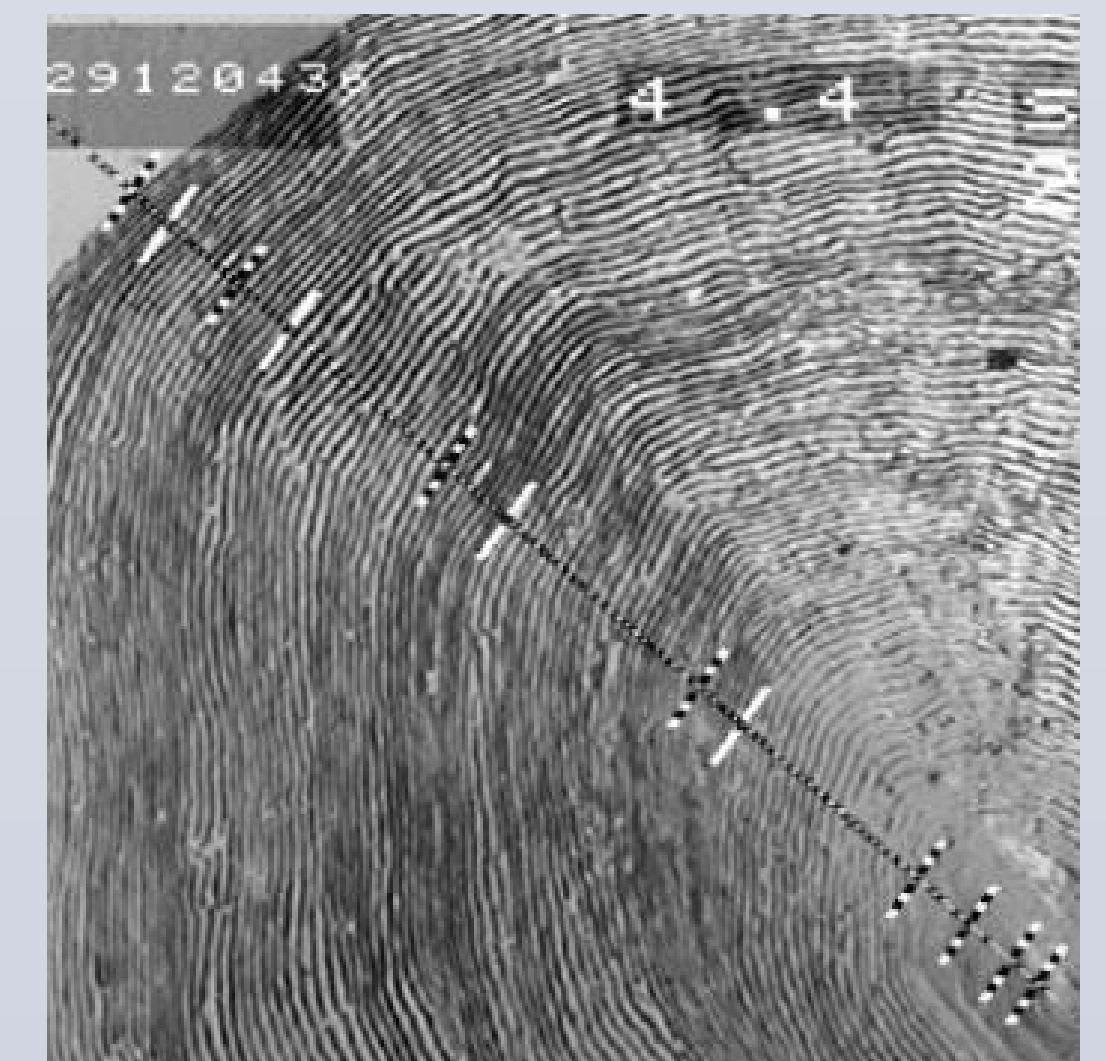


Image credit: Luke

Teno salmon can grow to >20kg and 120cm. Local fishers measure the fish and collect scales, which can be used for genetic analyses, measuring growth rate and to count the years spent in the river and at sea