

# Scientific basis behind eel restocking in Swedish waters

Rob van Gemert, SLU Aqua

# Contents

1. Background behind management plan's restocking
2. Current insights
3. Future plans

# Background behind management plan's restocking



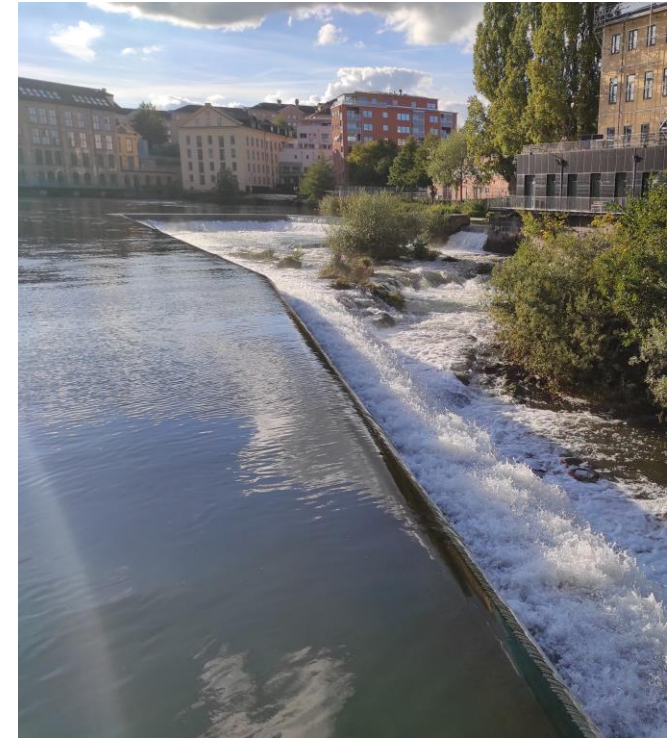
# Origin of restocking in Sweden

Compensation for fishers

First as assisted migration

Switch to glass eel import

Successful at increasing inland eel production



# Swedish eel management plan

## 2007 EU Eel Regulation

- Reduce mortality
- Long-term goal: escapement 40% of pristine level

## Sweden's ambition:

- Rapidly increase escapement: decrease fishing, **high restocking**
- Improve habitat and connectivity
- Better control





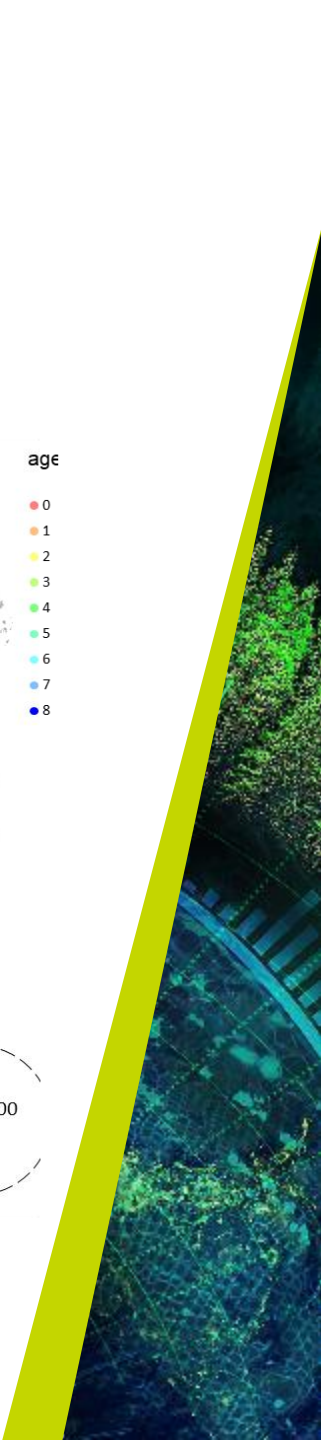
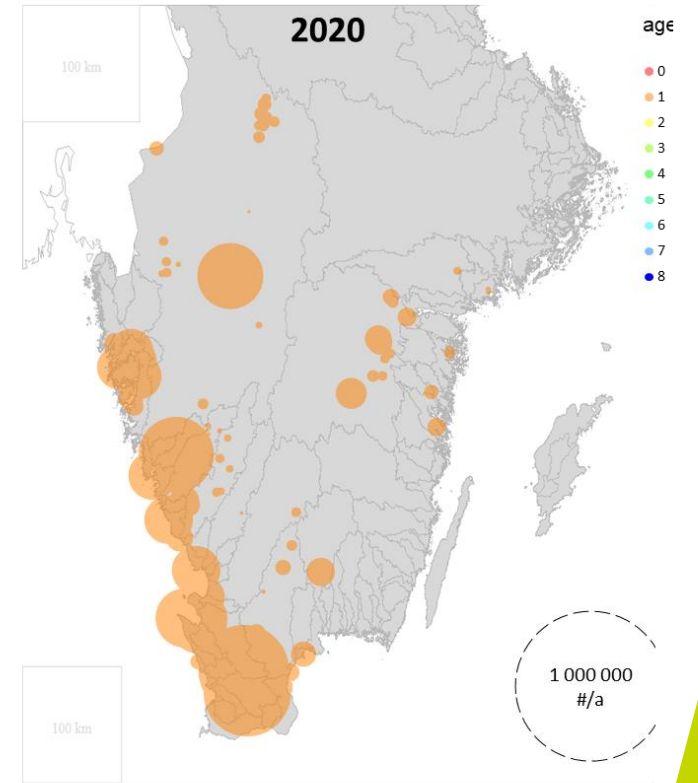
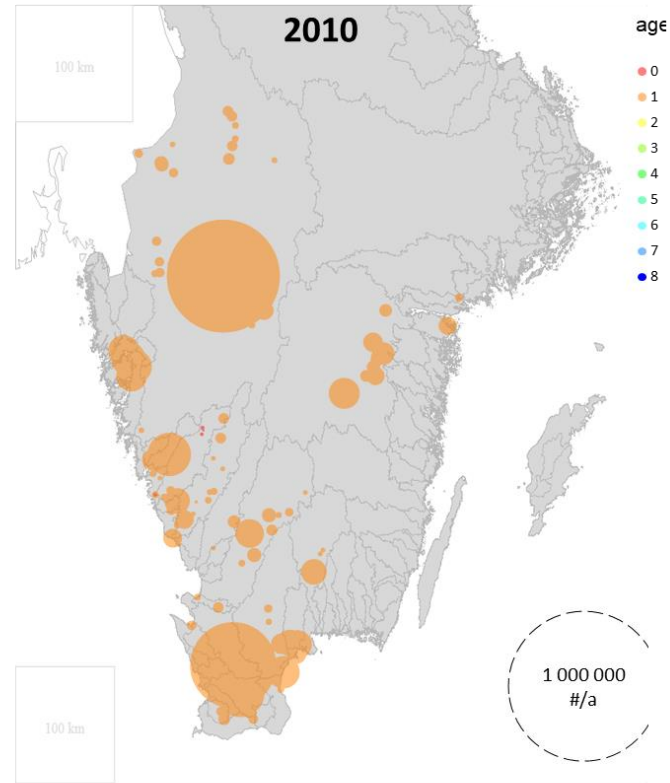
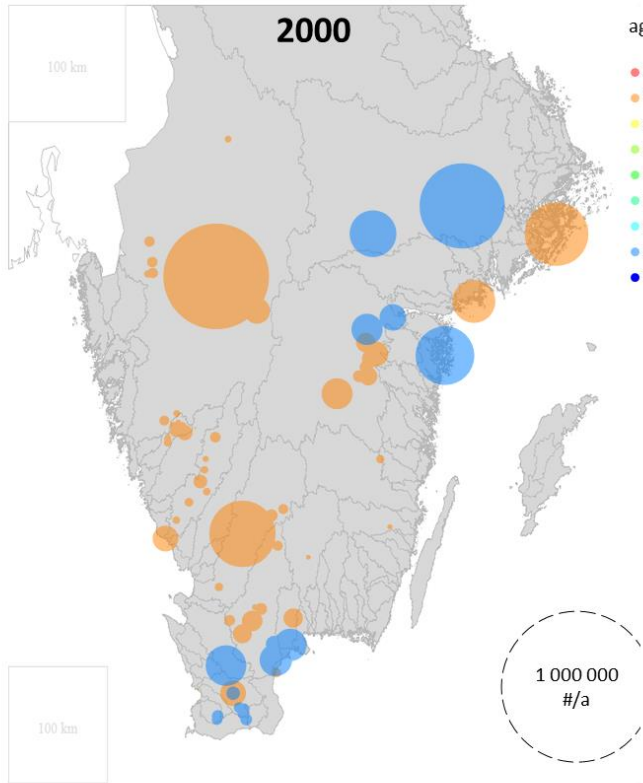
# Locations

”Utsättningarna skall ske i vattendrag med fria eller ordnade vandringsvägar för blankål. Vattenområden med hög potentiell ålproduktion och närhet till Västerhavet kommer att prioriteras liksom områden med mycket begränsat eller inget blankålsfiske alls.”

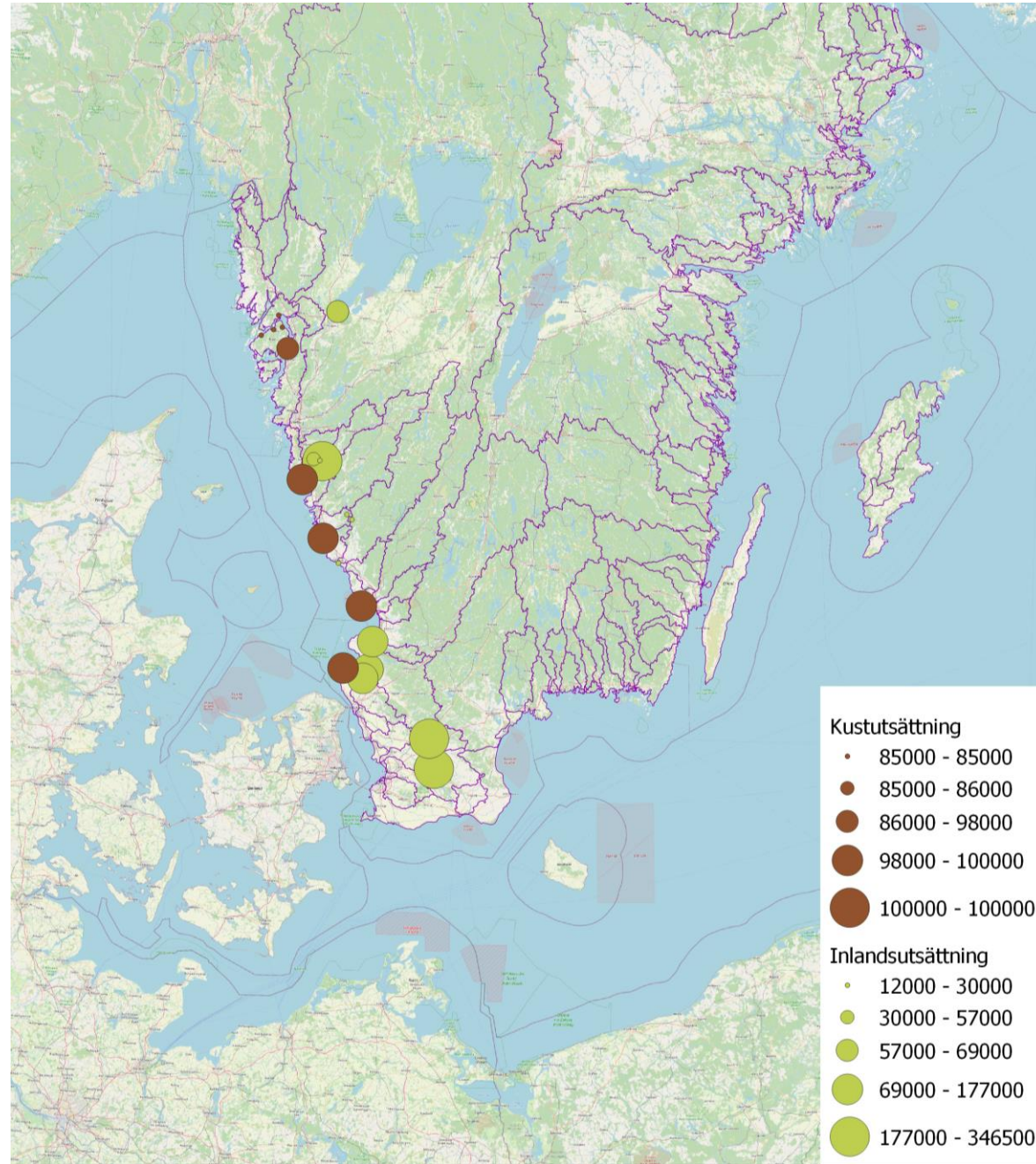
Stocking density: 100 eels per ha (Wickström, 1979)



# Locations



# Locations



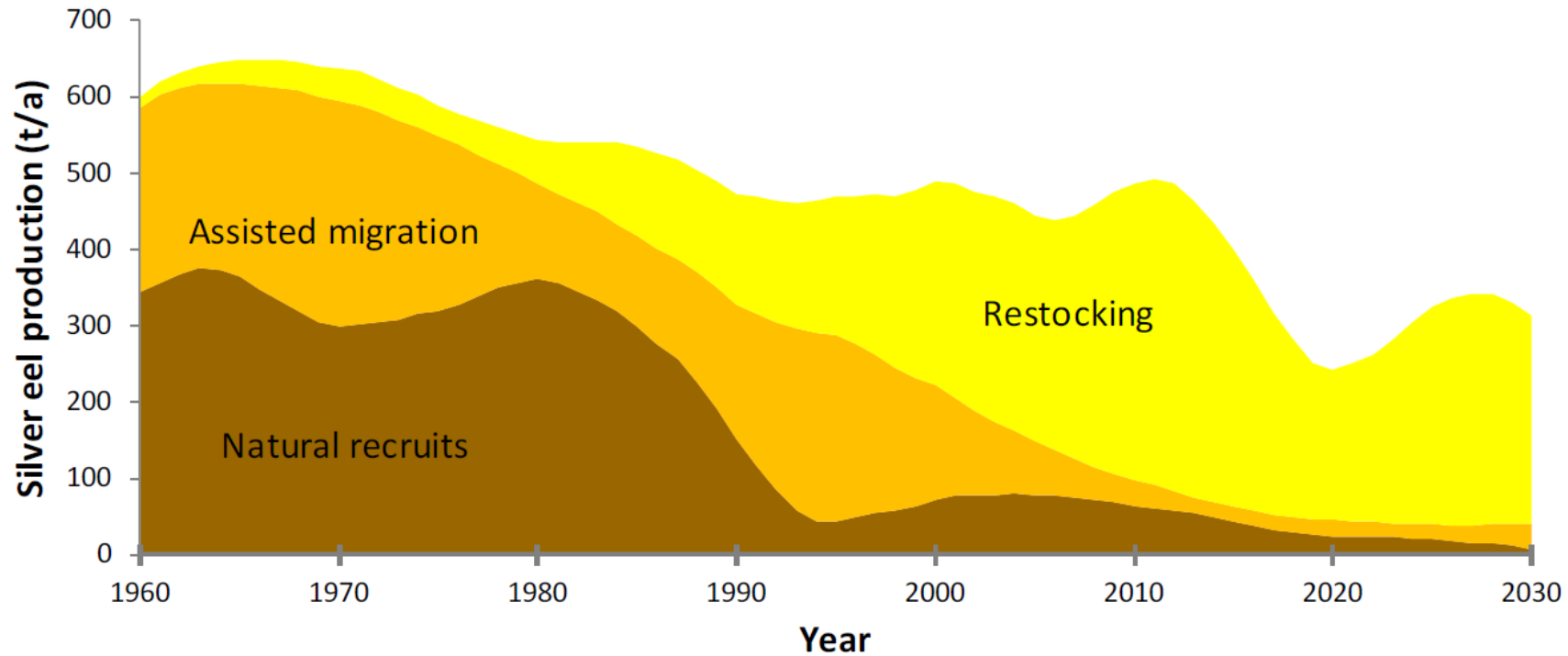


# Current insights



# Restocking increases silver eel production

2020: 90% of total inland silver eel production from restocking



# Negative effects?

Increased competition with natural recruits?

Mortality from restocking process?

- Glass eel fisheries: variable, 2.1% (Simon et al., 2022)
- 100 days quarantine: 2.6% (year 2020)

Influence on imprinting and homing



# Can restocked eel find their way to the Sargasso Sea?

Failure:

- Gotland (Westin, 2003)
- Mälaren (Sjöberg et al., 2017)

No control group

Uncertain:

- Kiel (Prigge et al., 2013)

Success:

- Baltic Sea (Limburg et al., 2003)
- Gullmaren Fjord & Marstrand (Westerberg et al., 2014)





## **Net benefits to the stock?**

Higher escapement than if the glass eel was not removed from its natural habitat in the first place?

Unknown (ICES, 2016)



# Precautionary approach

FAO precautionary approach to capture fisheries (FAO, 1996)

- Artificial propagation should not be a substitute for measures that reduce anthropogenic mortality

Current inland mortality exceeds limit

- Restocking should not be a substitute for higher mortality



# Restocking locations

Restocking for boosting escapement is most effective in water bodies where (anthropogenic) mortality is expected to be minimal

- Minimal fishing
- Barriers with downstream passage, or no barriers at all
- Low predation

Biodiversity loss?

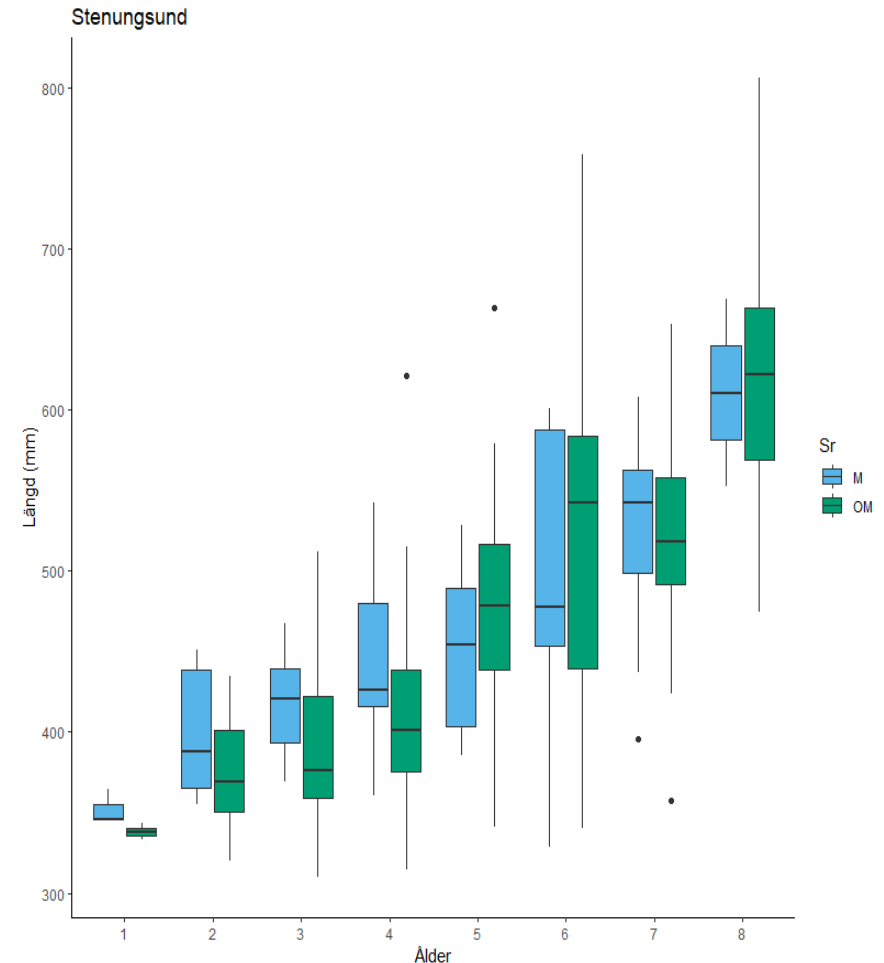


# Future plans

Evaluation of restocking programme

Proportion of marked (restocked) vs unmarked eel

- Distribution over different age classes
- Different capture locations, distance to release site





# Summary

Effective emergency measure to help boost local production

Should not be a replacement for proper protection measures

Should be directed to areas where mortality is expected to be minimal

Biodiversity loss above migration barriers should be considered





Rob van Gemert

SLU Aqua, Sötvattenslaborietet

Tel: 010 478 4211

Email: [rob.van.gemert@slu.se](mailto:rob.van.gemert@slu.se)

SCIENCE AND  
EDUCATION  
**SUSTAINABLE  
LIFE**