PIKE - en fiskdatabas

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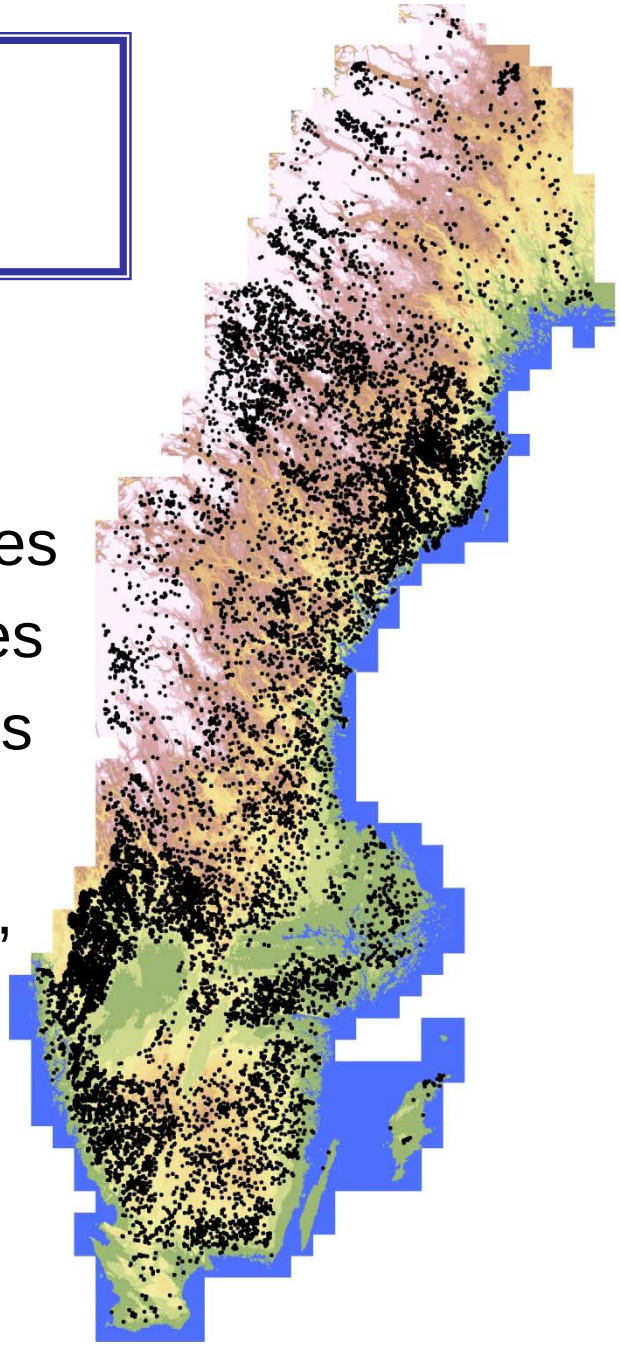
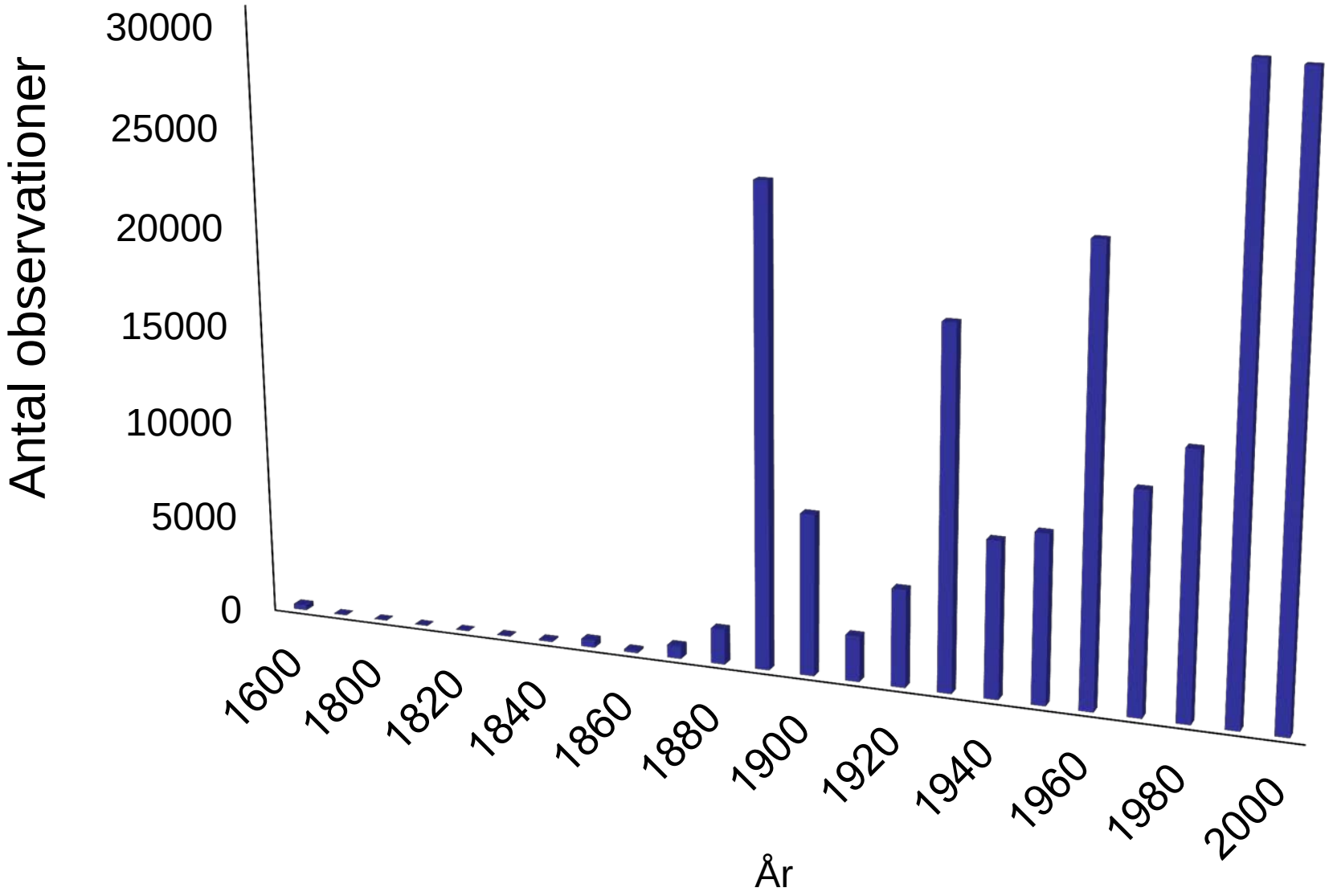
PIKE

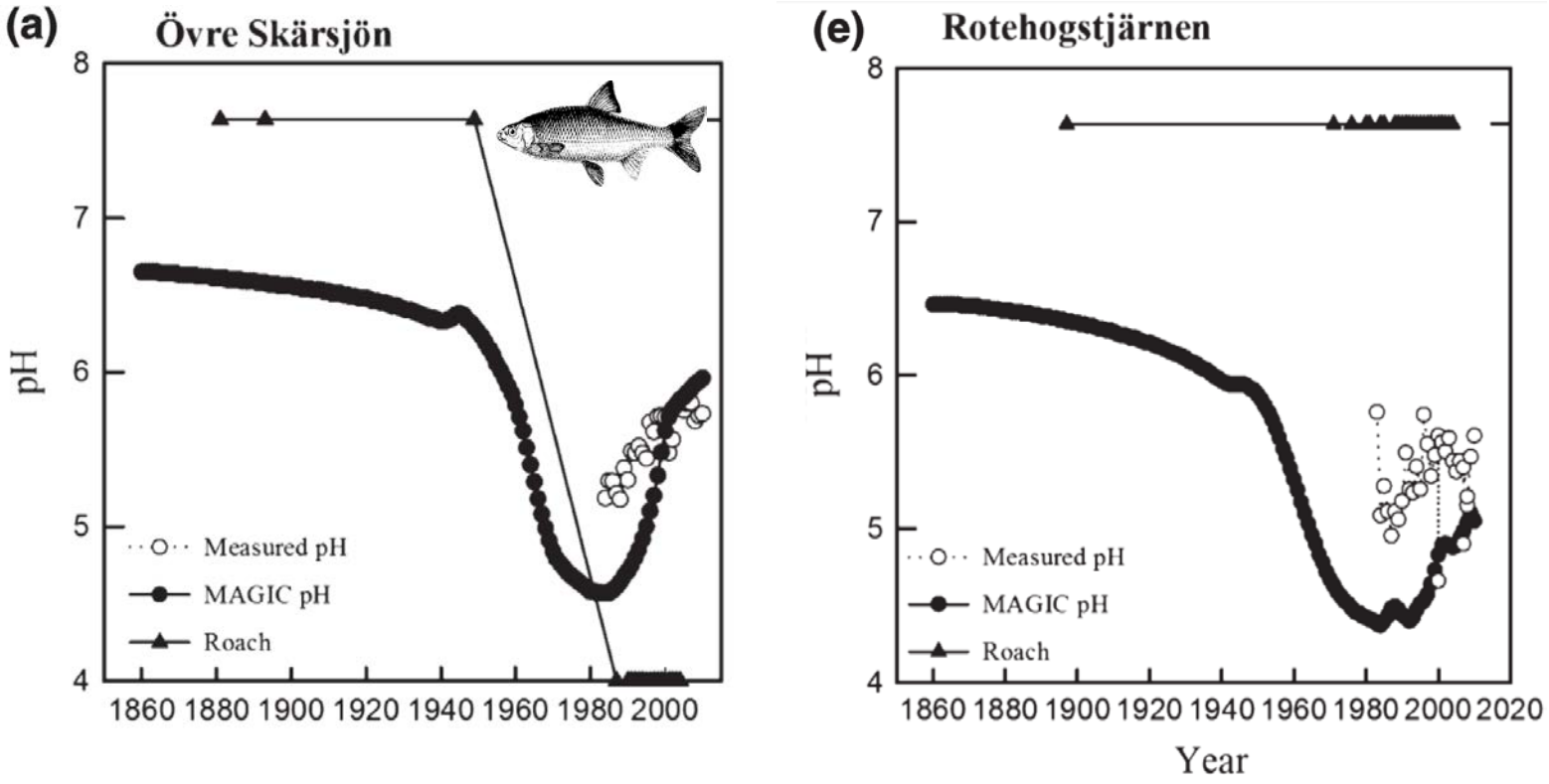
- Species composition > 19000 lakes
- Species introductions > 3000 lakes
- Rotenone treatments > 2000 lakes
- Water chemistry
- Geographic information – altitude, lake area, depth, dispersal barriers.....



Historiska data



Mört vs MAGIC



Rotehogstjärnen

Identify from: <Top-most layer>

- Export_Output_2 Events
  - 1897 European eal Presence
  - 1897 Perch Presence
  - 1897 Pike Presence
  - 1897 Roach Presence
  - 1971 Empty Presence
  - 1971 Perch Presence
  - 1971 Pike Presence
  - 1971 Roach Presence
  - 1976 Empty Presence
  - 1976 Perch Presence
  - 1976 Pike Presence
  - 1976 Roach Presence
  - 1980 Perch Presence
  - 1980 Roach Presence
  - 1981 Empty Presence
  - 1981 Perch Presence
  - 1981 Pike Presence
  - 1981 Roach Presence
  - 1984 Empty Presence
  - 1984 Perch Presence
  - 1984 Pike Presence
  - 1984 Roach Presence
  - 1985 Empty Presence
  - 1985 Perch Presence
  - 1985 Pike Presence
  - 1985 Roach Presence
  - 1988 Empty Presence
  - 1988 Perch Presence
  - 1988 Pike Presence
  - 1988 Roach Presence
  - 1989 Empty Presence
  - 1989 Perch Presence
  - 1989 Pike Presence
  - 1989 Roach Presence
  - 1990 Empty Presence
  - 1990 Perch Presence
  - 1990 Roach Presence
  - 1991 Empty Presence
  - 1991 Perch Presence
  - 1991 Pike Presence
  - 1991 Roach Presence
  - 1992 Empty Presence
  - 1992 Perch Presence

Location: 1 257 830.000 6 529 020.000 Me

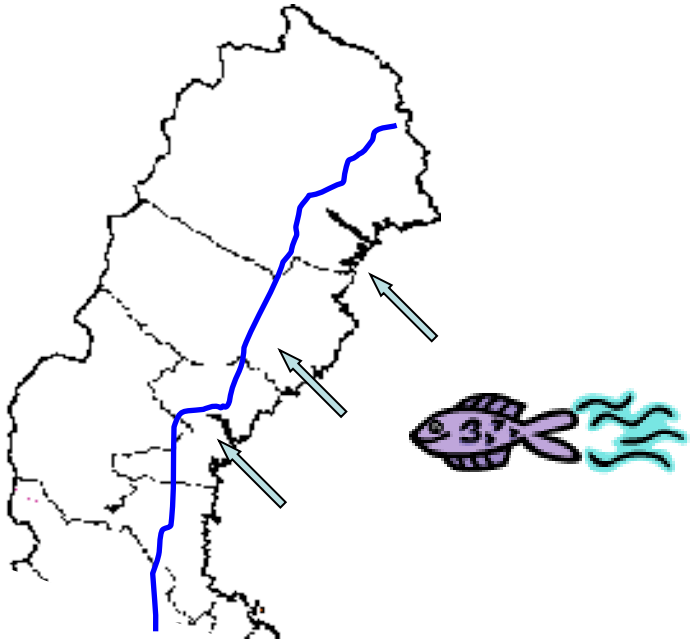
Field	Value
OID	89463
LakeID	36498
Name	Rotehogstjärnen
Expr1	1897 European eal Presence
year_preci	0
Native	Native
Comment	
Area	16.4788
Sum_of_Tem	1267
Altitude	120
Max_depth	9.133333
Source_ID	330
Source	Fiskeriverket - SÖLAB
Contact_in	Kerstin Holmgren / Olof filipsson.
Observatio	Archive - interview
Knowledge	
Reliabilit	2
Expr1008	
Expr1009	
Expr1010	
Expr1011	
Y	6529020
X	1257830
Latitude	58.815003
Longitude	11.612455
Species	European eal
Year	1897
Type	Presence
Shape	Point

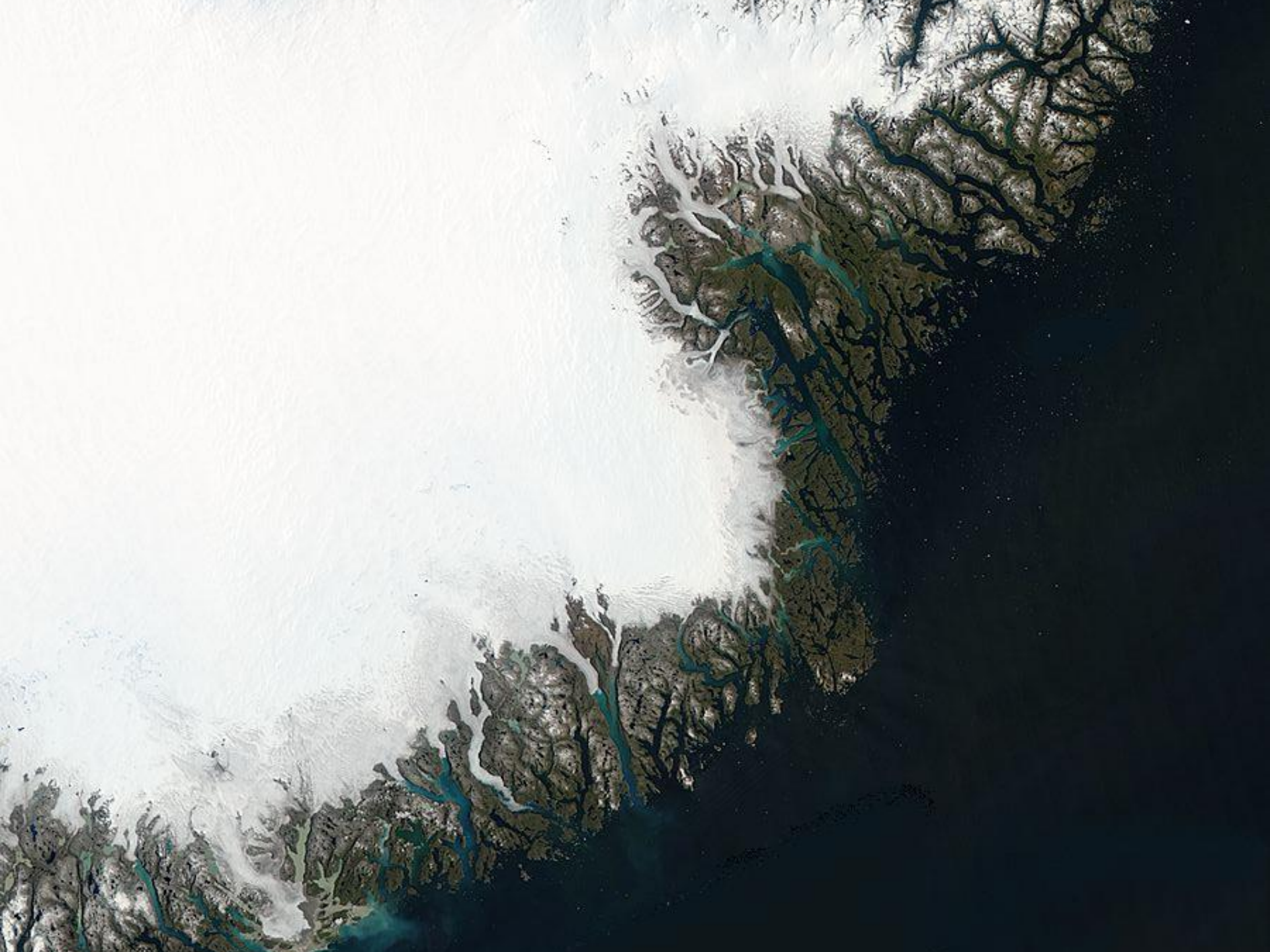
Vad bestämmer fiskars utbredning?

Varför saknas en art?

-spridning?

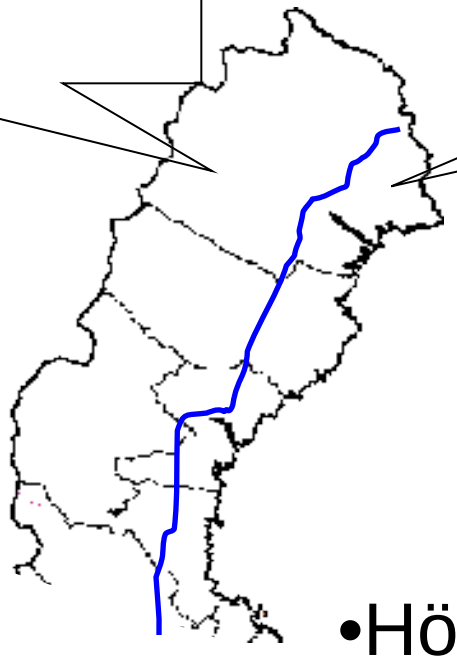
-överlevnad?





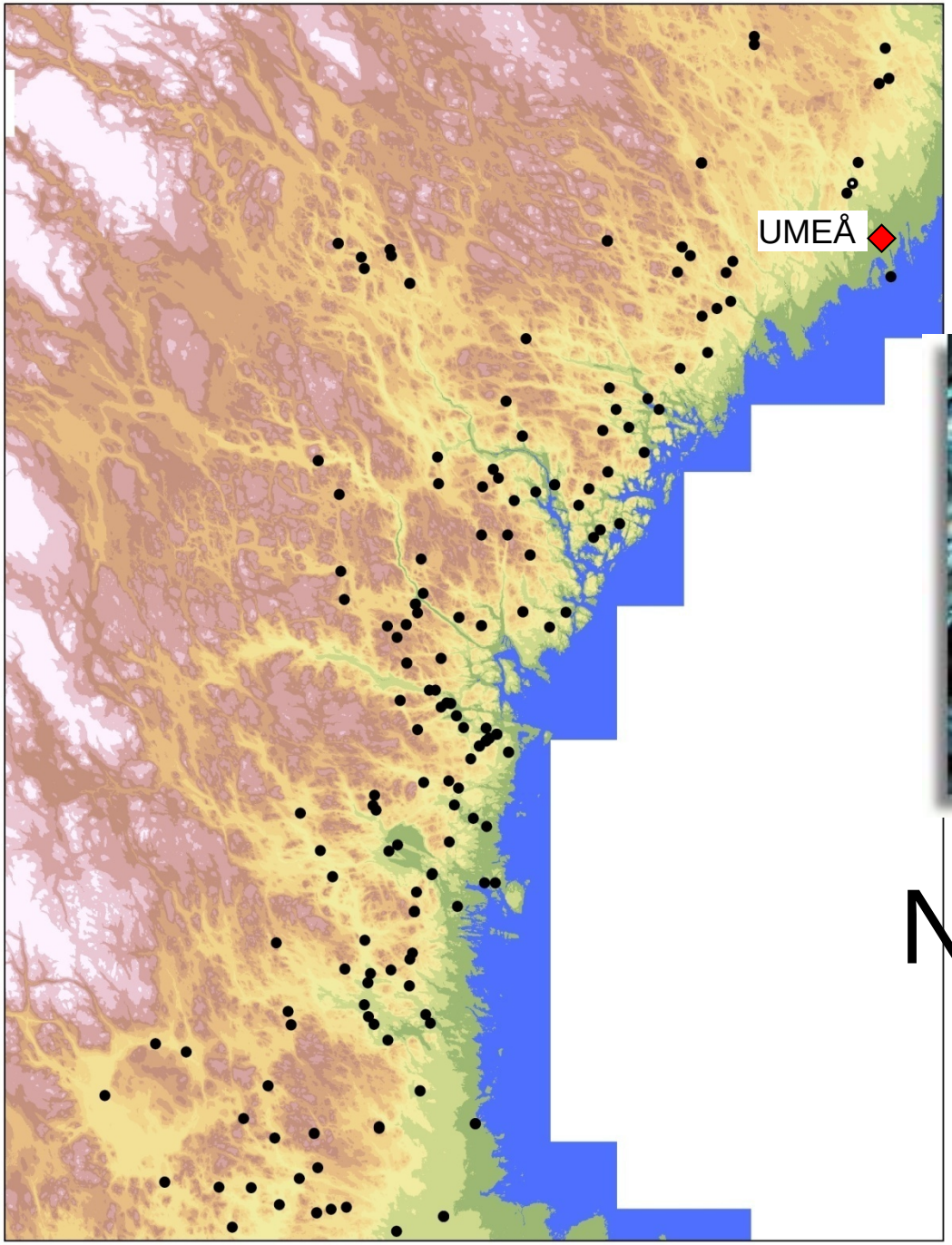
Kolonisationspräglade samhällen

Extinktionspräglade samhällen

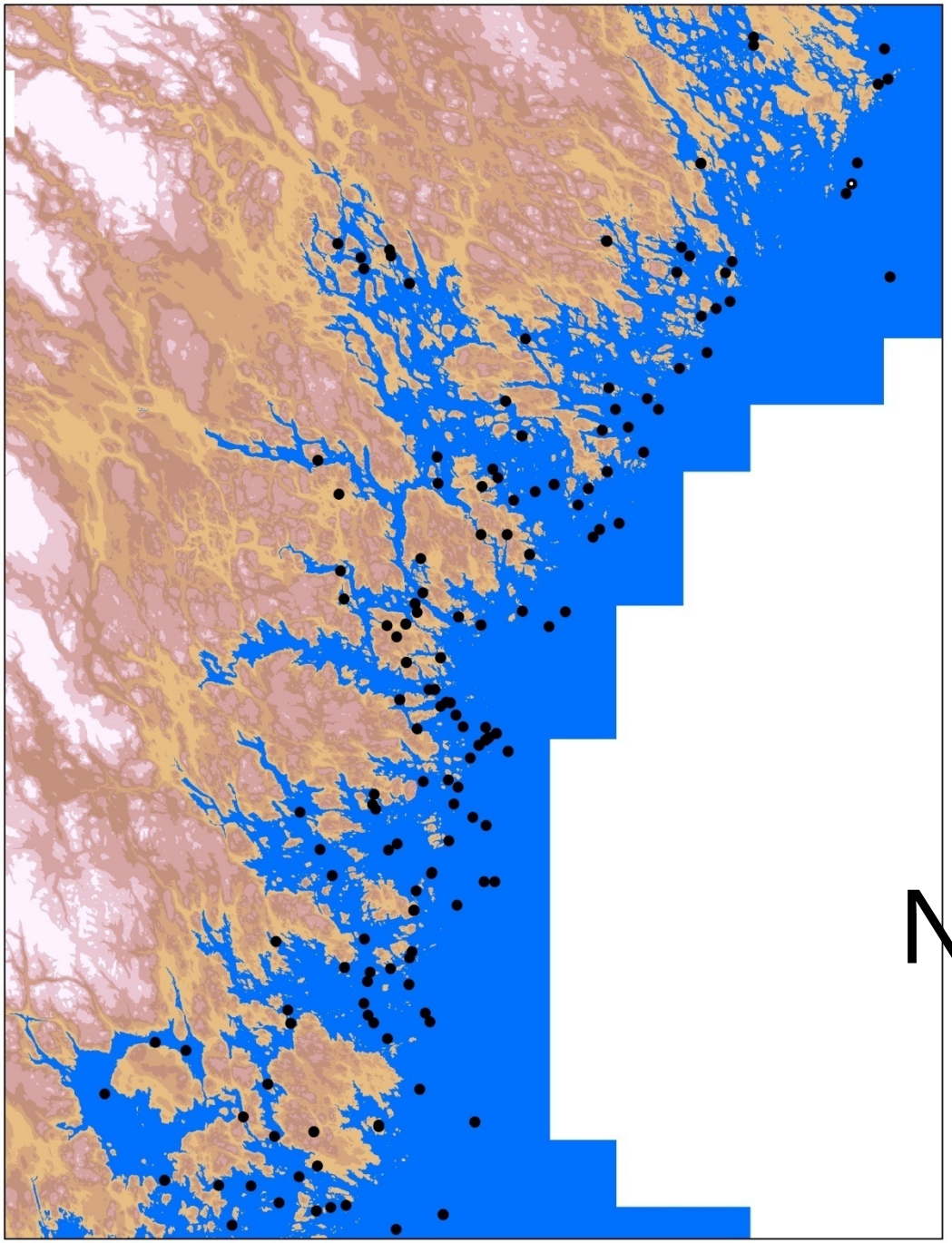


- Låg artrikedom
- Goda kolonisatörer
- Invaderbara samhällen

- Hög artrikedom
- Starka arter
- Resistenta samhällen



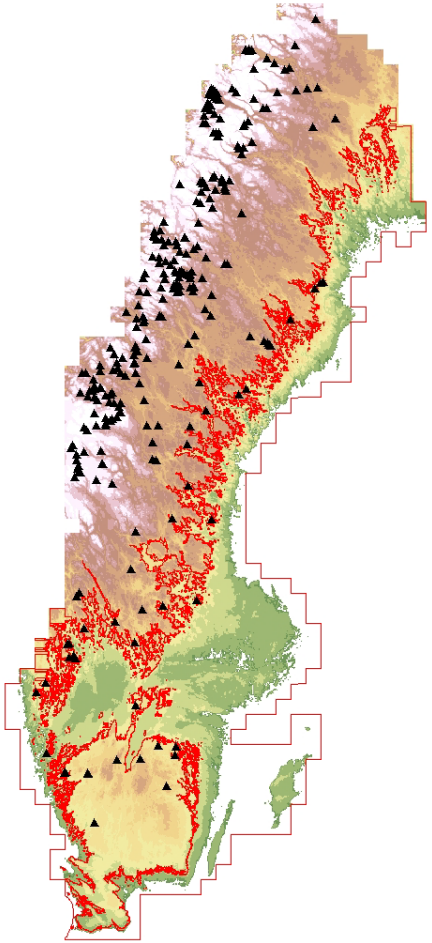
Nors

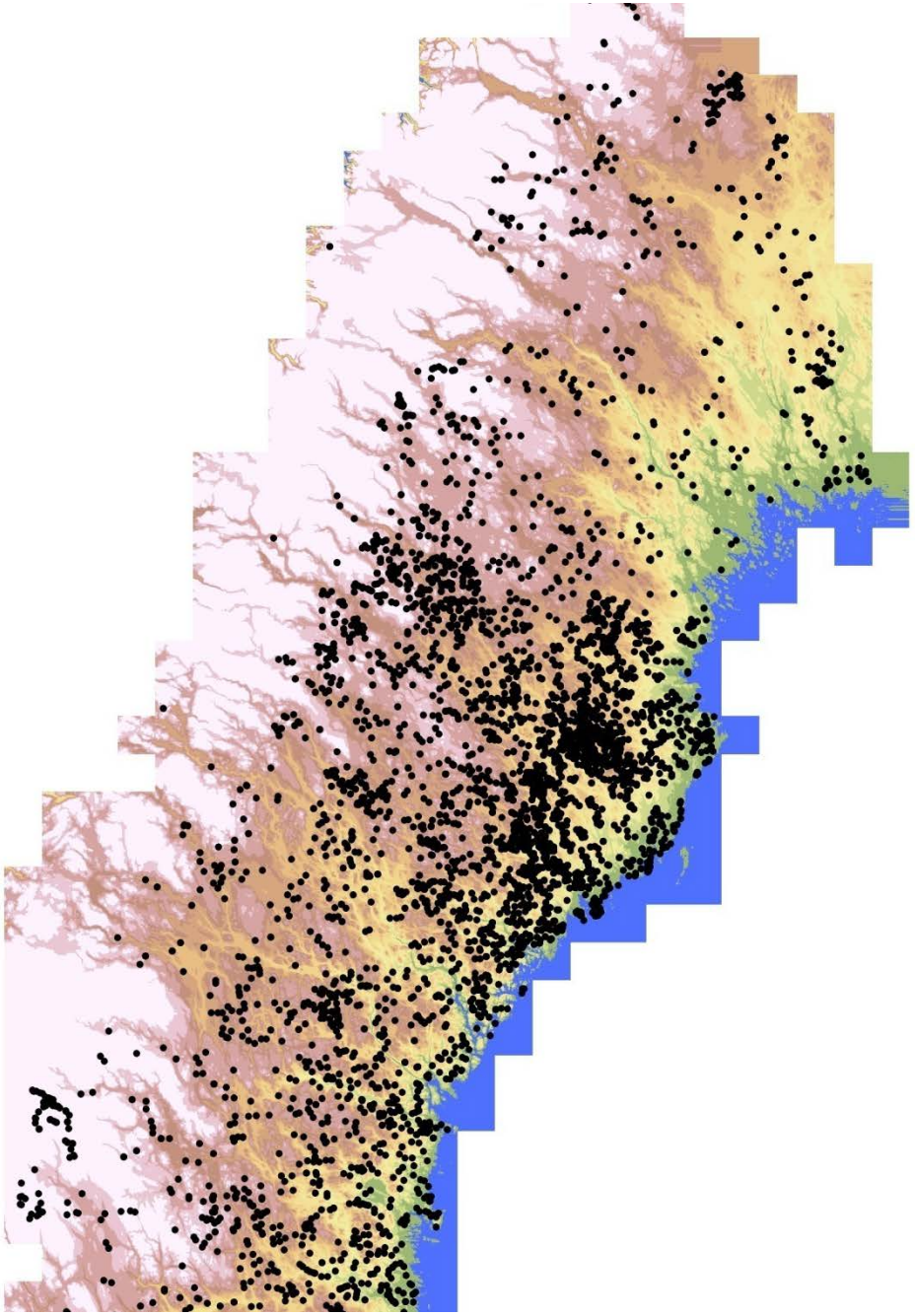


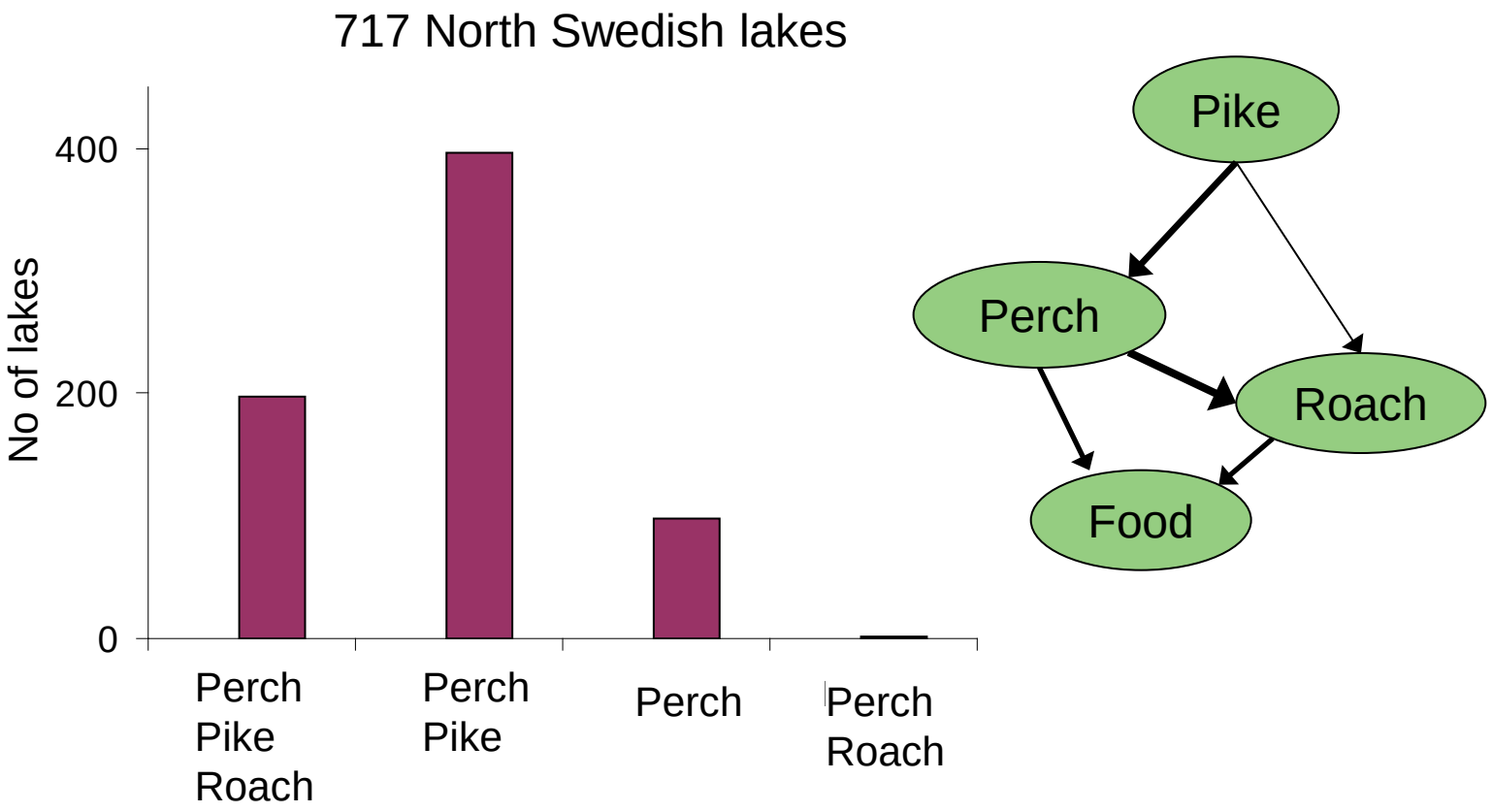
Nors

Röding

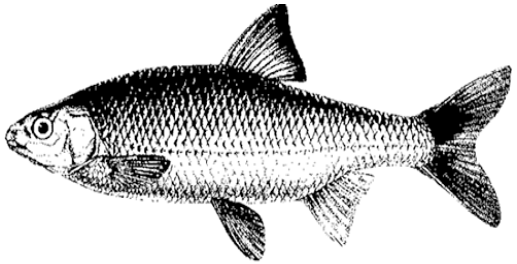
Varför fjällfisk i Sverige och kustfisk i Norge?






717 North Swedish lakes
No of lakes
400
200
0
Perch
Pike
Roach
Perch
Pike
Perch
Perch
Roach
Pike
Perch
Roach
Food

Introductions of roach



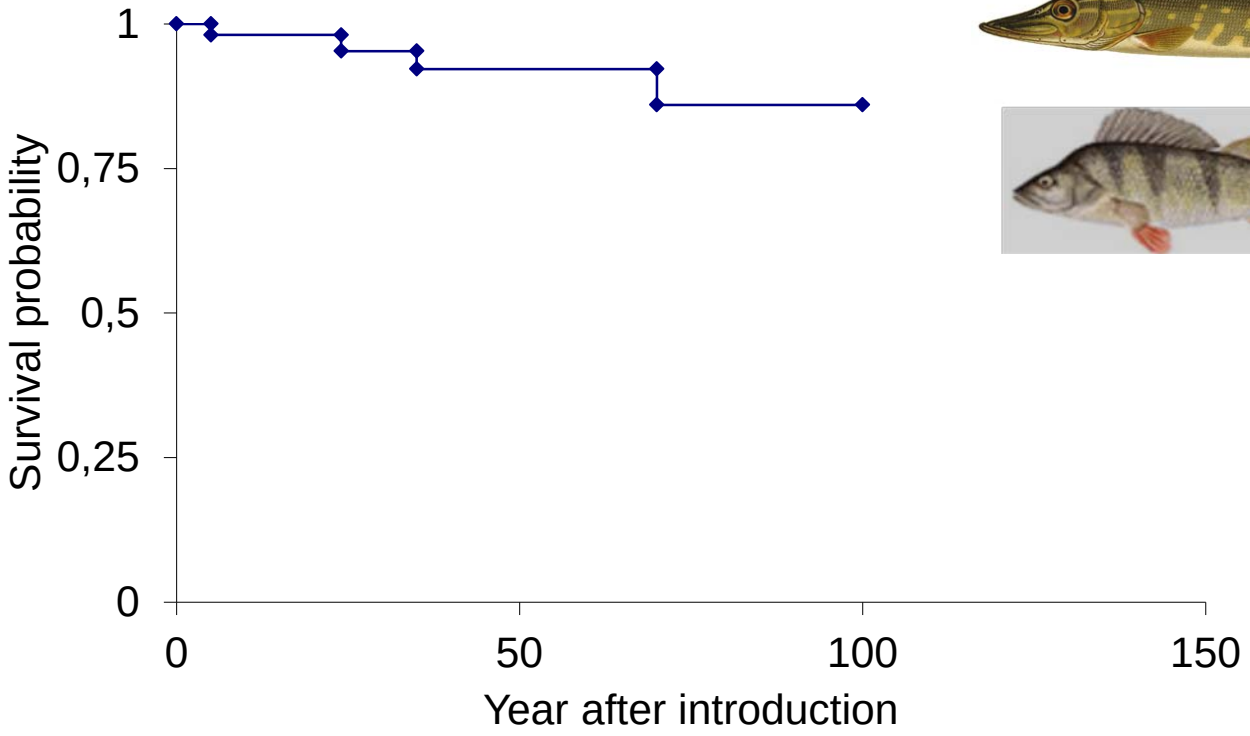
Perch, pike

57 lakes

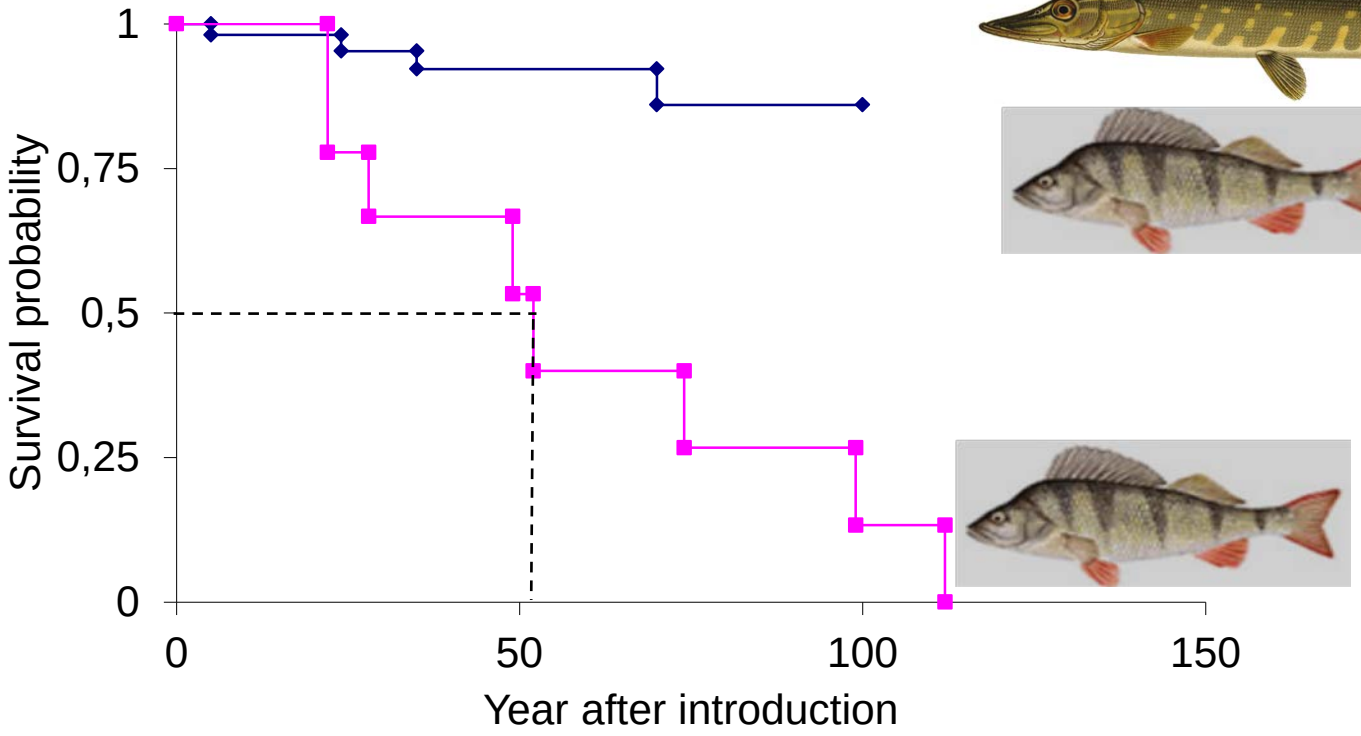
Perch

22 lakes

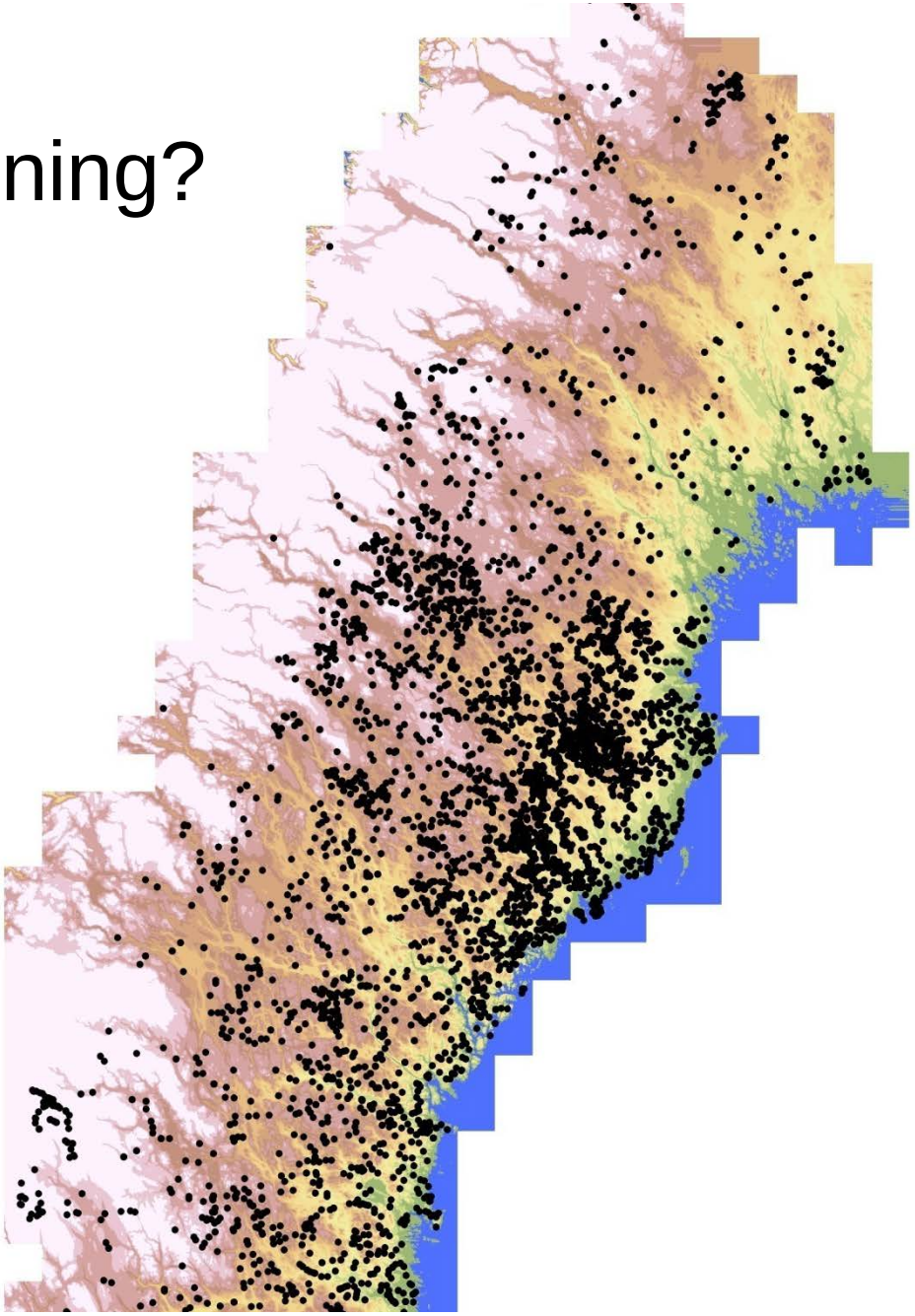
Introductions of roach



Introductions of roach



Klimatdriven gäddspridning?

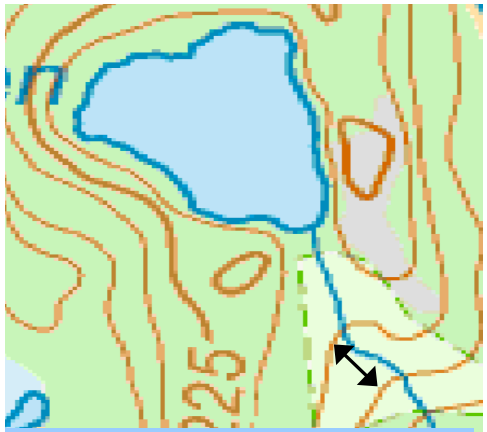


Modelling present distribution of pike

$$P = -0.65 + 0.070*\text{Area} + 0.28*\text{temp}$$

P=log odds

- Use model to predict future distribution by assuming increased temperature
- Only allow dispersal to accessible lakes

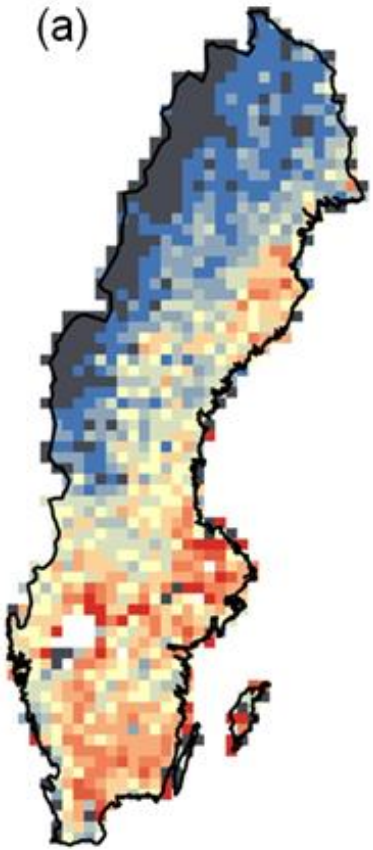


Katie Hein

Today

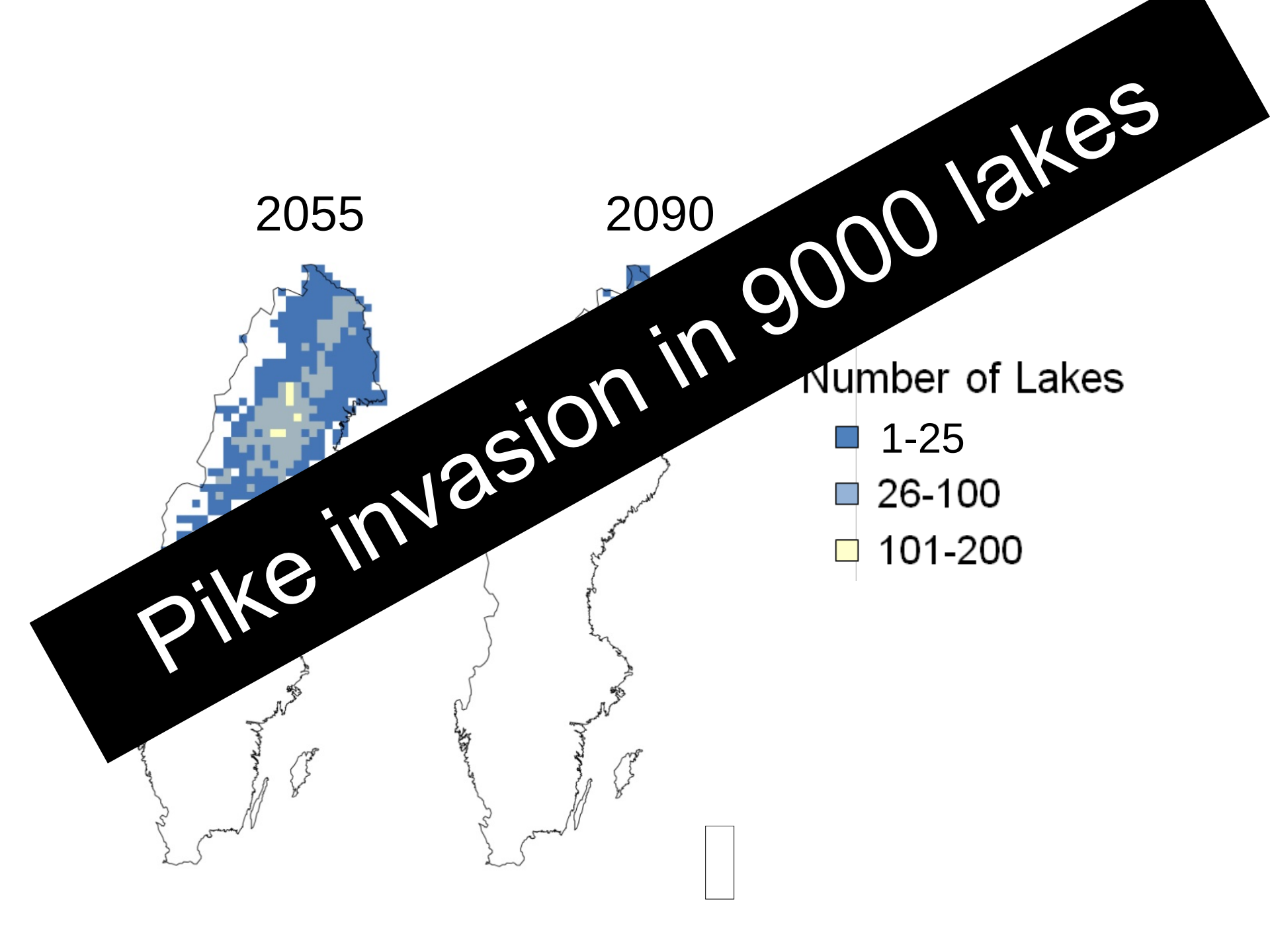
2090

2090 include
effect of barrier

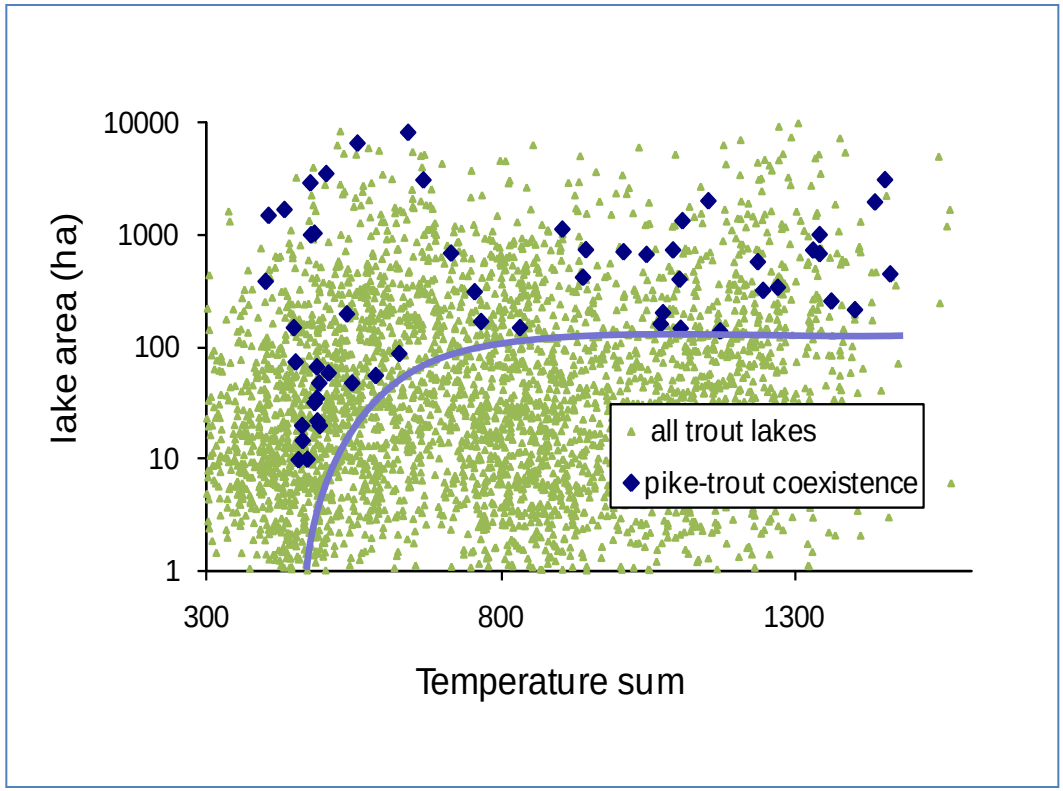


Percent pike lakes

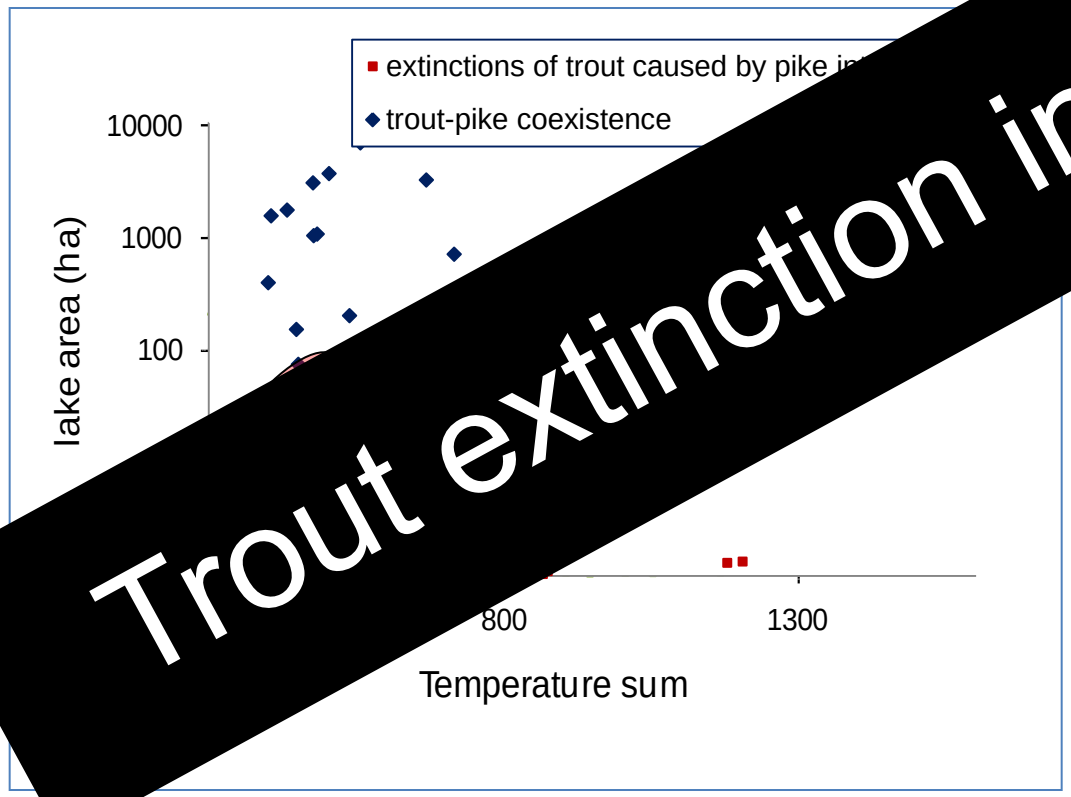
- 0
- 1-10
- 10-20
- 20-30
- 30-40
- 40-50
- 50-60
- 60-70
- 70-80
- 80-90
- 90-100


Pike invasion in 9000 lakes
2055
2090
Number of Lakes
1-25
26-100
101-200

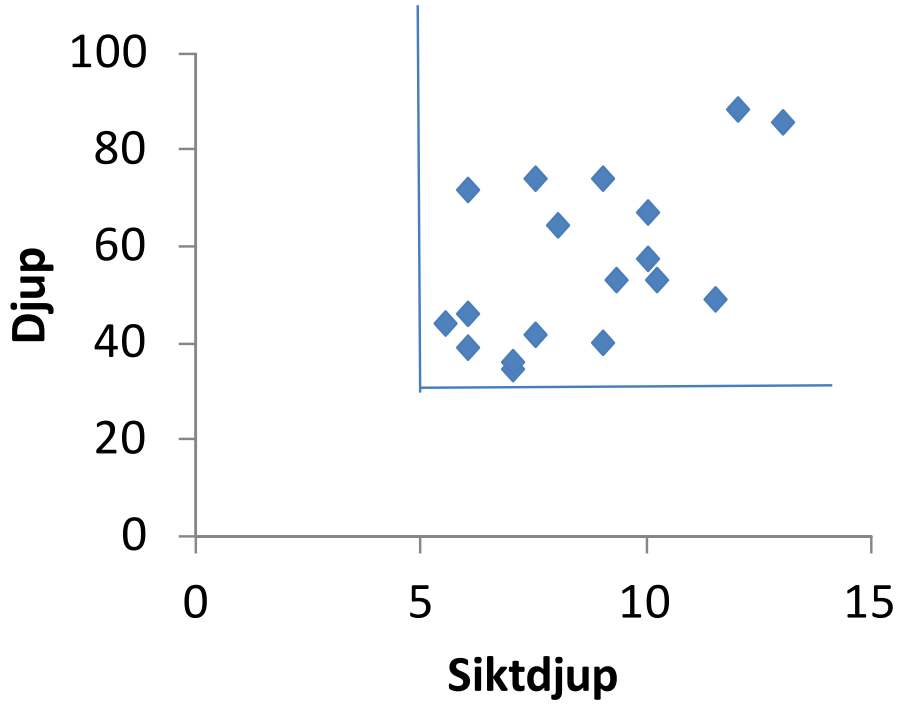
3000 lakes with brown trout will be invaded



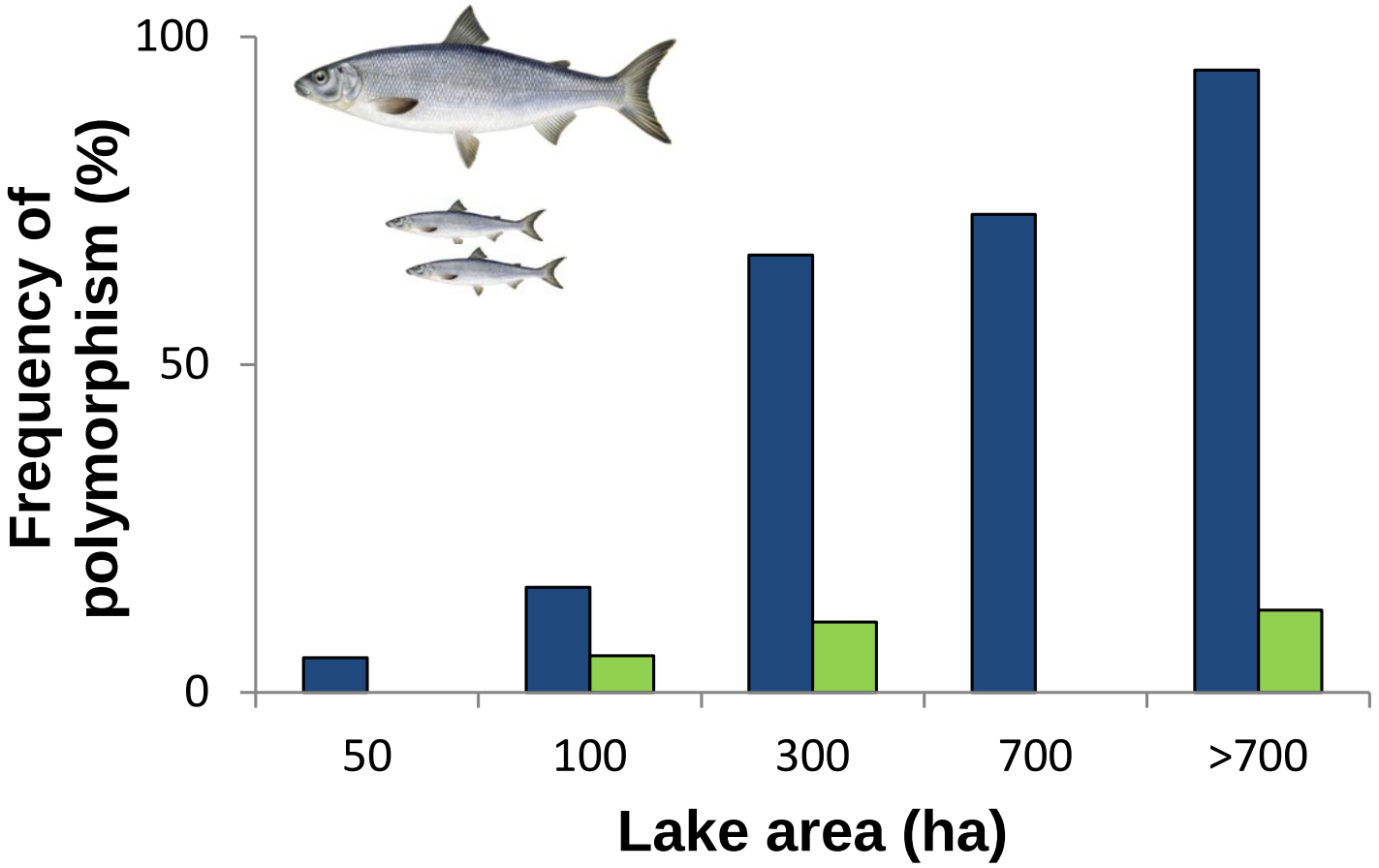
Trout extinction in 3000 lakes

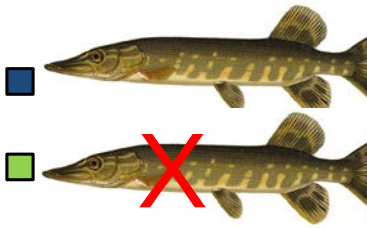


Samexistensnisch röding-gädda



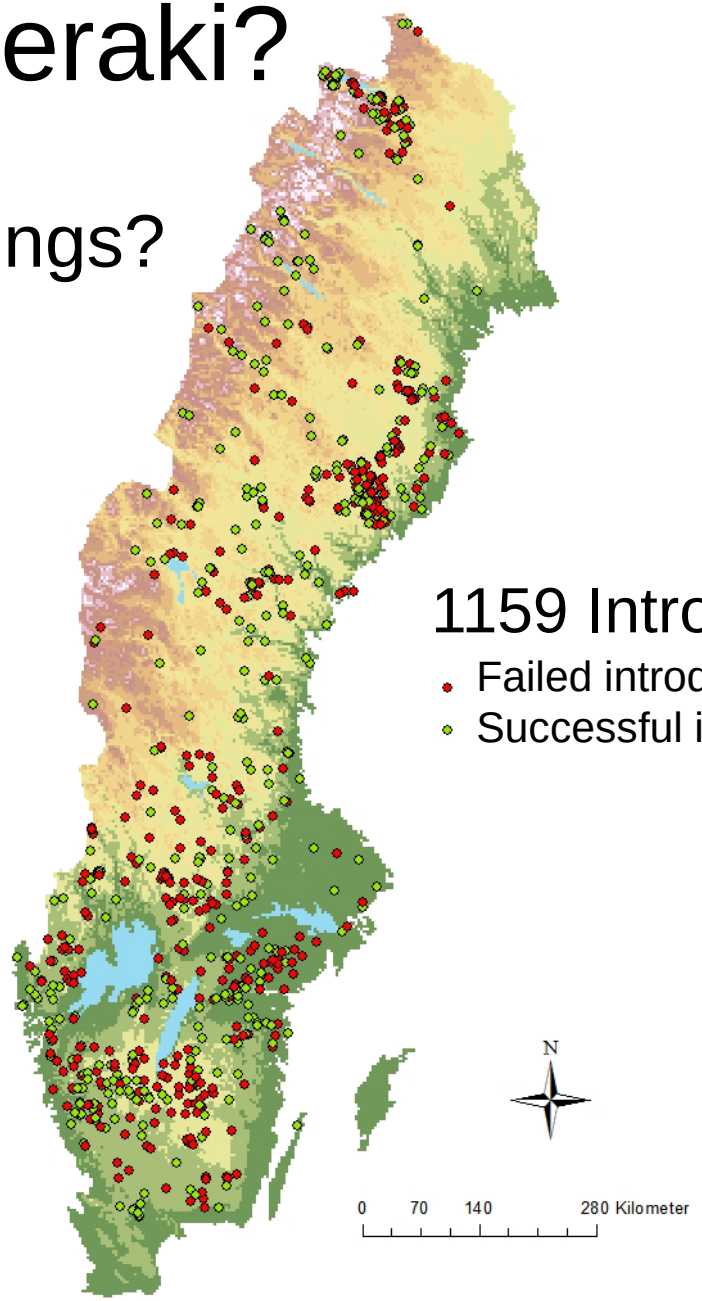
Artbildning hos sik drivs av gädda





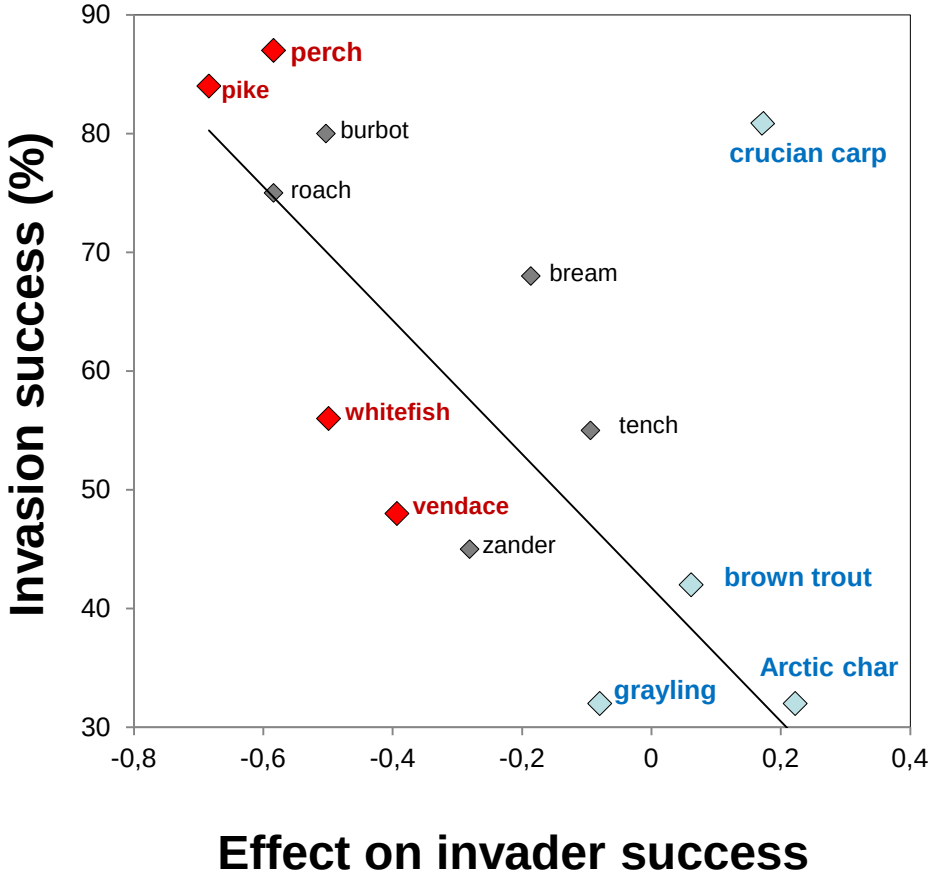
Finns det en arthieraki?

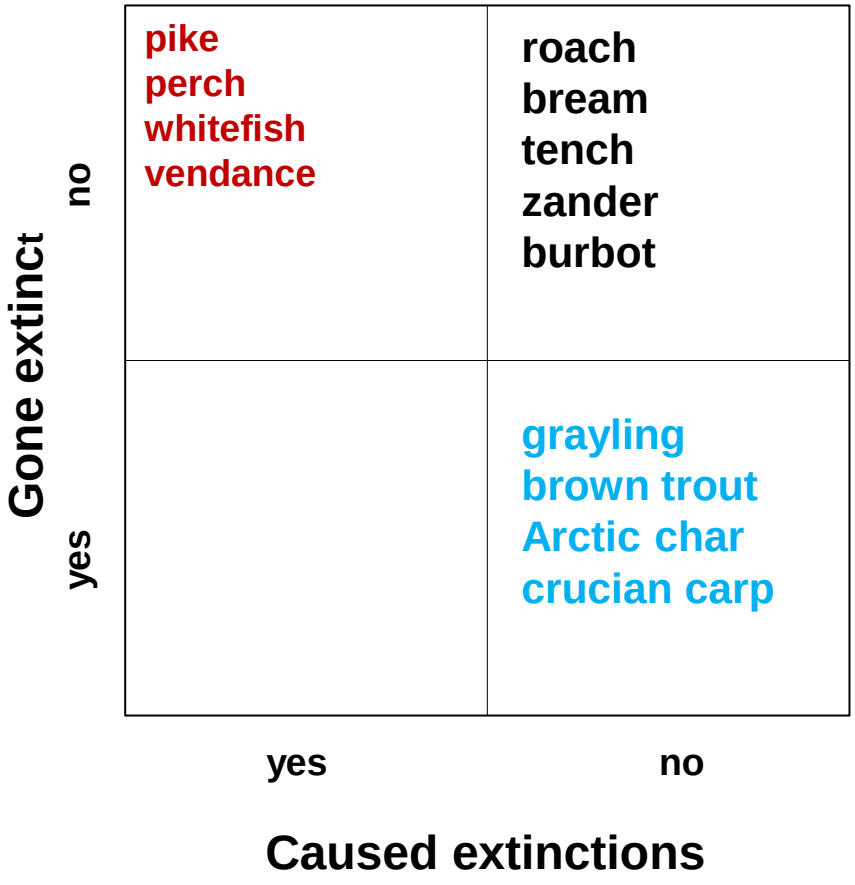
Superspecies and weaklings?



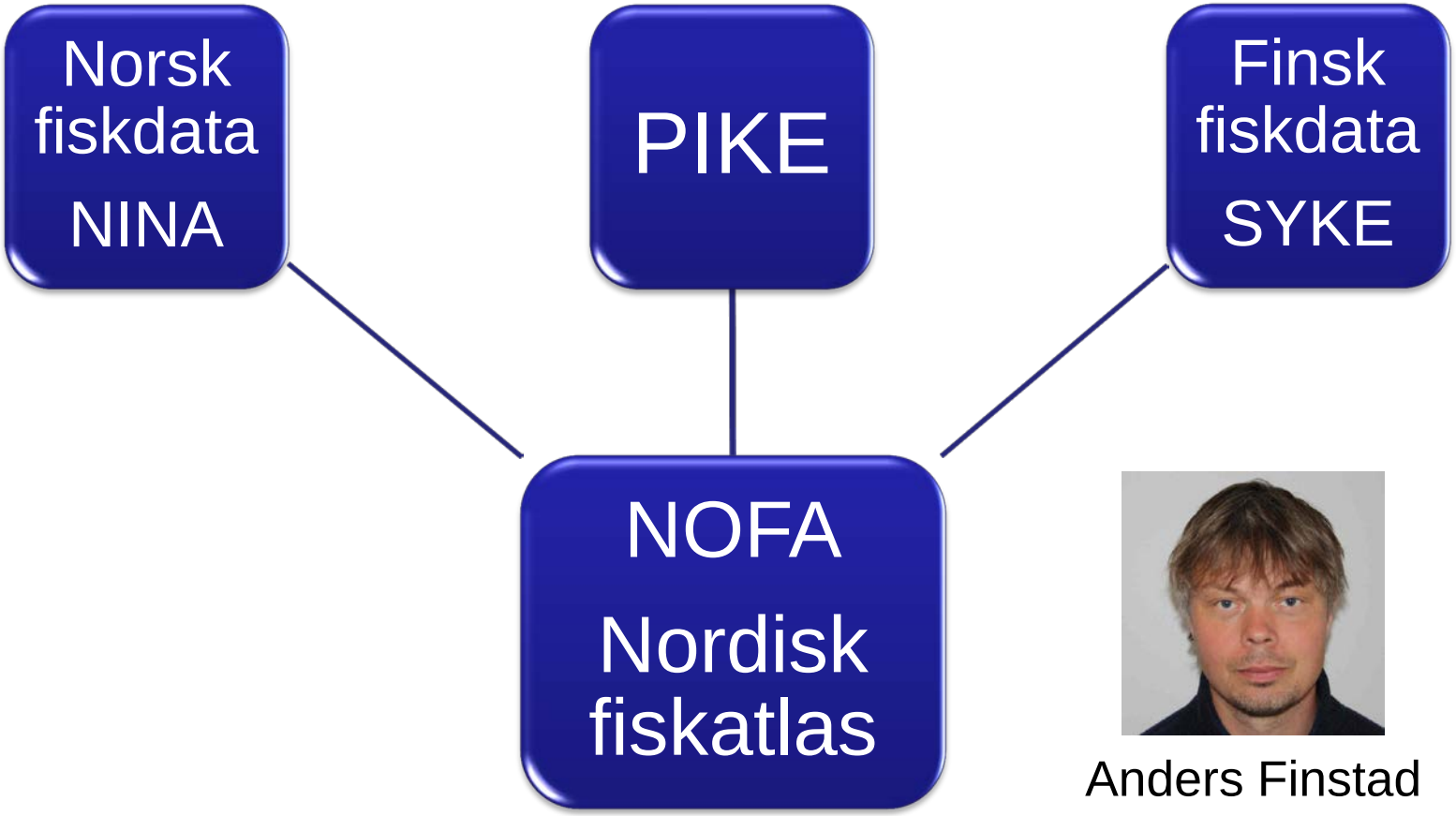
How to be a superspecies?

- Successful invader
- Resist invasions
- Cause extinctions when invading
- Persist when community is invaded


90
80
70
60
50
40
30
-0,8
-0,6
-0,4
-0,2
0
0,2
0,4
perch
pike
burbot
crucian carp
roach
bream
whitefish
tench
vendace
zander
brown trout
Arctic char
grayling
Invasion success (%)
Effect on invader success


Gone extinct
no
yes
pike
perch
whitefish
vendance
roach
bream
tench
zander
burbot
grayling
brown trout
Arctic char
crucian carp
yes
no
Caused extinctions

Relaterade projekt



Anders Finstad
NTNU, Trondheim

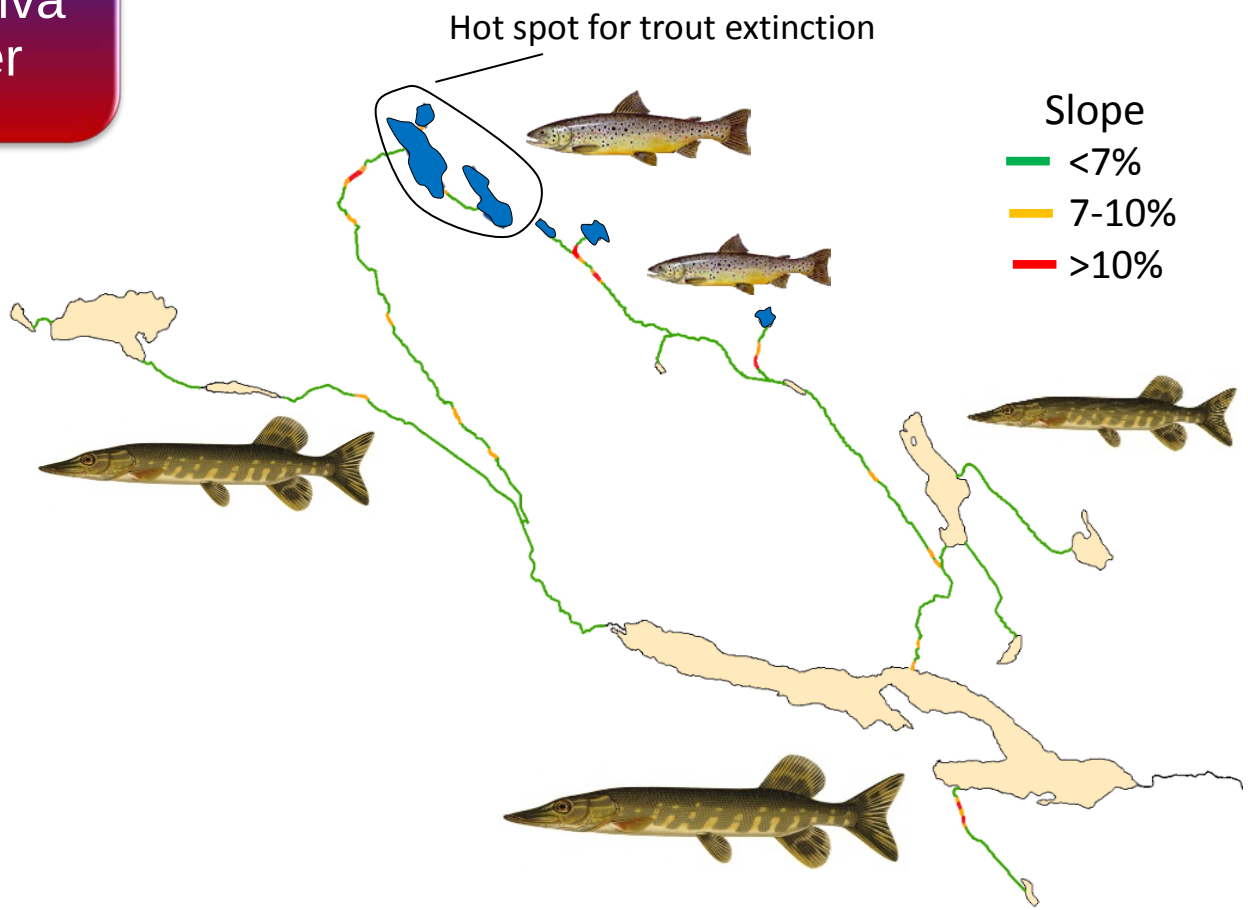
Relaterade projekt

ODYSSEUS
Konnektivitet

INVAFISH
Invasiva arter

WEB SERVICE

Dispersal barriers and risk hot spots



Hur får jag tillgång till PIKE?

- E-post till goran.englund@umu.se
- Introduktionsdata för 1000 sjöar laddas ner från Ecology
  http://onlinelibrary.wiley.com/doi/10.1890/15-1707.1/abstract
- Kommer snart:
  - PIKE på GBIF (månader)
  - Webservice (NOFA, betaversion om 2 år)

Referenser – fulltext finns på Researchgate

https://www.researchgate.net/profile/Goeran_Englund/contributions

1. Henriksson, A, Wardle, D., Trygg, J., Diehl, S. and **Englund, G.** 2016. Strong invaders are strong defenders – implications for the resistance of invaded communities. **Ecology Letters**, 19:487-494, **IF 13.0.** No of citations: 0
2. Henriksson, A, Yu, J., Trygg, J. Wardle, D.A., and **Englund, G.** 2016. Weighted species richness outperforms species richness as predictor of biotic resistance. **Ecology** 97:262-271. **IF 5.0**. No of citations: 1
3. Henriksson, A, Rydberg, C. and **Englund, G.** 2016. Failed and successful introductions of fish species into 821 Swedish lakes. **Ecology**. DOI: 10.1890/15-1707.1. **IF 5.0**. No of citations: 0
4. Öhlund, G., Hedström, P., Norman, S., and Hein, C.L., **Englund, G**. 2015. Temperature dependence of predation depends on the relative performance of predators and prey. **Proceedings of the Royal Society Ser. B**. Article no: 20142254. **IF 5.3**. No of citations: 2
5. Henriksson, A, Yu, J., Wardle, D.A., and **Englund, G.** 2014. Biotic resistance in freshwater fish communities: species richness, saturation or species identity? **Oikos** 124:1058-1064. **IF 3.6.** No of citations: 1
6. Hein C. L. Öhlund G. and **Englund G**. 2014. Fish introductions reveal the temperature dependence of species interactions. **Proceedings of the Royal Society Ser. B**. 281: 1471-2954. **IF 5.3**. No of citations: 7
7. Valinia S., **Englund G**., Moldan F., Futter M. N., Köhler, S. J., Bishop, K. and Fölster J. 2014. Assessing human impacts in freshwaters with historical species distribution data and hydrogeochemical modelling. **Global Change Biology**, in press. **IF 8.0.** No of citations: 7
8. Hein C.I., Öhlund G., and Englund G. 2012. Future distribution of Arctic char (Salvelinus alpinus) in Sweden under climate change: Effects of temperature, lake size and species interactions. **Ambio**, 41:303-312
9. Kenyon M., Lussetti, D., Johansson, F., Englund, G, and Bokma, F. 2011. Morphological and genetic divergence in Swedish nine-spined stickleback (*Pungitius pungitius*) populations isolated since the last glacial retreat. **BMC Evolutionary Biology 11:**287,
10. Hein C, L., Öhlund G, Englund G. 2011. Dispersal through stream networks: modeling climate-driven range expansions of fishes. **Diversity and Distributions**, 17:641-651
11. Dessborn, L., Elmgren, J. and Englund, G. 2011. Pike predation on ducks: effects on habitat selection and breeding success. **Freshwater Biology** 56:579-589
12. Elmberg, J, Dessborn, L, Englund, G. 2010. Presence of fish affects lake use and breeding success in ducks. **Hydrobiologia** 641: 215-223.
13. Englund, G., Johansson, F., Olofsson, P., Salonsaari, J. Öhman, J. 2009. Predation leads to assembly rules in fragmented fish communities. **Ecology Letters 12:663 – 671**
14. Spens, J., Englund, G. and Lundqvist, H. 2007. The role of network connectivity and dispersal barriers: using GIS to predict landscape scale distribution of a key predator (*Esox lucius*) in temperate lakes. **Journal of Applied Ecology** 44:1127-1137
15. Öhman, J., Buffam, I., Englund, G., Blom, A., Lindgren, E., and Laudon, H. 2006. Associations between water chemistry and fish species distribution a comparison between isolated and connected lakes in northern Sweden. **Freshwater Biology** 51:510-522

PIKE – en fiskdatabas

Databasutveckling
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