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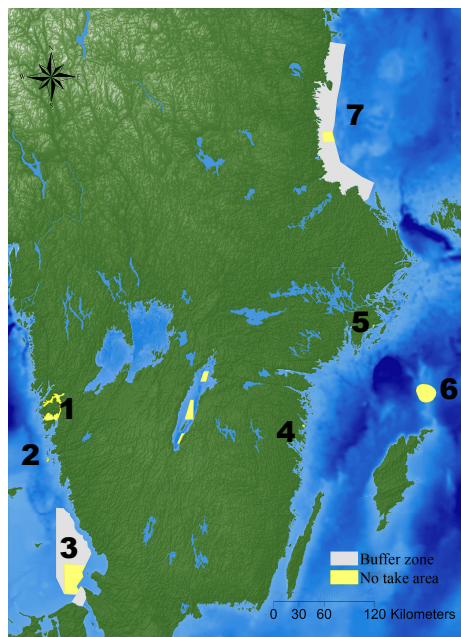


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Efficiency of no-take areas to restore fish stocks

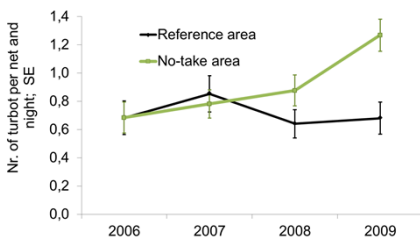
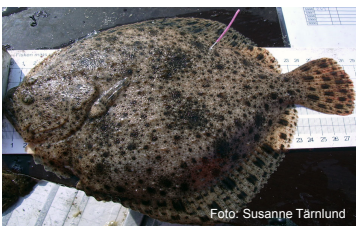
-Experiences from evaluations in Sweden

- In Sweden there are 7 no-take areas in the sea and 3 in lake Vättern. These cover about 1 400 km² and currently constitute about 2/3 of all existing no-take zones in Europe.
- Results from ongoing monitoring programs show positive effects on the target species:
 - Abundance
 - Size
 - Longevity
- Critical for evaluating the efficiency of no-take areas as a management tool is:
 - Baseline data and data from representative references areas
 - Assessment of food web effects, such as interactions between fish and top predators
 - Assessment of effects on individual growth rate

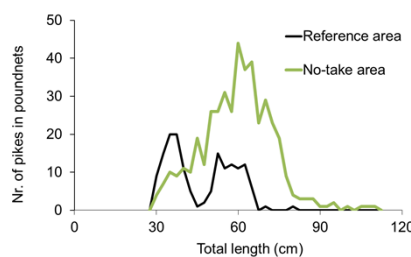


No-take areas in Sweden 2014. Target species and year of establishment .

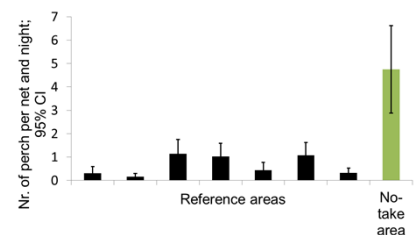
- 1. Havstensfjord**
Cod and flatfish (2010)
- 2. Vinga**
Lobster (2003)
- 3. Kattegat area**
Cod (2009)
- 4. Licknevarp**
Pike and perch (1971)
- 5. Gålö**
Pikeperch (2010)
- 6. Gotska Sandön**
Flatfish (2005)
- 7. S Bothnian Sea**
Whitefish (2011)



Abundance of turbot (*Scophthalmus maximus*) above minimum legal size (30 cm) is increasing in the no-take area but not in the reference area.



Pike (*Esox lucius*) is larger and more abundant in the no-take area compared to the reference area.



Large (>30cm) perch (*Perca fluviatilis*) is more abundant in the no-take area than in other parts of the same archipelago