The Grayling as an example species: pressures affecting Grayling populations in Europe

DOCUMENTATION OF EFFECTS

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Europe's freshwater fishes in the context of the Biodiversity Strategy Targets

Focus on wild, natural fish populations

Todays points:

1. Grayling: The ”stupid fish”
2. Studies from Denmark– what is documented?
3. Results from Central Europe
4. Status now

Grayling are abundant in sub-alpine and nordic streams

Popular ”game fish” for flyfishers

Very fast growth - reach maturity after just 2-4 years

Require good water quality and gravel substrate for spawning

Do move around a lot if possible, but NOT migratory

> Čech & Vejřík (2011) describe the grayling as: “... *a “stupid fish” with very poor avoidance reactions and less tendency to seek shelter. For that reason, this fish species is highly vulnerable to cormorant predation*

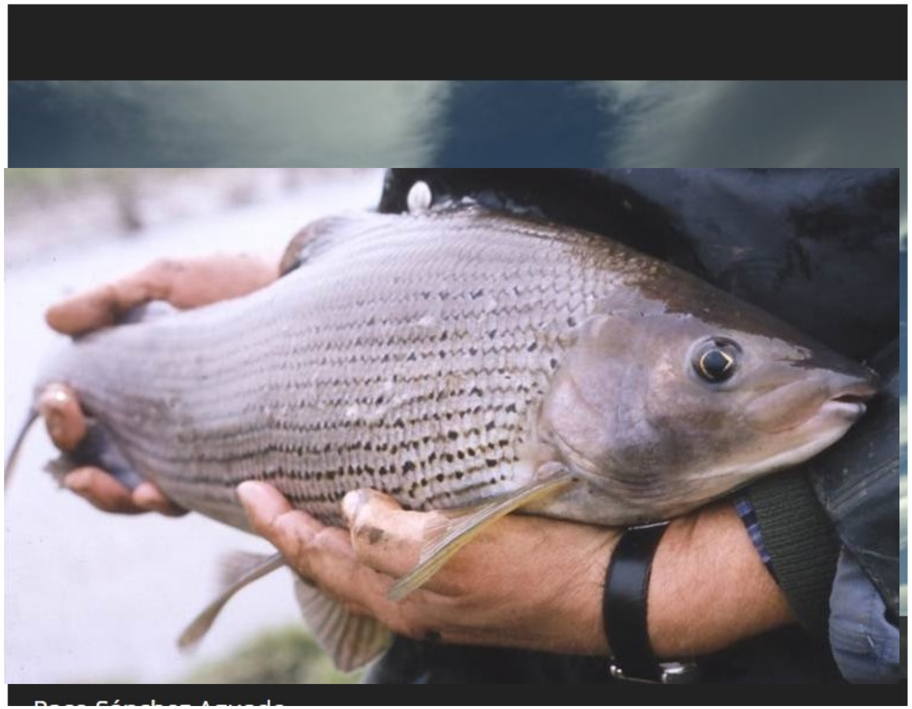
Grayling is listed in Annex 5 on the habitats directive

Also mentioned in the Bern and Helsinki Conventions

EUNIS Home | Species | Habitat types | Sites | Global queries | References | About EUNIS

Kingdom: Animalia > **Phylum:** Chordata > **Class:** Actinopterygii > **Order:** Salmoniformes > **Family:** Salmonidae > **Genus:** Thymallus > **Species: Thymallus thymallus**

European grayling - *Thymallus thymallus* (Linnaeus, 1758)



Quick facts

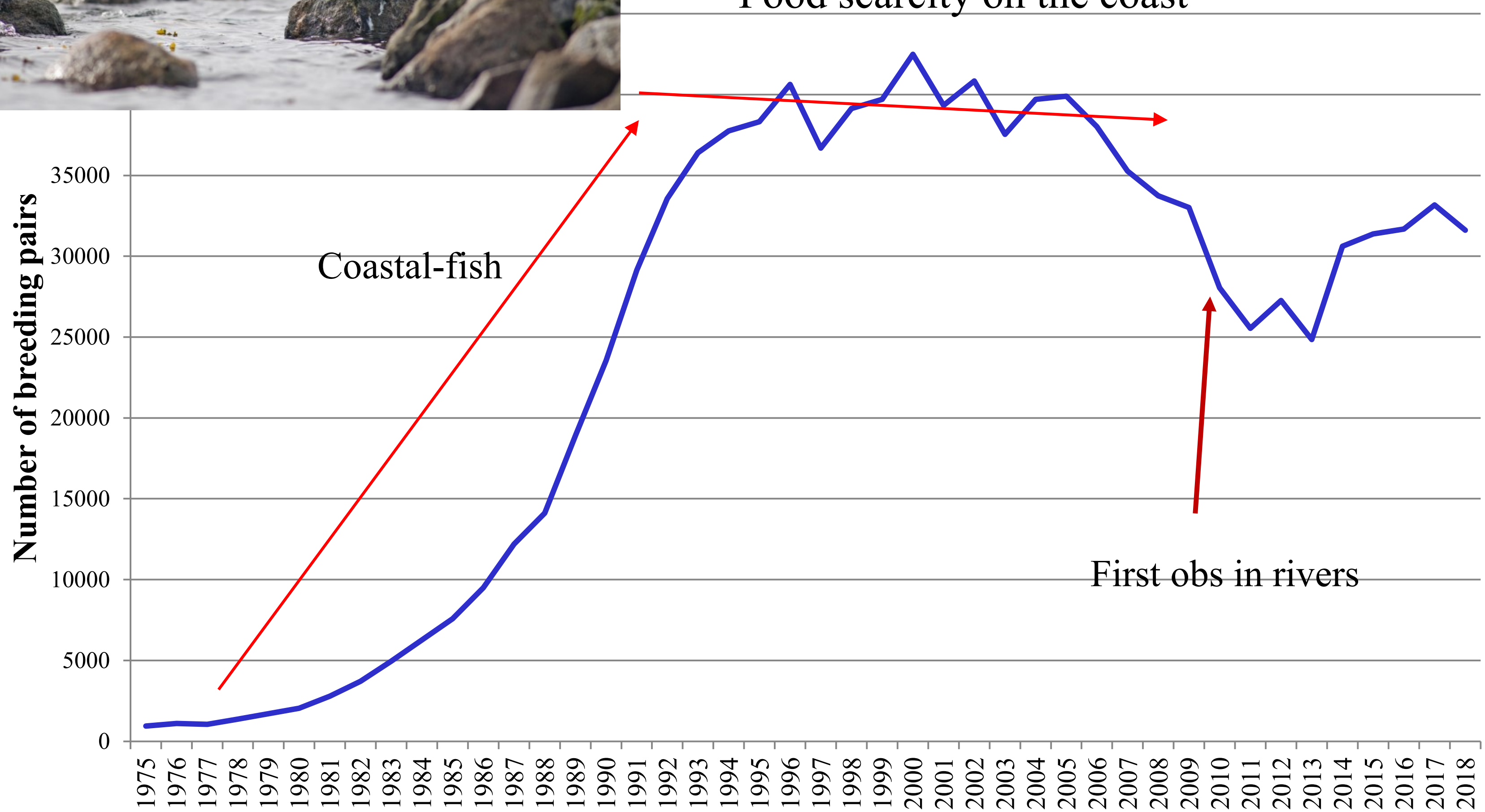
Threat status Europe	**Least Concern** (IUCN)
EU conservation status *by biogeographical region*	Alpine - *Bad* Atlantic - *Bad* Boreal - *Poor* Continental - *Bad* Marine Baltic - *Bad* Mediterranean - *Poor* Pannonian - *Bad*
Protected by	**EU Habitats Directive** and **2** other international agreements
Natura 2000 sites	**19** are designated for this species
Most preferred habitats	coastal, marine inlets and transitional waters, rivers and lakes

Hmm!!

In most areas, no degradation of habitats or exploitation can explain the decrease in status

Numbers of breeding pairs 1975-2018

Denmark



Despite decrease in breeding pairs, we may have more “cormorant-days”

Cormorants in rivers – a new phenomenon in DK

Foto: Allan Guido Nielsen

Two cold winters
2009-10
2010-11

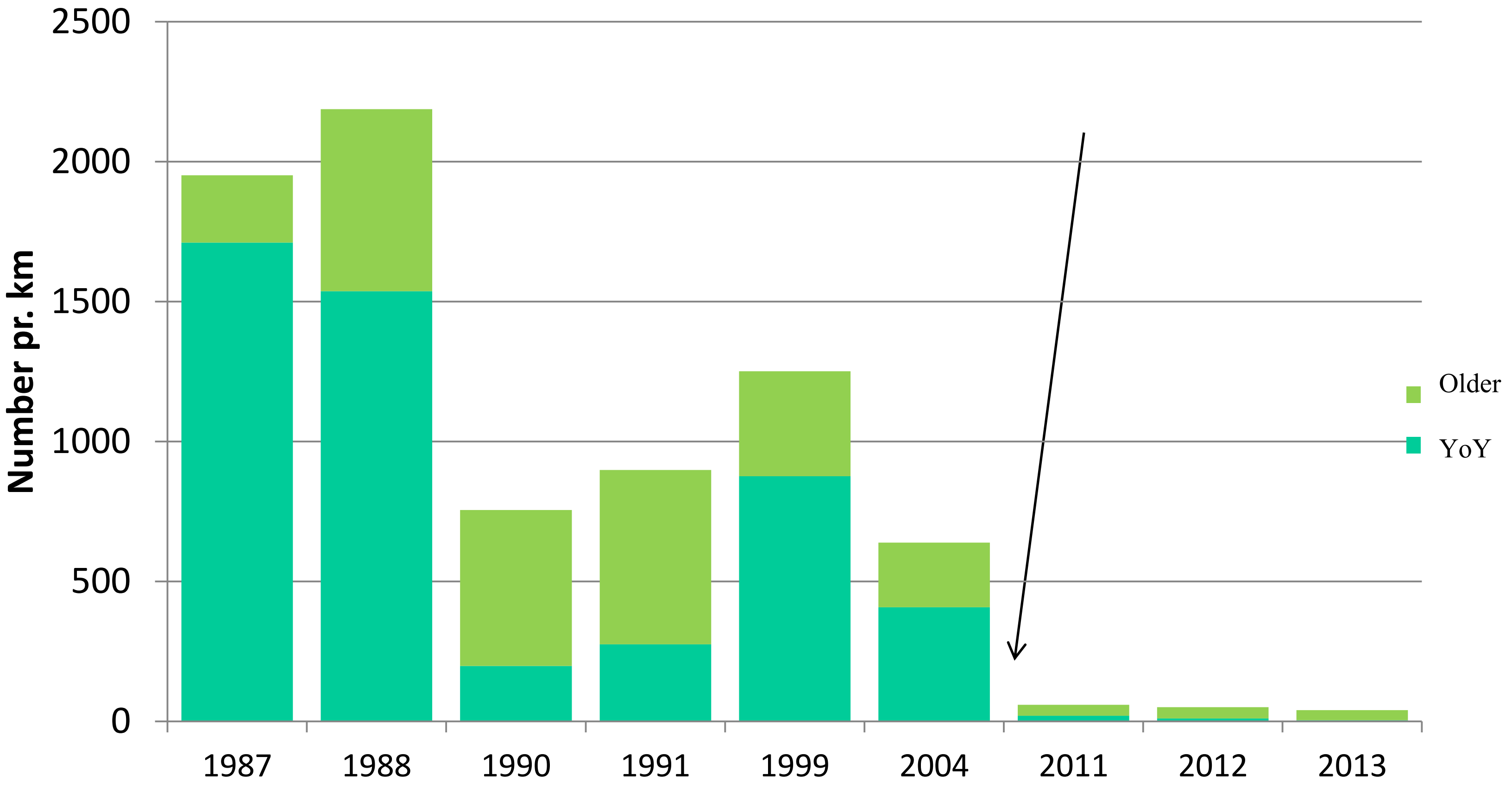
Foto: Michael Holm

Grayling

Grayling – Omme Å Number pr. km	2009	2010
Fry	147	0
1+	250	5
Larger	15	1
Total	**412**	**6**

Catch of Grayling by electrofishing a 2 km stretch in 2009 og 2010 (*Iversen 2010*).

Grayling



Grayling density in 1,5 km stream.

Råsted Lilleå

- The river was famous for brown trout and grayling
- No homes or industry in the catchment area
- Very little agriculture
- Fish farms removed, river restored
- Very good habitats with wide heterogenety
- No fishing pressure (only C&R)

A whole river e-fished, 35 km:

8 grayling

15 brown trout over 30 cm

Good density of Y-o-Y salmon and trout.

25 grayling (32-36 cm) were radiotagged in October.

River with very few cormorants

Only two tagged grayling survived

A loss of 80% of total fish biomass was estimated

Jepsen et al. 2018

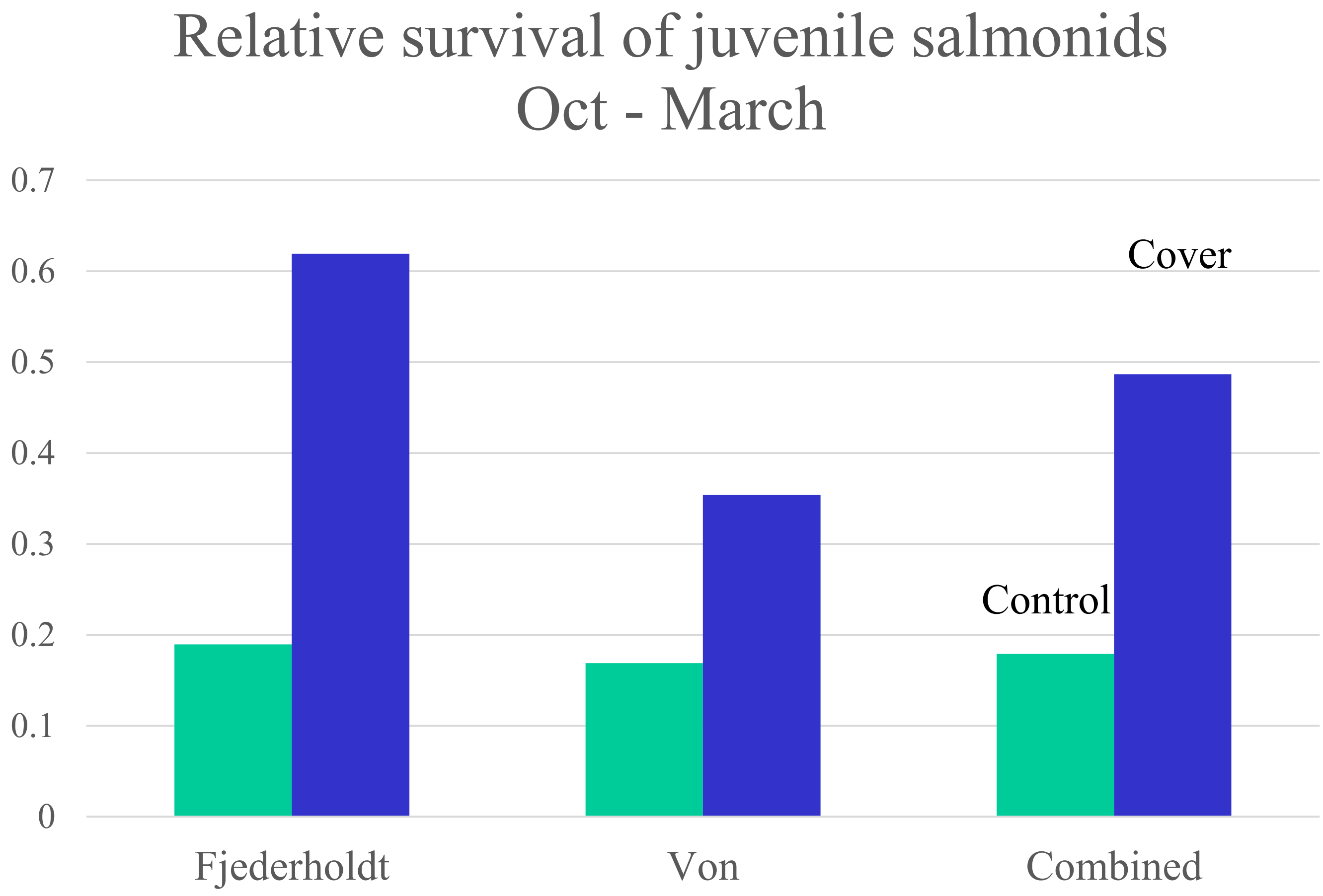
Measures: Urban areas and human traffic

When we survey rivers for grayling and brown trout,
the most fish are found where rivers run through urban areas.

Despite rather poor habitat conditions, especially larger fish, are almost exclusively found here.

Intense regulation (hunting), where one or two persons are patrolling a river stretch daily (armed) – the **Manfred Effect**.

Two years of exclusion experiments



Conclusion

Documentation that predation from cormorants is the ***main*** reason for an observed decrease in wild grayling populations.

Effects include:

- Economic loss - *recreational fishing*

- Cultural loss – *no fishing*

- Biodiversity loss – *Each grayling population is genetically uniqe*

- Problems in reaching WFD requirements – *too few fish in rivers*

Journal of Applied Ecology 1995, **32**, 29–46

The effect of predation by wintering cormorants *Phalacrocorax carbo* on grayling *Thymallus thymallus* and trout (Salmonidae) populations: two case studies from Swiss rivers

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Summary

1. The effect of cormorant predation on one trout and two grayling populations was examined in two rivers in north-eastern Switzerland, the only sites in the country at present where both bird and fish data are sufficient for such an analysis. Cormorant densities were among the highest recorded on Swiss rivers. Fishery yield was used as a means of detecting fish population changes, because population size could not be measured directly. Two hypotheses were tested: strong cormorant predation results either in lower yields, without affecting long-term population dynamics (compensatory mortality), or destabilizes the prey population, with effects observed in over-fished populations (additive mortality).

American Fisheries Society Symposium 75:000–000, 2011

Great Cormorant *Phalacrocorax carbo* Is Threatening Fish Populations and Sustainable Fishing in Europe

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Abstract.—Based on the EU Council Directive 79/409/EEC on the Conservation of Wild Birds (1979), the number of great cormorants *Phalacrocorax carbo* has increased enormously in many European countries and the distribution of the species has extended considerably. In the middle of the last century, breeding sites were mainly limited to coastal areas; however, today, colonies have become numerous on inland waters. In Germany, for example, breeding pairs expanded from 794 in 1980 to about 23,000 in 2005, and the growth of the population still continues. In the whole of Europe today, there are more than 350,000 breeding pairs constituting more than 2 million cormorants. The increasing expansion of cormorants in Europe causes ecological damage to fish populations and economic and sociocultural damage to fishing. An estimate of the daily food intake of cormorants in Europe is about 1,000 metric tons. Special concern exists for endangered fish species such as grayling *Thymallus thymallus*, brown trout *Salmo trutta*, and European eel *Anguilla anguilla*. Rearing of fish in farms and stocking of juveniles in natural waters are often unsuccessful because of cormorant predation.

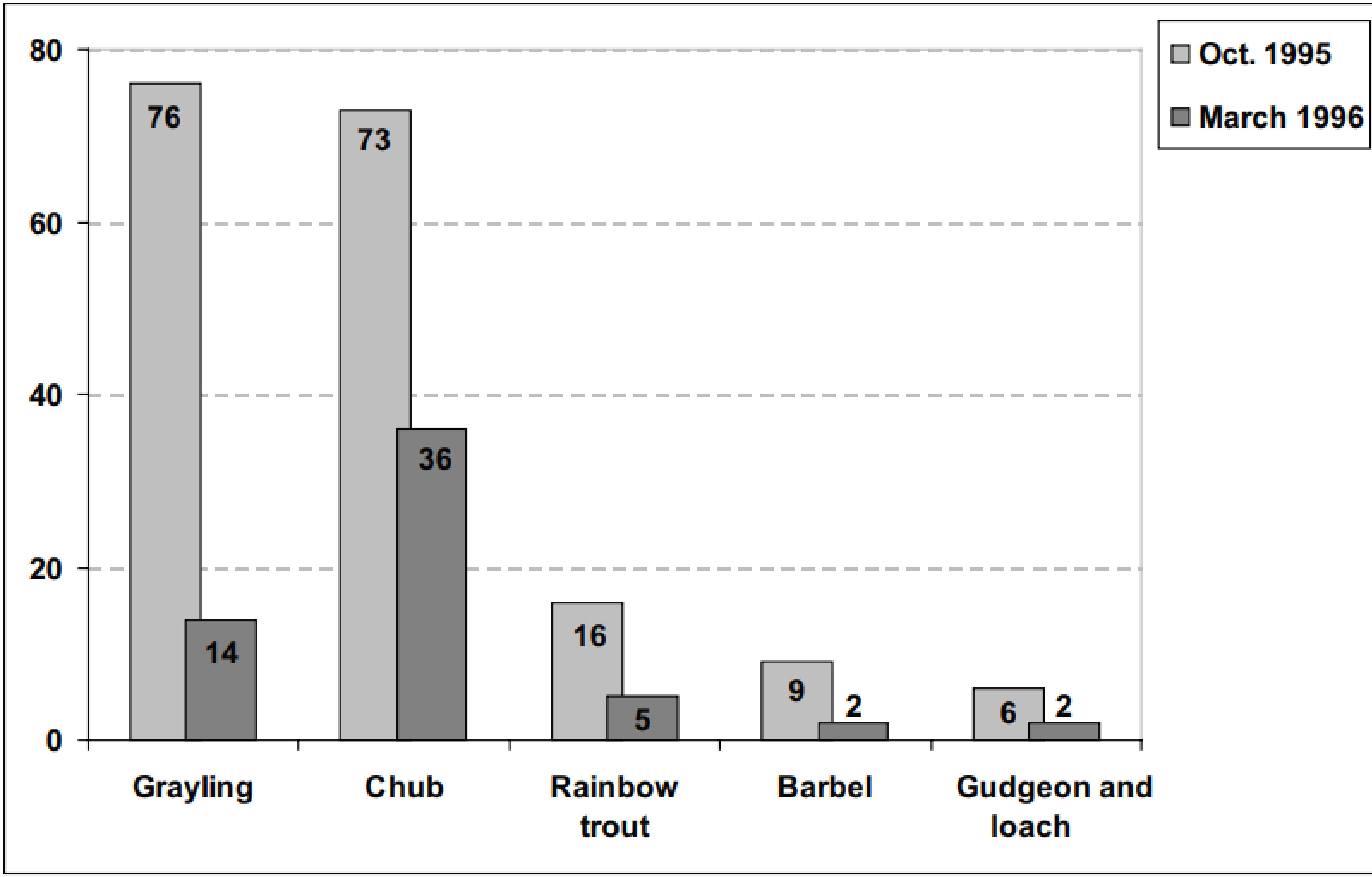

Figure 3.—Fish biomass (kg/ha) in the River Mur before and after the invasion of cormorants (Woschitz and Parthl 1997).

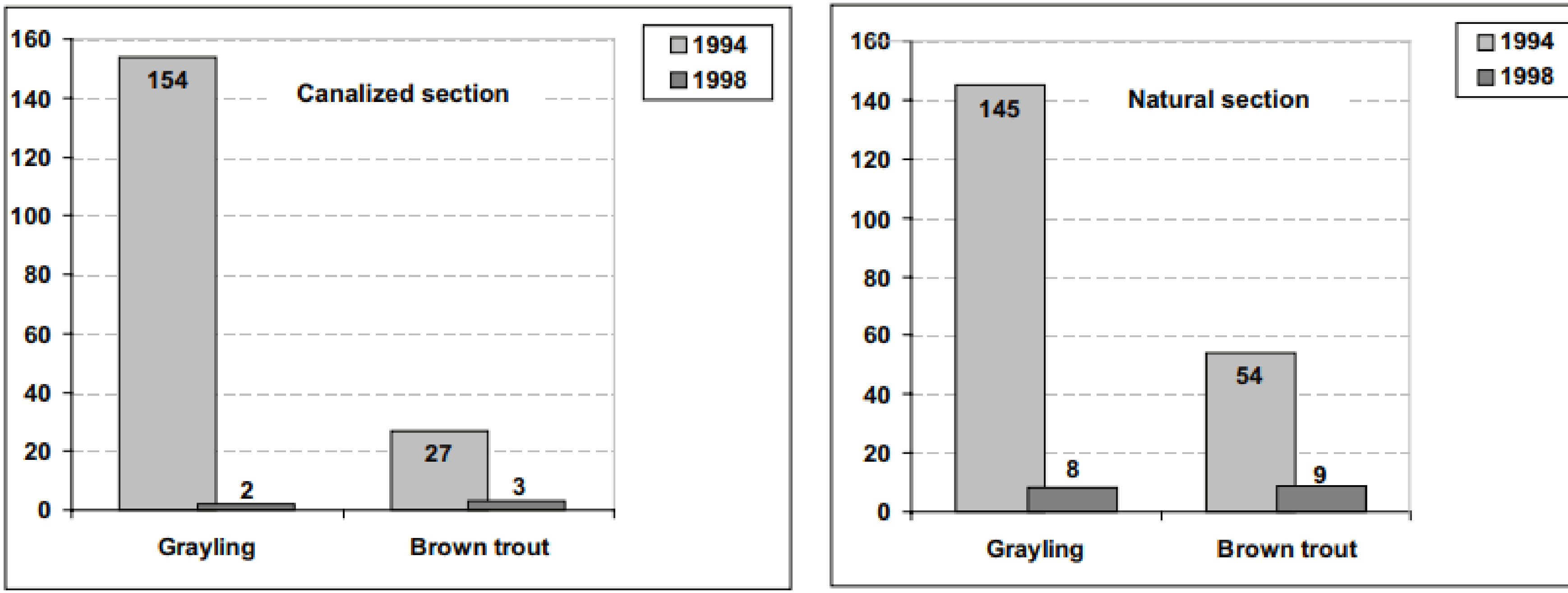

Figure 4.—Fish biomass (kg/ha) of grayling and brown trout in the River Enns before and after the invasion of cormorants (Zauner 1999).

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Managing international 'problem' species: why pan-European cormorant management is so difficult

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Date submitted: 24 November 2006; Date accepted: 18 December 2007; First published online: 6 March 2008

SUMMARY

Stakeholder analysis as a specific tool in social science can be used to explain why environmental conflicts arise or persist and identify steps to resolve these. This paper considers the conflict over the great cormorant, a fish-foraging bird with a rapidly growing population, a conflict previously treated only at a local, subnational or national level. The measures taken have sometimes mitigated the conflict, but have not addressed the damage and conflicts owing to the rapid cormorant population expansion. As the population is mobile at the scale of Europe, management of the population needs to be considered at the European level. In the 1990s, the Convention on Migratory Species (CMS) drew up a management plan, which was never endorsed. Interviews with authorities, scientists and other stakeholders revealed they considered the

Regulation of Whaling. For some species, such as geese, wolves and bears, the protection has been so successful that new problems have arisen, including conflicts about damage caused. The great cormorant (*Phalacrocorax carbo*) is a prime example of such 'problem' species.

The great cormorant is a highly mobile bird that crosses different borders when in autumn it migrates several hundreds of kilometres from its breeding colonies in northern Europe towards the south, migrating back in spring. The cormorant may cause significant damage to fish stocks according to human fishers, who ask for its management. The large-scale movements call for coordinated management of the increasing cormorant population in Europe, but the different stakeholder groups and countries have yet to agree upon a joint management scheme. The countries involved have dealt with population and damage management in different ways (Carss 2003). Uncoordinated actions taken in the different European countries could endanger the cormorant population (Klenke

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Institutional challenges for resolving conflicts between fisheries and endangered species conservation

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Abstract

Successful species conservation typically results in conflicts between wildlife protection and economic uses of natural resources as in fisheries and aquaculture. This article shows why managing these conflicts require a more comprehensive approach than currently pursued by endangered species conservation programmes. Against the background of several case studies focussing on wildlife conflicts in European waters this article derives two challenges for institutional response: First, the question of mandate—which societal actor initiates management related processes that require multiple actors to collaborate? Second, how can continuous processes of collaboration be sustained?

Keywords: Participation; Species conservation; Conflict resolution; Institutional change; Fisheries

Draft Resolution EIFAAC/31/2022/3

On the protection of vulnerable and endangered fish species from unsustainable predation from cormorants

The European Inland Fisheries and Aquaculture Advisory Commission (EIFAAC):

RECOGNIZING that predation from cormorants has become one of the most important direct drivers of negative population trends for European freshwater fish species alongside pollution, habitat loss, introduction of alien invasive species and their parasites, other predators, overfishing, dam construction, and climate change.

ACKNOWLEDGING EIFAAC's mission, which is to promote the long-term sustainable development, utilization, conservation, restoration and responsible management of European inland fisheries and aquaculture, consistent with the objectives and principles of the FAO Code of Conduct for Responsible Fisheries and other relevant international instruments, and to support sustainable economic, social, and recreational activities towards these goals.

ACKNOWLEDGING that EU Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (Birds Directive), has led to a large increase in the population of cormorants in Europe, and that this conservation success has led to increasing conflicts between fishing and aquaculture interests and cormorant protection advocates.

FURTHER ACKNOWLEDGING the EU guidance document Great cormorant: Applying derogations under Article 9 of the Birds Directive 2009/147/EC, and the options provided to EU Member States to derogate from the provisions of Articles 5, 6, 7 and 8 of the Birds Directive, where there is no other satisfactory solution.

Dokumentation

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