



Capture, handling and tagging wild fish in the field

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What is telemetry about?

- Obtaining information from a distance
- Radio, acoustic or PIT
- External or internal attachment
- Manual tracking or dataloggers
- Long- or short term studies
- Position or other parameters

The role of telemetry

- Applied science
- Management
- Documentation
- New knowledge



The role of telemetry

Limitations:

Low numbers

Tagging and handling effects

Animal welfare/ethics

Cost and labour intensive

Advantages:

Easy to understand

Easy to explain

Only way to get this type of
information

Clear results



Why go wild ????

Results from domesticated fish are not representative for wild fish

General behaviour, survival, growth, reproduction, migrations, etc.



Field conditions

Assets: no transportation, no additional handling and holding
no concern of water quality, feeding or enrichment

Problems: dirt, temperature, wind, rain, less equipment



Main considerations

Avoid sampling bias

Adverse effects of capture, handling and tagging



Capture

- Pain/suffering ?
- Stress
- Fatigue
- Physical damage
- Confinement
- Transportation



Handling

- Stress
- Physical damage
- Mortality



Tagging

- Mortality
- Pain/suffering?
- Infections
- Altered behaviour
- Increased risk of predation
- Changed swimming capability
- Transmitter expulsion



Our experience is based on surgical implants
and external tagging of:

- Atlantic salmon *Salmo salar* (16-22 cm)
- Common bream *Abramis brama* (40–55 cm)
- European eel *Anguilla anguilla* (35-65 cm)
- Chinook salmon *Oncorhynchus tshawytscha* (17–26 cm)
- Perch *Perca fluviatilis* (4-34 cm)
- Pike *Esox lucius* (17–85 cm)
- Pikeperch *Stizostedion lucioperca* (45– 50 cm)
- Roach *Rutilus rutilus* (12–26 cm)
- Trout *Salmo trutta* (stationary and sea-run 14– 90 cm)
- Rainbow trout (*Oncorhynchus mykiss*) (35 – 70 cm)

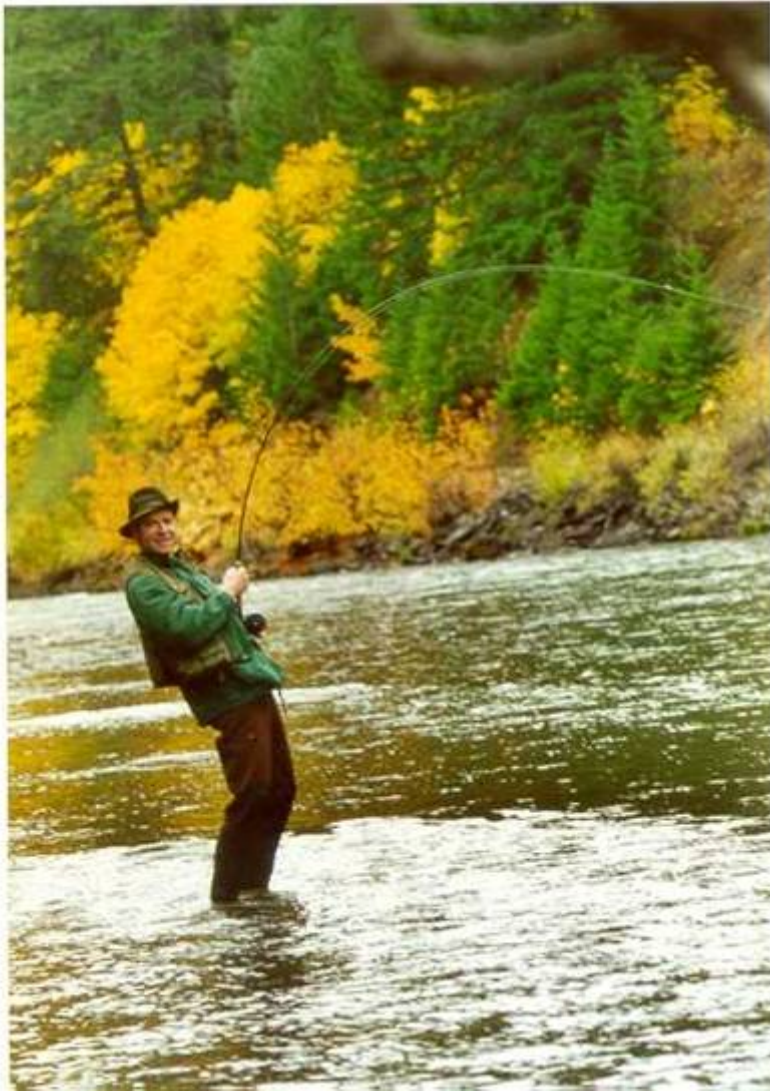
Capture of experimental fish



Trapping



Electric fishing



Angling

Anaesthesia



- Immobilisation
- Reduce pain and stress
- Easy to handle and distribute
- Low toxicity

- Metomidate
- Clove oil
- Benzocain
- 2-phenoxy ethanol





- Position and size of incision
- Position of antenna
- Suture material and method
- Prophylactic treatment?



Typical field surgery setup



Position and size of incision



Tag insertion



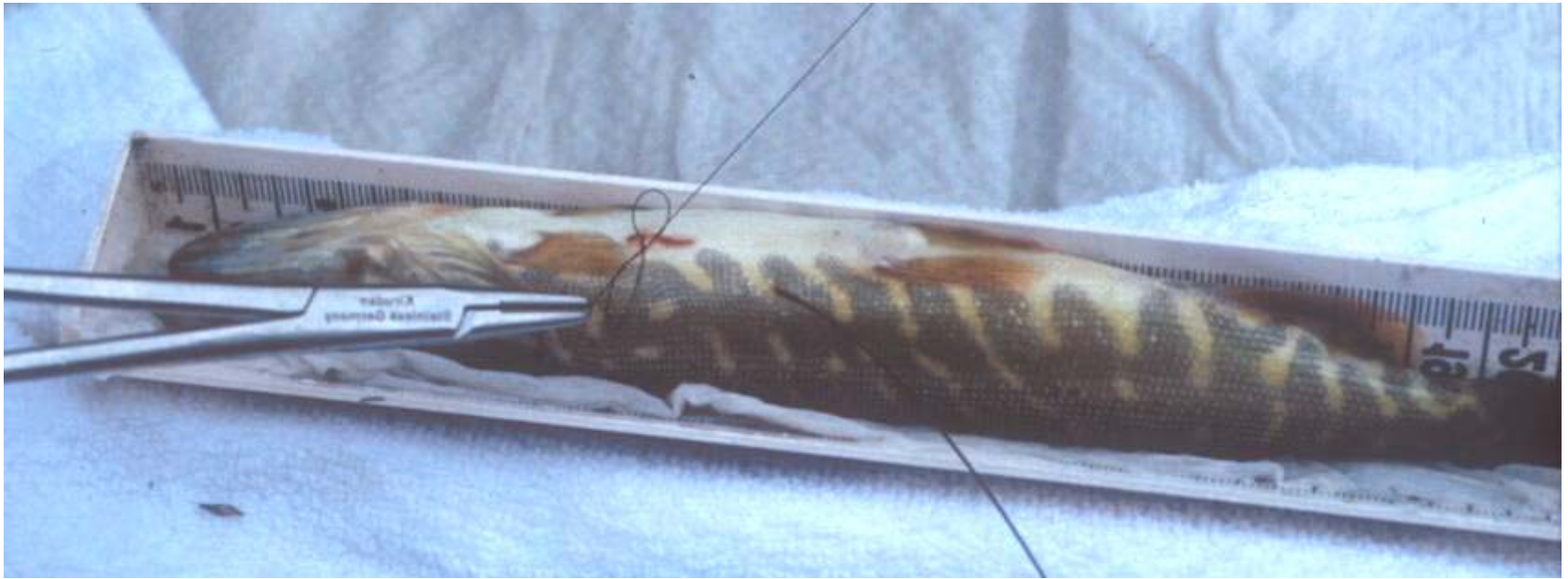
Position of antenna



Trailing antenna can directly cause tissue damage



Closing the incision

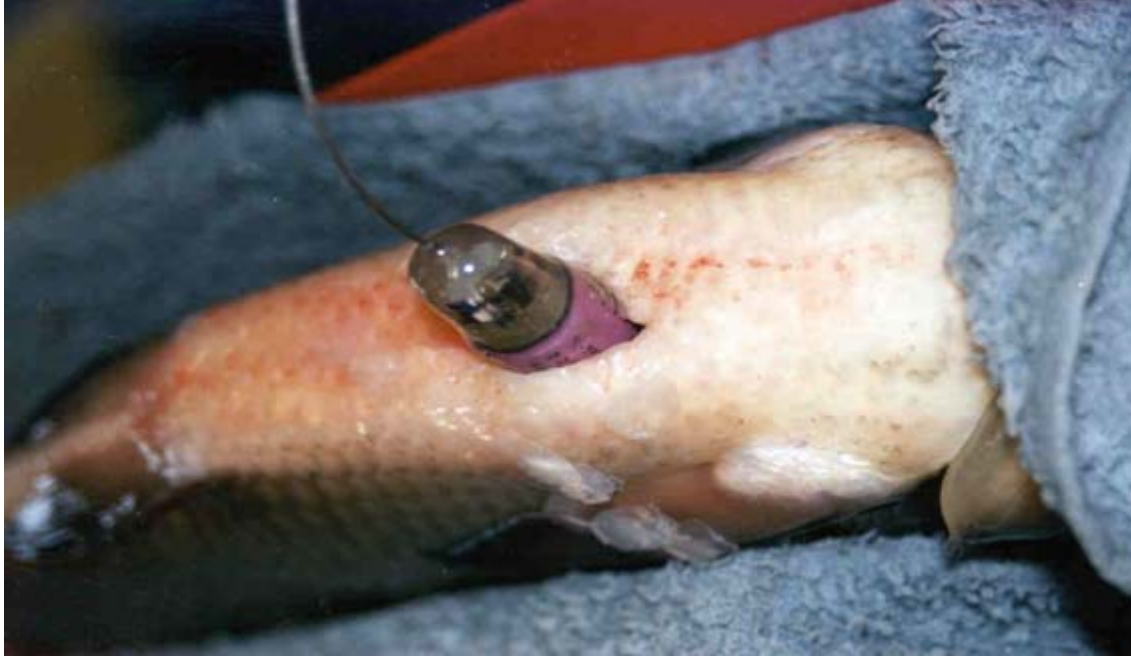


- Not at all
- Absorbable or non-absorbable suture material
- Braided or monofilament suture
- Separate sutures or more complicated patterns
- Staples
- Adhesives



Prophylactic treatment ?

Size and morphology of fish



Common bream



Female pike



Female pikeperch

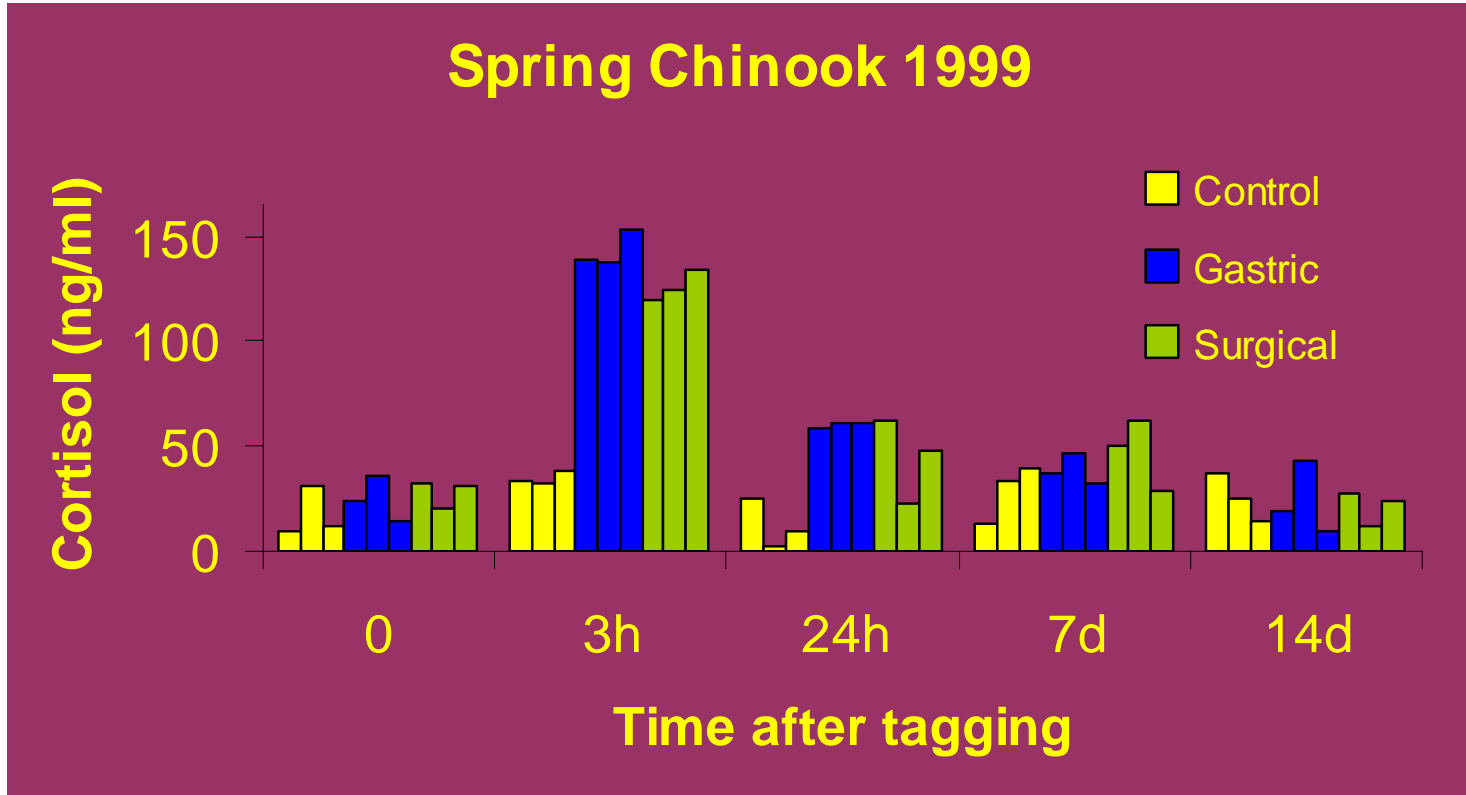


Choice of tag

Behaviour



When is a tagged fish ready to release ?



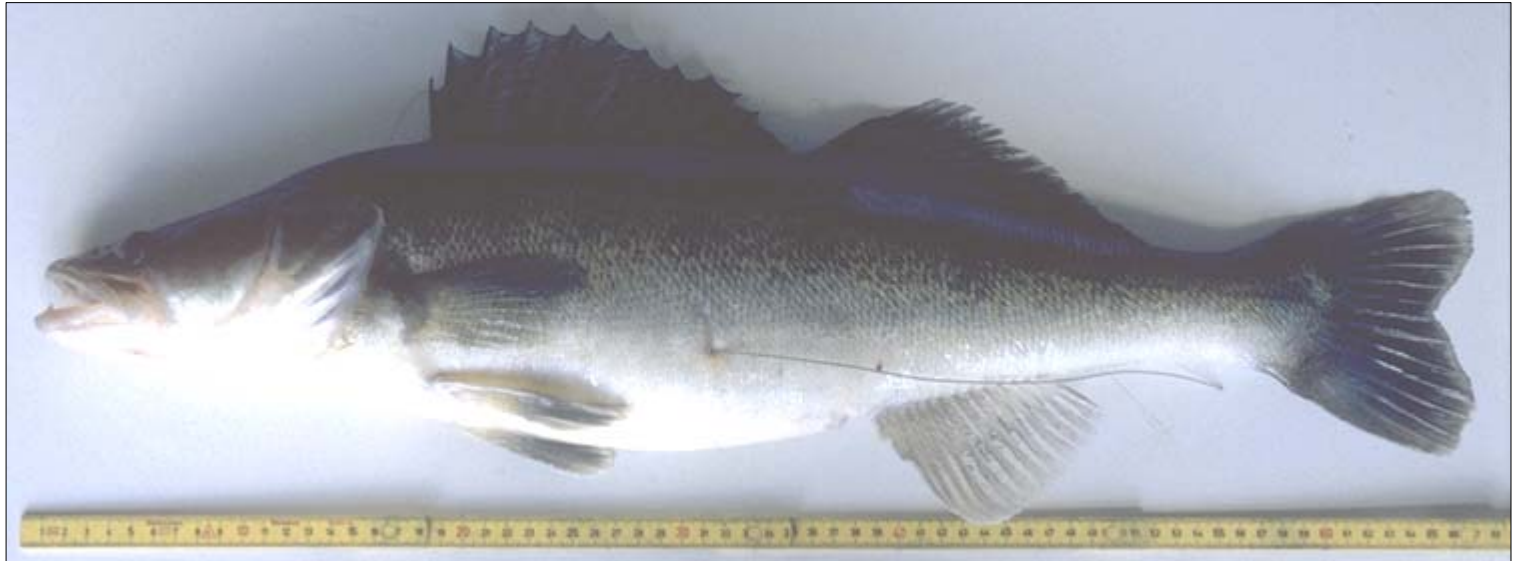
Holding stress ?



Expulsion of transmitters

Evaluation

Recapture of tagged fish provides excellent opportunities for evaluating the methods used.



Pikeperch one year after tagging









Telemetry studies have certainly improved our management of natural fish populations, but:

Is it ethically acceptable to treat wild fish as we do ?

What is the alternative?

Reduce (tag-size, number of fish, handling time)

Refine (capture, handling and tagging methods)

Replace (clean the water and use visual surveillance)

My hopes for the future:

More exchange of experience, also negative

More interdisciplinary work

Better options for funding for methodological studies

Harmonisation of guidelines, not rules

Different regulations for studies of wild fish, with the purpose of species conservation and habitat rehabilitation.