



Evaluation of transmitter application techniques for use in research of adult Eulachon



K.C. Hanson, K.G. Ostrand
U.S. Fish and Wildlife Service, Abernathy Fish
Technology Center

Background



- Scientific literature regarding eulachon is sparse
 - Historical run timing, spawning locations, abundance based on harvest
 - Age at maturity
 - Development of eggs and larvae
 - Composition of eggs
 - Population structure

Research Question



- Are common transmitter application techniques suitable for use on adult eulachon?
 - What are the lethal and sublethal impacts of each technique?
 - Are there any unique concerns with this species?

Methods

- JSATS ultrasonic transmitters are sufficiently small to be deployed on eulachon
- Salmon surgical techniques are well developed
- Unique challenges for use in eulachon
 - Never previously attempted
 - Unknown response to anesthetic
 - Complications from surgery on reproductively advanced fish



Methods

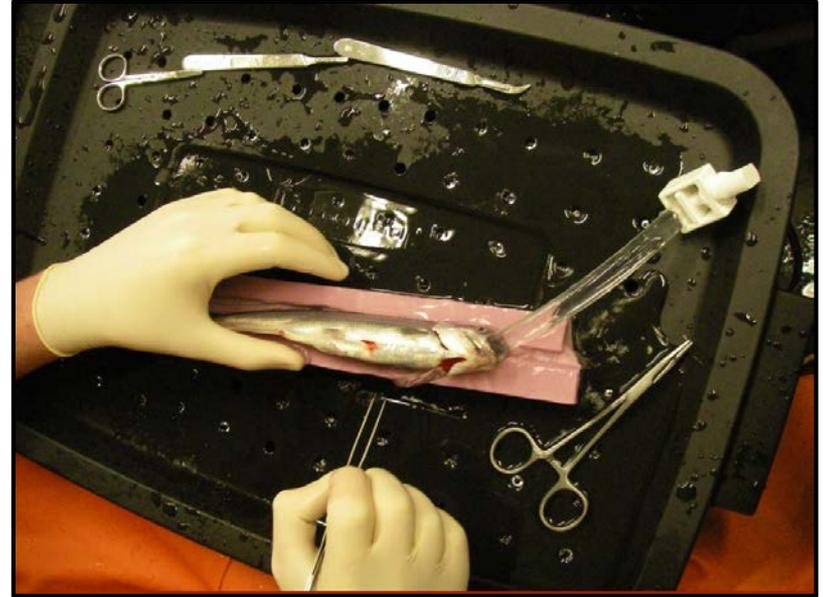
- Adult eulachon captured by Cowlitz Indian Tribe in early February, 2012
 - Fish captured at the mouth of the Cowlitz River via fyke net
 - Fish transferred to AFTC in river water with supplemental aeration
 - Fish separated by sex and placed in wet lab for 24 hour recovery period



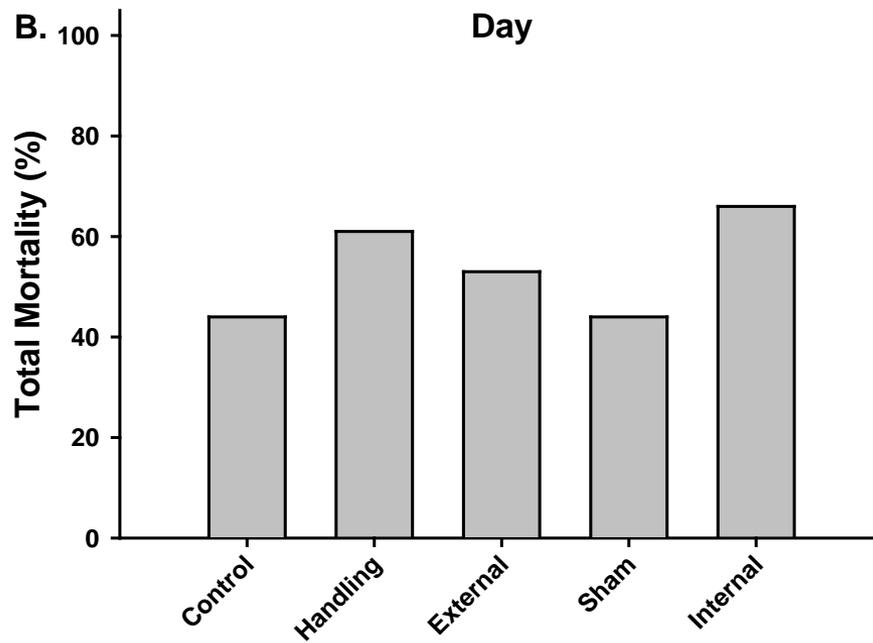
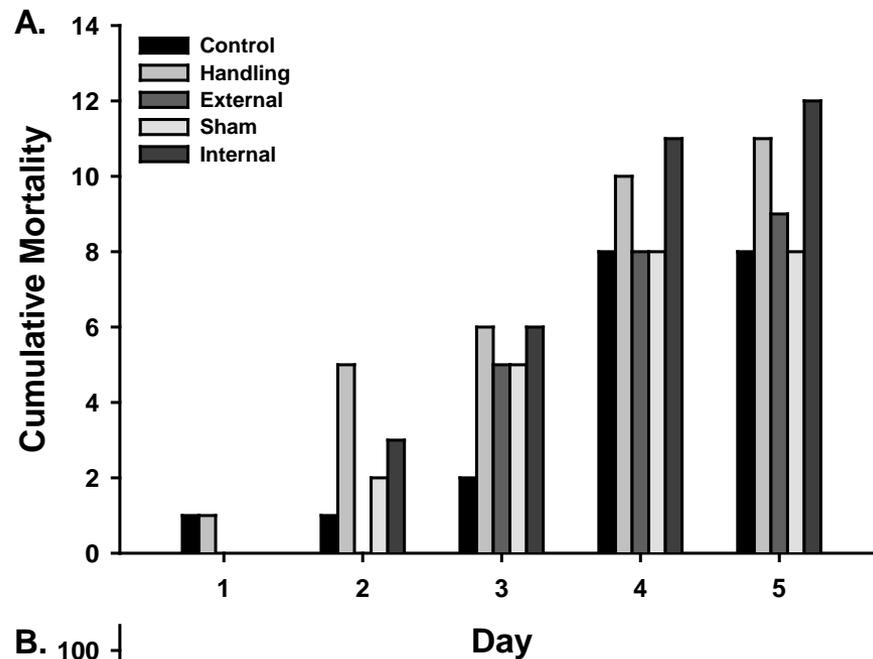
Methods

- Fish separated into five treatment groups (N=18 per treatment)
 - Control
 - Handling control
 - External attachment
 - Sham implantation
 - Internal implantation
- Handling time constant for all groups (2-3 minutes)
- Monitored for 5 days
 - Daily mortality observations
 - External disease screening on day 5
 - Blood biopsy on day 5
 - Plasma ions indicative of stress measured

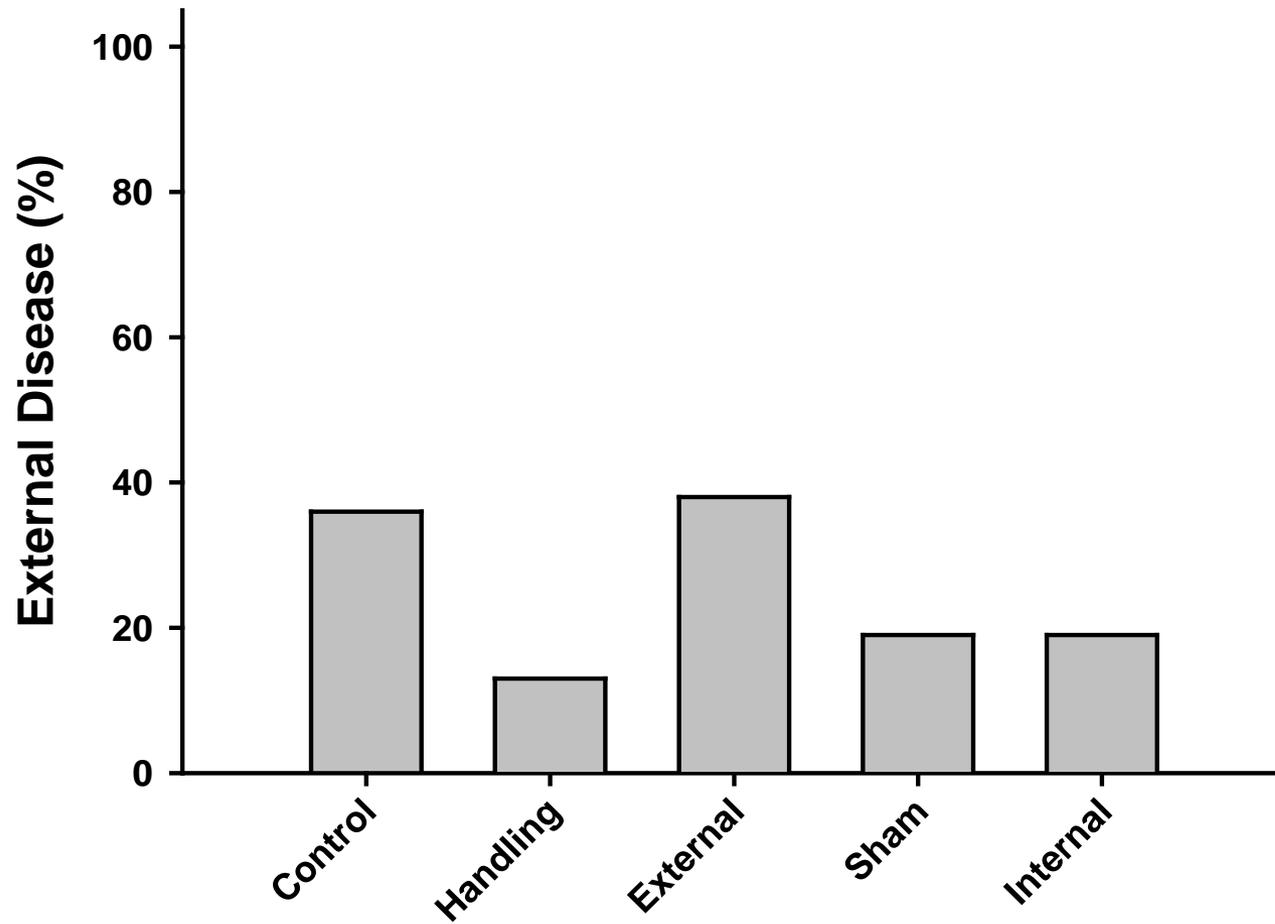
Methods



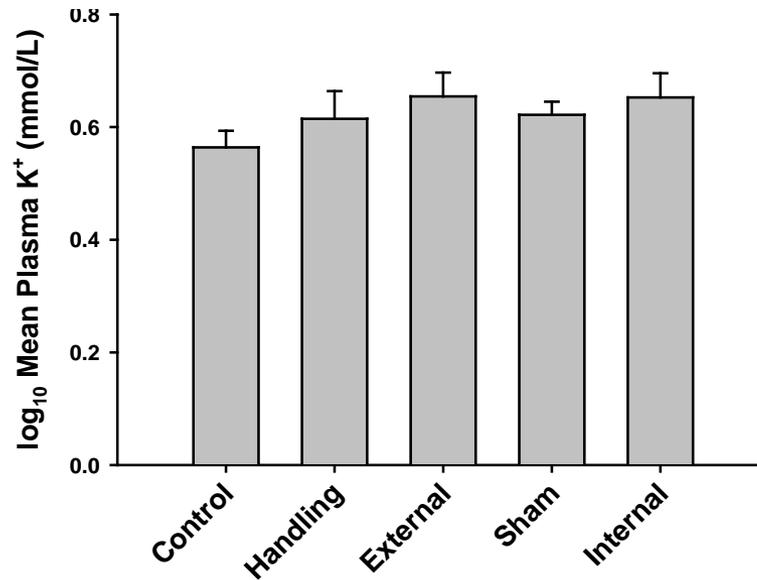
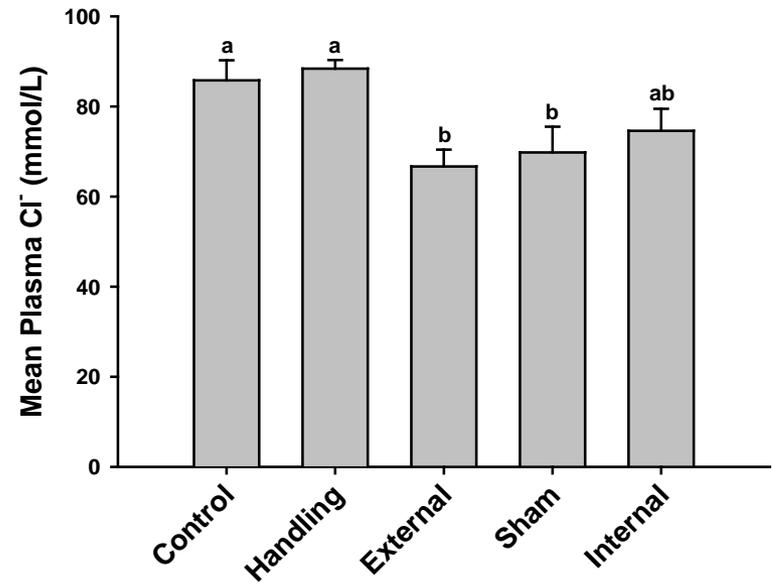
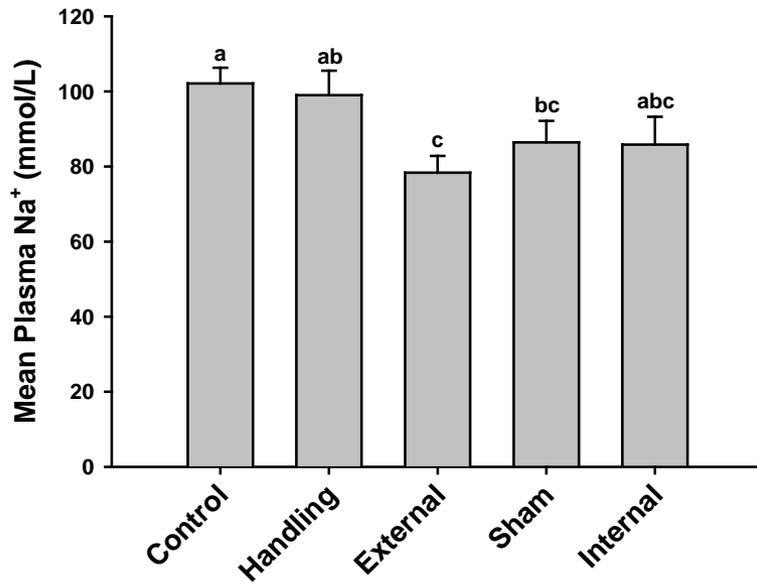
Results



Results



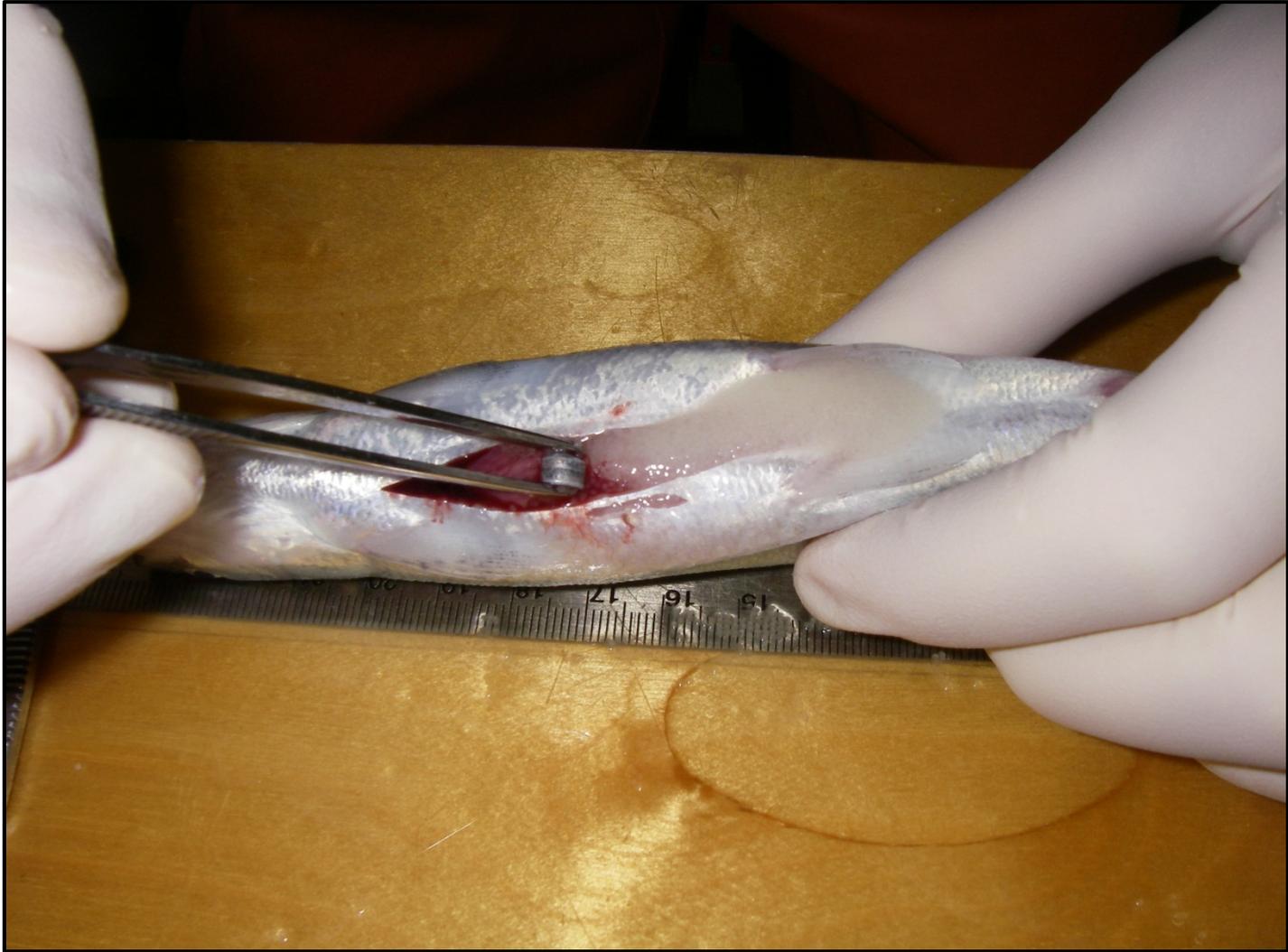
Results



Conclusions

- Eulachon are hardy, survive anesthetic and handling well
- Both internal implantation and external attachment are valid transmitter application techniques
- Sub-lethal stress from tagging procedures must be taken into account
 - Potential effects on recovery and survival in wild
- Sex-based differences make tagging females more complicated
 - Egg loss through incision, placement of tag

Conclusions



Acknowledgements

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“The findings and conclusions in this presentation are those of the author and do not necessarily represent the views of the U.S. Fish and Wildlife Service.”

