WF4313/6613-Fisheries Management

Class 24– Invasives continued

In the news

Announcements

Exam II not graded yet…
Paddlefish Tomorrow!

Management Brief

- Brief- Due 8 am December 5th, he management brief should be no longer than 1000 words and targeted towards the same stakeholders as the presentation.
- Brief presentations-November 28th, The presentation should be short, 5 minutes at most and aimed at an audience of stakeholders. Stakeholders in fisheries may include anglers, angler groups (e.g., BASS), and lake associations. The following rubric provides guidance on how this element will be assessed. Presentations will be held Tuesday November 28th during lab.

Presentation rubric

Scoring Rubric for WFA 4313 Oral Presentations

PRESENCE -body language & eye contact -contact with the public -poise -physical organization	0	2.5	5	7.5	10	12.5	15
LANGUAGE SKILLS -correct usage -appropriate vocabulary and grammar -understandable (rhythm, intonation, accent) -spoken loud enough to hear easily	0	2.5	5	7.5	10	12.5	15
ORGANIZATION -clear identification of objectives -logical structure -clear management implications	0	2.5	5	7.5	10	12.5	15
MASTERY OF THE PAPER -pertinence -depth of commentary -spoken, not read -able to answer questions -application to Mississippi fisheries	0	2.5	5	7.5	10	12.5	15
OVERALL IMPRESSION -very interesting / very boring -pleasant / unpleasant to listen to -very good / poor communication	0	2.5	5	7.5	10	12.5	15

TOTAL SCORE _____ / 75

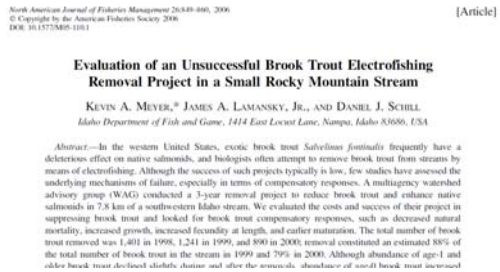
Journals to look in

- North American Journal of Fisheries Management
- Canadian Journal of Fisheries and Aquatic Sciences
- Transactions of the American Fisheries Society
- Fisheries Management and Ecology

Homework Assignment 1

- Due November 15th 8am.
- Find and article and email it to me to check.

Management case study



[Article]

Evaluation of an Unsuccessful Brook Trout Electrofishing Removal Project in a Small Rocky Mountain Stream

KEVIN A. MEYER,* JAMES A. LAMANSKY, JR., AND DANIEL J. SCHILL

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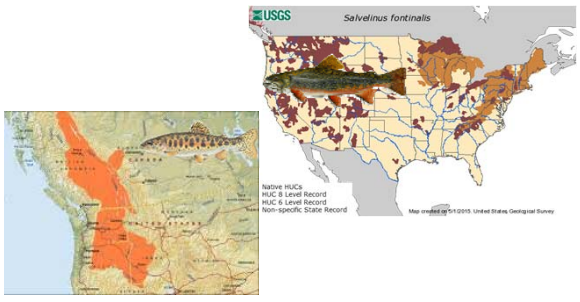
Abstract.—In the western United States, exotic brook trout *Salvelinus fontinalis* frequently have a deleterious effect on native salmonids, and biologists often attempt to remove brook trout from streams by means of electrofishing. Although the success of such projects typically is low, few studies have assessed the underlying mechanisms of failure, especially in terms of compensatory responses. A multiagency watershed advisory group (WAG) conducted a 3-year removal project to reduce brook trout and enhance native salmonids in 7.8 km of a southwestern Idaho stream. We evaluated the costs and success of their project in suppressing brook trout and looked for brook trout compensatory responses, such as decreased natural mortality, increased growth, increased fecundity at length, and earlier maturation. The total number of brook trout removed was 1,401 in 1998, 1,241 in 1999, and 890 in 2000; removal constituted an estimated 88% of the total number of brook trout in the stream in 1999 and 79% in 2000. Although abundance of age-1 and

Brook Trout Eradication

Distribution



Approach

- 2-pass depletion
- Physically remove brook trout captured
- 1998-2002
- Very intensive

Expected effects

What would we expect for a massive removal of the population?

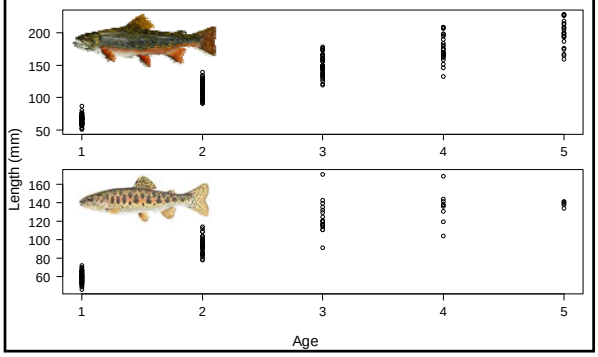
Abundance?

Size structure?

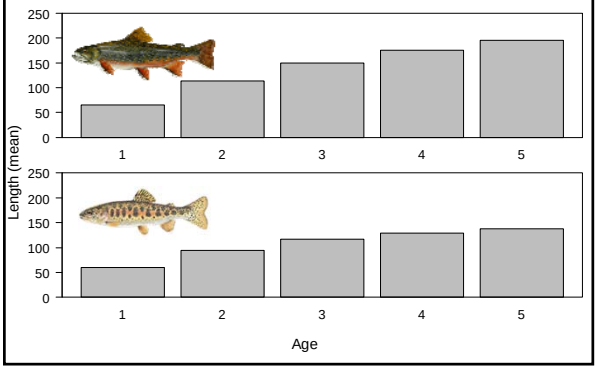
Age structure?

Others?

Expected Growth



Expected Age Structure



Effect of removal?

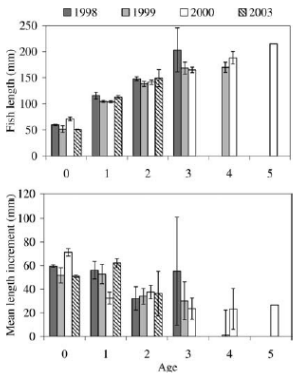
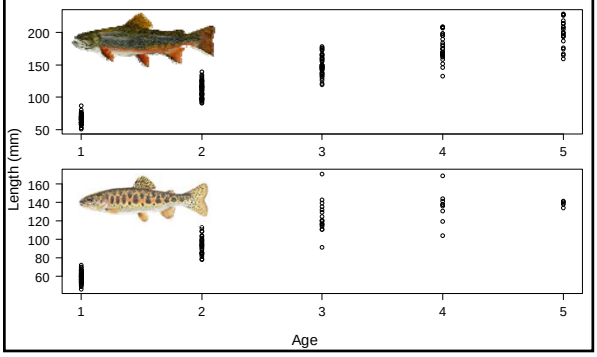
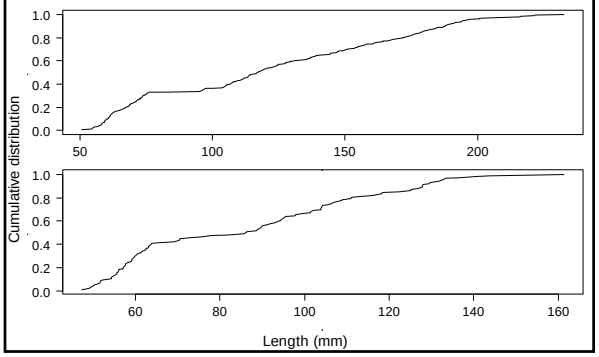


FIGURE 3.—Mean (±95% CI) length at age and length increment for nonnative brook trout removed by electrofishing in Pike's Fork, Idaho, during 1998–2000 and 2003.

Age Structure



Cumulative length distribution



Effect of removal

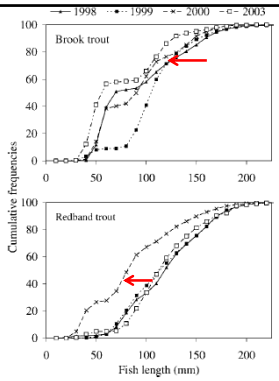


FIGURE 4.—Cumulative length frequencies of nonnative brook trout and native redband trout in Pike's Fork, Idaho, during 1998–2003. Electrofishing removal of brook trout was conducted in all years except 2001 and 2002.

Effect

- Length-weight?
- Fecundity?

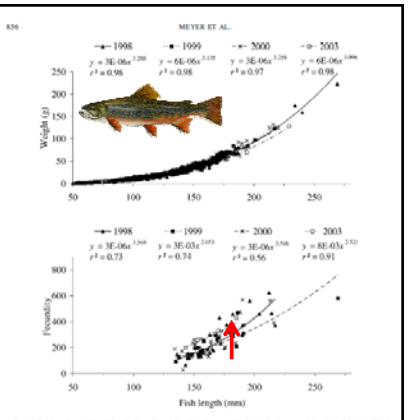


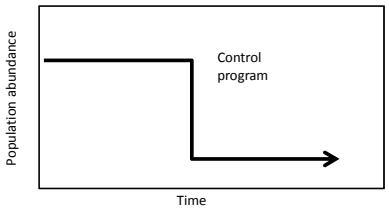
FIGURE 5.—Length–weight and length–fecundity relationships for nonnative brook trout removed by electrofishing in Pike's Fork, Idaho, during 1998–2000 and 2003. Length is total length (mm).

Take home message

- Eradication is rarely achieved, even with extraordinary efforts!
- Mental model versus real model
  - No conceptual or physical model
  - No management alternatives
  - Unintended consequences = compensation
- Control more likely than eradication

Control

- Reduce population to level that minimizes impact



Methods of Eradication & Control

- Chemicals
  - Rotenone, Lampricide
- Physical
  - Traps, nets, explosives, water level, electrofishing, commercial fishing
- Biological
  - Predator & prey, pathogens, daughterless technologies, pheromones

Chemicals

Physical

- Fishing
  - Commercial
  - Recreational

Strategies to Control a Common Carp Population by Pulsed Commercial Harvest

Simulated Population Responses of Common Carp to Commercial Exploitation

Biological

- Predator prey
  Tiger musky & brook trout
- Pathogens
  Koi Herpes virus-carp
- Pheromones
  Lamprey, brook trout

But I really want to introduce a fish…

American Fisheries Society Position (taken from Policy Statement 15)

1. Rationale
2. Search
3. Preliminary assessment of the impact
4. Publicity and review
5. Experimental research
6. Evaluation or recommendation
7. Introduction

Rationale

Reasons for seeking an import should be clearly stated and demonstrated. It should be clearly noted what qualities are sought that would make the import more desirable than native forms.

Search

Within the qualifications set forth under rationale, a search of possible contenders should be made, with a list prepared of those that appear most likely to succeed, and the favorable and unfavorable aspects of each species noted.

Preliminary assessment of the impact

This should go beyond the area of rationale to consider impact on target aquatic ecosystems and general effect on game and food fishes or waterfowl, aquatic plants, and public health. The published information on the species should be reviewed, and the species should be studied in preliminary fashion in its biotope.

Publicity and review

The subject should be entirely open, and expert advice should be sought. It is at this point that thoroughness is in order. No importation is so urgent that it should not be subject to careful evaluation.

Experimental research

If a prospective import passes the first four steps, a research program should be initiated by an appropriate agency or organization to test the import in confined waters (e.g., experimental ponds).

Evaluation or recommendation

Publicity is in order and complete reports should be circulated amongst interested scientists and presented for publication in the Transactions of the American Fisheries Society.

Introduction

With favorable evaluation, the release should be effected and monitored, with results published or circulated.

MANAGEMENT BRIEF

Risk Screening of Arapaima, a New Species Proposed for Aquaculture in Florida

Restoration & Introduced Species?

A critical first step in dealing with a potential introduction is positive identification of the species to confirm the species is nonnative (Fuller et al. 1999).

Best of intentions for species recovery?

Colorado Greenback Trout