

Steelhead Angling Harvest Vulnerability Alsea River

OHRC Advisory Committee

11 March 2013

Steelhead Angling Harvest Vulnerability

David Noakes

Marc Johnson

Ryan Couture

Steelhead Angling Harvest Vulnerability

- Alsea Sportsman' Association (Stan Steele, Marc Davis, other members)
- ODFW (Bob Buckman, Derek Wilson, Matt Frank, Marc Johnson, Michelle Varney, Josh McCormick, others)
- OHRC (David Noakes, Ryan Couture, Joseph O'Neil)
- OSU (Kathleen O'Malley, Michael Banks)
- Anglers, Public, OHRC Advisory Committee, "others"

Steelhead Angling Harvest Vulnerability

- Background (references)
- (some) Theory (genetics, behavior)
- Hypothesis & Predictions
- Experimental Design
- Broodstock
- Fish Marking
- Creel Census
- Analysis and Reporting

Steelhead Angling Harvest Vulnerability

- Background
 - April 2012 – first meeting
 - Alsea Sportsman's Association
 - ODFW, OHRC, OSU
 - ODFW hatchery practice
 - Alsea River steelhead genetics
 - Fisheries management

Steelhead Angling Harvest Vulnerability

- Background

- (A) Bass (*Micropterus* species)

- Dave Phillip et al (Illinois)

- “biting and non-biting” male bass

- (B) Rainbow trout (*Oncorhynchus mykiss*)

- Peter Biro et al (Alberta) and many others

- “behavioral syndromes in trout (and other species”

Steelhead Angling Harvest Vulnerability

- Background

(A) Bass (*Micropterus* species)

Dave Phillip et al (Illinois)

“biting and non-biting” male bass

References available – DropBox (Alsea steelhead anglers) – accept invitation, access references

- Select male parents, breed over 3 generations – produce HIGH and LOW angling vulnerability in successive generations

Steelhead Angling Harvest Vulnerability

- Background

(B) Rainbow trout (*Oncorhynchus mykiss*)

Peter Biro et al (Alberta) and other papers

“behavioral syndromes in trout” (DropBox)

- Growth rate, response to predators, vulnerability to angling, responses to temperature all show differences among individual fish – at least some differences show responses to artificial selection (angling, domestic selection)

Steelhead Angling Harvest Vulnerability

- Theory (genetics, behavior)
- “Differences” – NOT “genes FOR something”
- e.g., “Difference in feeding rate”
 - “Difference in response to predators”
 - “Difference in probability of capture by angler”
- Differences can be assigned to genetic differences between the individual fish

Steelhead Angling Harvest Vulnerability

HYPOTHESIS

Differences in behavior of steelhead (responses to food, temperature, etc., etc.) result from genetic differences between fish.

PREDICTION

IF differences in behavior result from genetic differences **THEN** DIRECTIONAL selection can act on that behavior.

Steelhead Angling Harvest Vulnerability

HYPOTHESIS

Differences in behavior of steelhead (responses to food, temperature, etc., etc.) result from genetic differences between fish.

PREDICTION

Steelhead from parents caught by anglers are more likely to be caught by anglers than fish from parents NOT caught by anglers.

Steelhead Angling Harvest Vulnerability

“hatcheries are breeding out the bite”

This is a testable hypothesis.

Steelhead Angling Harvest Vulnerability

Hatchery Practice (segregated program)

Use returning hatchery fish, from traps, as broodstock for next generation (good reasons for this practice). Fish from traps have NOT been caught by anglers.

BUT

This **COULD** be selecting for fish that are LESS LIKELY to be caught by anglers.

Steelhead Angling Harvest Vulnerability

- **Experimental Design**

- (a) Wild fish as broodstock – expect greater response to hatchery and angling selection
- (b) rear fish at North Fork Alsea hatchery and release as smolts, following standard procedures
- (c) monitor returning adults over at least two (2) successive brood years (4 years for returning fish)
- (d) compare fish caught as returning adults – according to their parents

Steelhead Angling Harvest Vulnerability

- **Broodstock**

- TWO (2) groups
- (a) wild fish, from trap
- (b) wild fish, caught by anglers

MINIMUM – 15 females, 15 males

30,000 smolts from each group of parents

Steelhead Angling Harvest Vulnerability

- **Fish Marking (North Fork Alsea Hatchery)**

- Adipose fin clip
- Maxillary clip
- Coded Wire Tags

(recognize hatchery fish; distinguish fish externally from other North Fork steelhead; CWT examination required to identify parent group)

Genetic sample from all adult broodstock

Steelhead Angling Harvest Vulnerability

- **Creel Census**

- ODFW – Derek Wilson, Bob Buckman
- Intensive angler survey in Alsea River basin, trap sites – over successive years
- Total numbers of returning fish; fish caught by anglers (assigned to parents)

SAMPLE SIZES CRITICAL

- Requests for funding
 - SUPPORT from anglers, “others”

Steelhead Angling Harvest Vulnerability

- **Analysis and Reporting**
- **SAMPLE SIZES CRITICAL**
 - **BROODSTOCK and RETURNING ADULTS**
 - Regular reporting to ODFW
 - Regular reporting to OHRC Advisory Committee
 - Reporting to anglers, other interest groups
 - Presentations at scientific meetings
 - (one or more) Publications in scientific literature

Steelhead Angling Harvest Vulnerability

ANGLER PARTICIPATION – CRITICAL

Wild broodstock caught by anglers - numbers

Capture of returning adult fish - numbers

Broad Support for Project

Funding Support

Steelhead Angling Harvest Vulnerability

“Are hatcheries are breeding out the bite?”

This is a testable hypothesis.

