

MEMORANDUM

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State of Alaska

TO: Frank Van Hulle
Regional Supervisor
Division of Sport Fish
Juneau

DATE: November 24, 1986

FILE NO:

TELEPHONE NO: 747-5355

FROM: Art Schmidt *AS*
Area Management Biologist
Division of Sport Fish
Department of Fish and Game
Sitka

SUBJECT: Steelhead Workshop
Held November 12-14
at Port Townsend,
Washington

The Steelhead Workshop I attended at Port Townsend was my first trip "outside" to attend a workshop or conference in 15 years and was very worthwhile.

I have attached a copy of the agenda which occurred and a listing which includes the names and addresses of most participants. Peter Hahn will also send each participant a listing of active projects and publications for each state attending the workshop. No published document will result from the workshop so I have collected all written materials available at the workshop and am enclosing copies for anyone who is interested or thinks they may become involved with steelhead research or management.

The workshop provided an excellent format for those people active in research/management of steelhead to get together and exchange current information and techniques. The day sessions were primarily devoted to the papers listed on the agenda and discussions of same, with informal evening sessions which allowed free interchange of ideas. Participants came from British Columbia, Idaho, Washington, Oregon, Michigan, Wisconsin, and Alaska. No one was present from California.

The workshop emphasized knowledge of wild steelhead populations and how hatchery production has interacted with wild populations. The State of Washington and Province of British Columbia have the largest active steelhead programs followed by Oregon and Idaho. You know the status of steelhead research/management in Alaska.

I presented a very short paper on our knowledge of Alaskan steelhead stocks and discussed the Alaska Steelhead Workshop we held in 1985. There was considerable interest in our workshop report. I am now sending copies to those who didn't get one, as I only had 15 copies.

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I will briefly discuss the various State/Province steelhead programs with emphasis on what I believe is most relevant to Alaska.

British Columbia

The work being done in British Columbia is obviously most relevant to Alaska because of similarities in watershed, climate, water chemistry, and geographic location.

Research on the Keogh River, a 20-mile long watershed on north Vancouver Island, has been going on for several years. This long-term research program has resulted in several publications which I have requested. The Keogh River produces 2 to 12 thousand smolts annually which have marine survival of 8 to 20%. Smolt age is largely 3 and 4 fresh water. A model is being developed to predict adult return based on size and number of smolt, sex ratio, and ocean age. I was not as interested in this model as the basic life history and survival rates. Survival rates for egg to 1-month fry was 7.3% (range 3 to 25) for 7 years. Fry to smolt survival is 12.5% (range 4 to 25%). One year with high spring flood water resulted in decreased smolt yield for 2 years and adult return for several years. A group of smolt reared in lake net pens were in better condition than hatchery smolts, but survived at less than half the rate of wild smolts.

The other ongoing British Columbia project of great interest concerns the prediction of smolt yield based on drainage area and discharge. This project is being done by Dale Sebastian of the B.C. Fisheries Branch at Victoria, B.C. A four-stage model has been developed which is fairly accurate for predicting fry and parr populations and smolt production when compared to known smolt populations. The work is unpublished at this time, but procedural information is attached. The important aspect of this work is a model which can be used.

Washington

Washington has been forced to conduct active steelhead management/research programs through the Boldt case. The majority of papers presented at the workshop were concerning Washington steelhead. They have established long-term research sites, developed spawner/recruit models, calculated maximum sustainable harvest models, documented wild/hatchery interactions, developed methods to estimate total

escapements from redd counts, etc. All of this is very interesting and should be reviewed prior to anyone in our Department attempting similar techniques. Reference to this literature is included.

One very intriguing study in Washington evaluated the relationship of wild and hatchery-produced steelhead at Kalama River. These researchers were very adamant about not putting hatchery stock on top of wild stock as the genetic viability of wild stock will be lost through interbreeding with hatchery progeny. The following are excerpts from reports on the Kalama River studies.

"Data collected from 1979 to 1982, indicated that wild steelhead <sic> spawners were 270 percent more capable of contributing to the natural production of sub-yearling steelhead in the Kalama River watershed than were hatchery spawners. Evidence is presented which suggests the observed difference between hatchery and wild steelhead, in terms of reproductive success, may be due to: 1) early, non-adaptive spawning of hatchery steelhead, and 2) frequency dependent competitive interaction between fry from wild parents and fry from hatchery parents. Preliminary evidence from smolt data indicates that the reproductive fitness of wild steelhead may exceed the reproductive fitness of hatchery steelhead by 600 percent. "

"We recommend that (1) hatchery spawners should not be used to meet wild steelhead escapement goals, and (2) spawner-recruit models should only include hatchery spawners for improvement of accuracy after attempts have been made to eliminate hatchery fish from the spawning population."

Idaho

Ted Bjornn (University of Idaho) presented a history of what has happened to the Clearwater River steelhead population with eight dams now on the migration path. A Columbia Basin Model for steelhead has been developed and would be of interest to all modelers. Contact Ted for details. Ted presented a population model at MSY which had replacement population of 65k adults from 11k spawners or 78% harvest. Smolt production at MSY was 75% of maximum.

Russ Thurow discussed the parr density estimation done on the Salmon River by diving transects. He also discussed management of wild (hook and release) and hatchery (kill-um) steelhead fisheries in Idaho.

No literature is available from the Idaho work.

Oregon

Nancy MacHugh was recently named "Steelhead Coordinator" for the State of Oregon. Oregon has not done nearly as much intensive investigation as Washington, but are far ahead of us. They have just completed writing a steelhead plan, which is not yet published. I requested a copy when it is available and was able to get an overview of the plan (enclosed). It would be well worth our while to review Oregon's plan prior to adopting our own if such a move is ever made.

Ken Kenaston described the homing of hatchery smolts released to other systems which return to their natal streams. This straying of hatchery smolts decreases the genetic viability of wild stocks.

Mark Wade described what happened to cutthroat populations when steelhead fry were planted into a cutthroat system: 1) The cutthroat population decreased dramatically, 2) a resident population of rainbow developed, and 3) survival of presmolt to smolt steelhead was very low.

It was of particular interest to learn that Glen Davenport (Cold Bay) volunteers to the steelhead project one day each week to do technician work.

Michigan

Paul Seelbach described the population dynamics and characteristics of a wild steelhead population in Michigan. He studied the population for this Ph.D. so had good information. Most of his population information was not too applicable to Alaska, however, i.e. age 1 smolt. Interesting facts include: 1) Four-inch smolt survival to adults was 1% while 9-inch smolt survival to adult was 31%; 2) smolt to adult survival was 20 to 50%; 3) fish that spend 2 years in Lake Michigan return to stream at 25-inch length; and 4) there are about 200 thousand steelhead caught from Lake Michigan including both natural and hatchery production.

S WAYLAND
Director



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STATE OF WASHINGTON
DEPARTMENT OF GAME

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MEMORANDUM

DATE: AUGUST 21, 1986

TO: POTENTIAL STEELHEAD WORKSHOP PARTICIPANTS

FROM: PETER HAHN

SUBJECT: WORKSHOP ON STEELHEAD TROUT RESEARCH AND MANAGEMENT NEEDS & RESULTS

I am proposing November 12-14 for a workshop on state-of-the-art research results and techniques, theories and management practices for winter and summer steelhead trout. Some time may be spent on coastal cutthroat trout and Dolly Varden/bull trout. I envision two half days, one full day and two evenings of a combination of formal presentations (50%) and informal group discussions (50%). The time for informal, detailed discussions is one of the primary reasons for this special workshop limited to 15 to 25 persons. I want us to get into the nitty gritty details of what we know, will know shortly, and what we still need to know about MANAGING steelhead trout, (primarily wild stocks but obviously this is intimately related to management of hatchery stocks). Our research is the means to improve our management, therefore I expect that research results will be the nuts and bolts of our discussions.

I propose that the meeting site be at the Fort Warden facilities in Port Townsend, Washington. I can arrange for visitors from the north to be picked up at the Port Angeles ferry terminal. Perhaps those of you flying to Seattle could share a car from the SEATAC airport. The Fort Warden State Park conference center has grand old "officer's houses" that will sleep up to 9 people each and cost approximately \$20.00 per person per day. Each has a living room and dining room that is excellent for our informal evening discussions. Meals are provided for \$11.25 per person per day. Meeting rooms are nearby. I would like all of us to stay together so as to enhance the informal, detailed discussions.

I have scheduled the meetings from 1:00 pm Wednesday Nov. 12 to 12:00 noon Friday Nov. 14. If people want to come early or stay later, at least two of us will have boats for salmon fishing. Tennis is available if it is not wet. The park offers hiking on beaches and old World War II gun emplacements. Call me for accommodation options (some very cheap, as in free) if you want to stay longer.

Please let me know if you will come. Also let me know who else you think should come (go ahead and discuss the meeting with them to see if they are interested).

Nearly every person should be prepared to give at least one formal, relatively brief presentation (slides etc.) so propose a title(s) and include a short description and get it to me by September 15. I will arrange the presentations into some logical order and let you know how much time you will have (estimate what you need). I will not require a written paper nor will there be any sort of "publication" resulting from the workshop (other than a summary letter from me and ACTION from all of us in our future research and management directions). However, be prepared with handouts or copies of your own publications or data because I know that much of the current information we will be discussing is very data intensive. Remember, the objective is to push the bounds of our knowledge and to share our latest techniques and analyses so that we all benefit from what others are doing.

We will have at least two IBM or COMPAQ microcomputers available (a IOMB Bernoulli box, LOTUS, BASIC and FORTRAN compilers can also be made available) in case any of you have been able to afford to work in the 20th century.

Some examples of presentations (titles may change, I proposed these just to set the tone):

- Thom Johnson, "Steelhead parr densities and Potential Parr Production Index for western Washington rivers."
"Snow Creek steelhead life history update; survival rates, carrying capacity..."
- Bill Freymond, "Measuring steelhead spawning escapements, techniques for large and small rivers."
- Randy Cooper, "Exploitation and escapement of hatchery steelhead trout in two small Washington rivers."
- Peter Hahn, "Multi-river, standardized, steelhead stock recruitment analysis for setting escapement goals."
- Bruce Ward, "Keogh River, British Columbia steelhead life history/production/survival update."

So, let's see some enthusiasm and titles for your presentations. I look forward to the brainstorming sessions.

List of invited participants to the 1986 workshop on steelhead research & management:

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Ron Ptolemy
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Steve Pettit
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UNIVERSITY OF OREGON

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UNIVERSITY OF WASHINGTON

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ADFIG

Art Schmidt

*We can afford him
on salary so send
him to become
learned. Don*

*we
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