



COLUMBIA RIVER INTER-TRIBAL FISH COMMISSION

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MEMORANDUM

TO: Commissioners
FROM: Marianne M. McClure
DATE: August 19, 2003
SUBJECT: Brief Summary of Mass Marking and Selective Fisheries

What is “mass marking”?

- Generally, it is the application of any “mark” to an entire release group.
- Specifically, “mass marking” is often used to refer to adipose clipping all or most of a release group of steelhead, coho, or chinook salmon, without also injecting a coded-wire tag.

Types of “mass marks”:

Any mark and/or tag that can be reliably applied, not lost through time, and later detected is a potential “mass mark”, including:

- fin clips, such as the adipose or ventral fin clip,
- injected wire tags (can now be used alone as a “mark” in conjunction with electronic sampling, e.g. Klickitat fall chinook production),
- pit-tags,
- thermal otolith marks, and
- implantable visible tags or elastomers (e.g., Lyons Ferry fall chinook).

Selection of a particular mass mark is based on the interaction of

1) Attributes of the mark

- Size of fish it can be applied to
- Mortality and stress imposed by marking/tagging
- Visibility
- Whether fish has to be sacrificed to determine mark
- Cost of application

- Speed of application
- Cost and speed of recovering information
- Ability to coordinate use with other agencies and competing uses

AND

2) Objectives of marking

- Harvest management
 - According to proportion of marked fish in run at any time
 - Selective fishing
 - Selective catch and release of marked or unmarked fish
 - Shaping a fishery in time or space to target or avoid marked fish
 - Sorting catch to release non-target species

(Canadians, especially, use the term in these last 2 ways)
- Management of broodstock or natural spawning (e.g. spring chinook at Warm Springs NFH)
- Evaluation of supplementation or straying (e.g. Nez Perce Hatchery coho studies)
- Regulatory compliance. Since about 1992, NMFS has required all hatchery production of chinook in the Snake River basin to be “mass-marked”, as a prerequisite for “no jeopardy” biological opinions.

Adipose clip mass-marking for the objective of selective fishing

Advantages of using the adipose clip “mass-mark” for selective fisheries:

- Adipose fin excision can be done on the smallest juvenile salmon fry, while many other marks require fish to be larger
- The adipose clip is easily, immediately, and visually identifiable
- Sport fishers are aware that the ad-clip “means” harvestable hatchery fish because of its use on hatchery steelhead for many years.
- The adipose clip imposes little mortality, and less stress than other visual marks (the otolith mark is the most benign, but it is not immediately visually detectable)
- Adipose clipping is fast and cheap compared to other marks, especially since the development of automated equipment.

Disadvantages of using the adipose clip for mass marking include:

- Making the clip unavailable for other competing uses, such as its long standing use to signify the presence of a coded-wire tag.
- Redirecting limited financial resources to purchase of marking equipment, mass marking operations, and electronic detection equipment now necessary to detect coded-wire tags.
- Loss and/or disintegration of the information from the existing coded-wire tag system because of difficulties replacing visual sampling with adequate electronic detection sampling.

Other difficulties with mass-marking for selective fisheries are more intrinsic to actually implementing selective fisheries than to using the adipose clip as the particular mass mark. Two of the major issues with implementing selective fisheries are:

- Loss and/or disintegration of the information from the existing coded-wire tag system, including fishery specific exploitation rates, because the harvest of CWT fish is no longer representative of the harvest of unmarked fish.
- Reallocation of the conservation burden to terminal areas, due to successful selective harvest, and concentration of protected stocks in terminal fisheries that are then constrained by harvest limits for those stocks.

Additional issues with implementing a new “selective” fishing regime:

- Lack of monitoring and analytical tools to evaluate impacts of incidental mortality and multiple encounters.
- Lack of data and inability to model new regulatory constructs (such as a “mixed bag limit” – 2 total, with at least 1 clipped, etc.)
- Lack of data and inability to model fisher’s behaviors, which will range from total non-compliance to voluntary release of all fish with adipose fins, to voluntary catch and release, depending on individual perceptions and beliefs.

These issues are not likely to be overcome without significant investments of time and money (to monitor fisheries, collect data, and develop analytical tools), neither of which appear to be allocated to dealing with the outcomes of selective fishing, even though significant resources are being applied to obtaining marking equipment and mass marking production.