Description of Selective Fisheries
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What is selective fishing?

- Selective fishing is the ability of a fishing operation to avoid non-target species or stocks, OR when encountered, to release those animals alive and unharmed.
    - No fishery can operate with 100% live release
    - Goal is to use best fishing practices with low release mortality rates
- The two components of selective fishing, avoidance, and live release, are managed very differently.

Goals of Selective Fisheries

- Minimize take/mortality of wild or ESA-listed fish
- Minimize by-catch
- Maximize harvest of hatchery/target stocks

Avoidance Selective Fisheries

- Time, Area, Gear selective (TAG)
- Fisheries using time, area, and/or gear regulations to minimize by-catch while targeting a specific species/stock

Examples of Time Selective Fisheries

- Spring Chinook sport and commercial fisheries prior to 2001
    - Closed March 31 to avoid upriver Chinook
- Fall commercial coho fisheries
    - Focused on peak of coho run in October
    - Most of Chinook and steelhead past fishing area
    - Closes prior to major chum migration time frame
- Sturgeon sport fishing sanctuaries

Examples of Area Selective Fisheries

- Spring Chinook sport and commercial fisheries prior to 2001
    - Closed below I-5 Bridge to avoid upriver Chinook
- Commercial shad fishery
    - Focused on small area downstream of Bonneville where shad are abundant and easily harvested
- SAFE fisheries – sport and commercial
    - Terminal areas with mostly hatchery fish present
- Mainstem fall fishery – commercial
    - Focused above Lewis River to avoid lower river tules

Examples of Gear Selective Fisheries

- Various mainstem sport fisheries
    - Gear use associated with target species
- Winter season commercial fishery – early 2000's
    - Large mesh gillnets in February
    - Target lower river hatchery spring Chinook
    - Avoid winter steelhead
- Commercial coho fishery
    - 6 inch mesh targets coho and avoids Chinook
- Commercial summer/fall Chinook fisheries
    - Large mesh nets avoid steelhead and sockeye
- Sport and commercial sturgeon fisheries
    - Specific gear to target sturgeon (bait on bottom and 9 inch gillnets)
- Mesh size is a common tool for selective fishing
    - 4 1/2 inch mesh targets sockeye
    - 6 inch mesh targets coho
    - 8 inch mesh targets Chinook
    - 9 inch mesh targets Chinook and sturgeon

Success Story Commercial shad fishery

- Gear restrictions were changed in 1996 based on information from monitoring
- Regulations currently are:
- Mesh size – 5.75 – 6.25 inches
    - 10 lb breaking strength
    - 40 meshes in depth
    - 150 fathoms in length
- The shallow and shorter nets substantially reduces the handle of salmonids compared to gear used prior to 1996

Time, Area, and Gear Selectivity

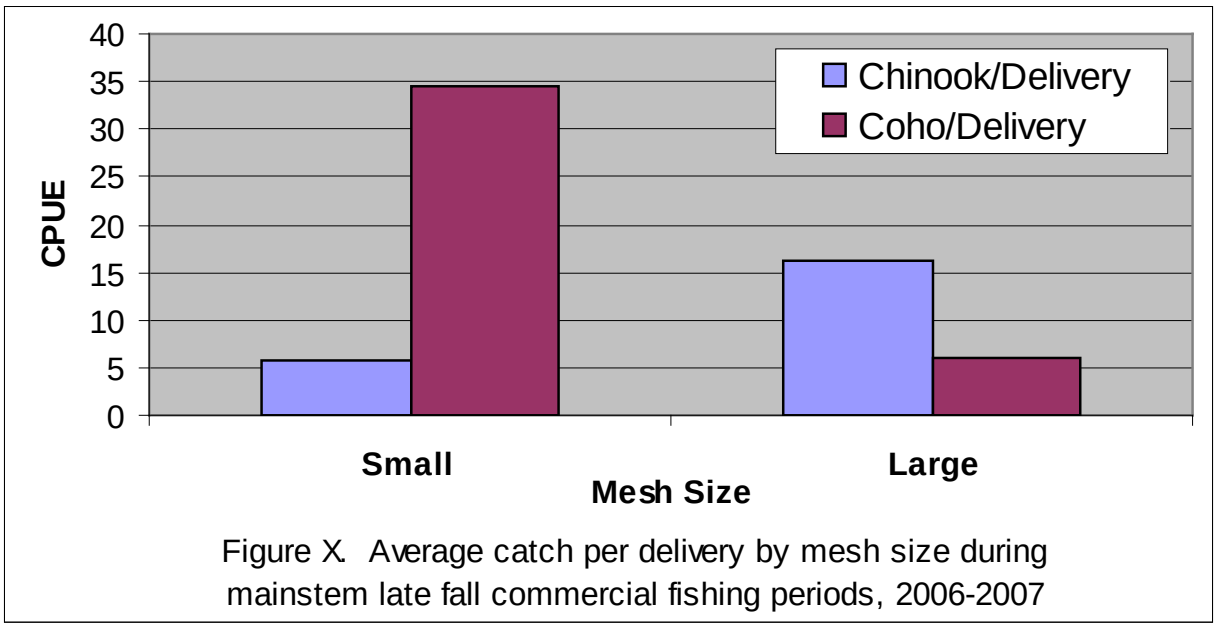

Figure X. Average catch per delivery by mesh size during mainstem late fall commercial fishing periods, 2006-2007

Live Release or Mark-Selective Fisheries (MSF)

- Live release fisheries release non-target fish alive or with low mortality rate
- MSF target fin-marked hatchery fish and release non-marked fish
- MSF are most effective when the mark rate is high and the release mortality rate is low
- The number of mortalities associated with a MSF is a product of the number of fish handled and the release mortality rate
- The same number of mortalities can result from two different gear types
- Example:
    - Purse seine handles 1,000 steelhead at 2% mortality rate = 20 mortalities
    - Large mesh gillnet handles 52 steelhead at 38.3% mortality rate = 20 mortalities

Examples of Mark-Selective/Live Release Fisheries

- Mainstem spring/summer Chinook sport fisheries
- Tributary spring Chinook sport fisheries
- Mainstem and tributary coho sport fisheries
- Mainstem and tributary steelhead sport fisheries
- Commercial spring Chinook tangle net fishery
- Commercial coho tangle net fishery
- Experimental seine fisheries

Historical Selective Fishery Management

- Time, area and gear management has been used in the Columbia River for decades in the commercial fishery
- 1878 – Oregon Fish Commission established its first gear regulation

- 1917 – Purse seines prohibited in the Columbia River
- 1923-1949 – whip seines, fish wheels, haul seines, traps, set nets prohibited
- 1938 – area closures around Bonneville Dam

Conclusions

- Many types of selectivity exist
- Regardless of selectivity, all mixed stock fisheries impact ESA-listed stocks to some degree
- The cumulative affect (total ESA impact) is more important than the incremental (release mortality rate) affect when determining total impact of a gear/fishery on listed stocks
- Need to consider harvest/value of fish per impact and efficiency of gear
    - Fishery needs to be economically feasible
- Gear can be selective for one species but not another
    - Large mesh gillnets avoid steelhead but target Chinook, so the gear is selective for avoiding steelhead but is non-selective for releasing wild Chinook
- Refining time, area, gear selectivity is a trial and error process