Estimation of Percentages for Listed Pacific Salmon and Steelhead Smolts Arriving at Various Locations in the Columbia River Basin

“A very precise estimate of questionably accurate numbers”

The Questions

When will the 2011 Estimation Memo be done?

Next week (March 5-9, 2012)

Where do those numbers come from?

Collect Information

Adult counts
Juvenile counts
Redd counts
Hatchery release information
Fish guidance efficiency estimates
Survival estimates

Primary Data Sources

Streamnet
Fish Passage Center
Agencies –
- NOAA Fisheries
- IDFG
- ODFW
- WDFW

Calculating Estimates

Different methods for different species depending on the available data.

Estimates are developed from upstream to downstream

Estimates developed for:

- listed and unlisted wild fish
- listed and unlisted, AD-clipped and non-AD clipped fish

Calculating Estimates

Wild spring Chinook salmon
Lower Granite Dam

redd count (5 yr average)
x estimated fecundity rate
x estimated egg-smolt survival rate

= estimated number of wild smolts

Calculating Estimates

estimated number of wild smolts outmigrating

+ estimate of hatchery reared fish

= estimated total outmigration to the first dam

Calculating Estimates

estimated outmigration to the first dam

x estimated survival rate

+ estimated additional hatchery fish

+ estimated additional wild fish

= estimated outmigration to the next dam

Calculating Estimates

Wild subyearling Chinook salmon

Lower Granite and McNary Dams

past years juvenile count
x % change in adult count
/ estimated FGE
= estimated wild count

Calculating Estimates

Sockeye salmon

Lower Granite Dam

multi year average of wild sockeye count
+ (hatchery releases x survival estimate)
= estimated total sockeye to Lower Granite

Calculating Estimates

Steelhead

Lower Granite Dam

past year juvenile count
x % change in adult count
x % outmigration estimate
/ estimated FGE
= wild count to LGR

Calculating Estimates

Steelhead

Lower Snake River Dams

Lower Granite estimate
x survival estimate
+ additional fish
= estimate to next dam

Calculating Estimates

Steelhead

McNary Dam

Ice Harbor Dam estimate
+ Priest Rapids Dam estimate
+ Yakima River estimate
+ Walla Walla River estimate
= wild estimate to McNary Dam

Calculating Estimates

Coho salmon

hatchery release estimates
(above Bonneville Dam)

+ natural production estimates
(above and below BON)

= estimated outmigration

Calculating Estimates

Chum salmon

Lower Columbia River

redd counts
x fecundity estimate
x egg-smolt survival estimate
+ hatchery release estimate
= estimated outmigration

Calculating Estimates
Summary

use whatever data is available for upstream
wild fish estimates
add estimates of hatchery releases
factor in survival estimates and
fish guidance efficiency estimates

Calculating Estimates
Summary

estimates cascade downstream from dam to dam,
reduced by survival estimates
increased by the addition of hatchery
and/or wild fish populations

Calculating Estimates
Summary

Below Bonneville Dam

add transported fish back in

add additional hatchery and wild fish

Data

I’m always looking for better data for the memo

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Questions?