# Modeling Grays Harbor Net Fishery and Washington North Coast stock BkFRAM Abundance

Problem: Grays Harbor stocks (Chehalis, Humptulips) are part of the WA North Coast stock aggregate which is represented by Queets tag groups. Although a large portion of the Grays Harbor net catch consists of the local stock, the model is not capturing this, because there are no Queets recoveries in this fishery. Due to fishing location, the treaty fishery is assumed to be almost exclusively local stock, whereas the non-treaty fishery is assumed to have some non-local stock model impacts. The Grays Harbor model uses *XXX (3.2%?)* non-local impacts in the non-treaty fishery. Currently, FRAM projects a 22.5% model-stock proportion in treaty/non-treaty combined. Since the actual model stock proportion is probably close to 100% and zero Grays Harbor impacts are assessed, at least 77.5% should be allocated to Grays Harbor local stock.

We need to find a method that correctly allocates non-local model stocks while accounting for actual Grays Harbor abundance.

Solution:

Assumption: True model stock proportion in Grays Harbor Net = 100%. Therefore any Chinook not assigned to non-local stocks are Grays Harbor Chinook. This is the same as non-model stock proportion, because there are 0 WA N.Coast recoveries.

Provide Grays Harbor Terminal Run Size as : Escapement + FW Catch + (Grays Harbor Net \* Non-Model Stock Proportion)

Example:

Model Stock Proportion in GH Net = 20%

Grays Harbor Net Catch = 100

Grays Harbor Escapement to Freshwater= 400

Grays Harbor Net Catch Local Stock = 100 \* (1-0.2) = 80

Grays Harbor Net Catch Non-local (but model stock) = 100 \* 0.2 = 20

Grays Harbor Run Size For FRAM = 400 + 80 = 480

No further adjustments to modeling are needed. The net catch of 80 is only accounted for once by adding to escapement. The model will assign this catch to non-model stock proportion where it will not impact exploitation rate calculations.