Osoyoos dead pitch data questions and comments

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# Location

1. Is direction important between sampling reaches? E.g., Is “VDS 17 to VDS 16” the same as “VDS 16 to VDS 17”?
2. Possible that more sampling reaches can be further consolidated. Needs review. Low priority as (as far as I can tell) these data aren’t necessarily being used in the current analyses.

# Dates

1. How the sampling data reflects the wild populations varies between years. On a year-by-year basis I used day-of-year values to calculate some summary statistics on this topic: 1) number of days between the first and last sampling day of the year, 2) Standard deviation of the sampling dates, and 3) total number of unique sampling dates.
   1. I just have these data sitting to the side for now. This reminds me a lot of Scott’s ATS analyses – wondering if some spawner data can (or should?) be up/downweighted using some of these data.

# Sex

1. What to do with Jacks? I was thinking these could be either discarded entirely, or retained but add another binary factor for jack status (i.e., y/n).
2. What to do with large numbers of fish of unknown sex? So far I am keeping them.

# Size

1. Using POH measurements, I have converted all length data into fork lengths (FLs). If fish had both FL and POH data, I simply chose the existing FL data without calculating anything. Using the subset of fish with both POH and FL data, I performed a regression to estimate the relationship between POH and FL. I then used this regression to estimate FLs for the large number of fish with POH values only.
2. Size data needs some review. For example, some dead pitch fish have a FL of only 150mm – is this realistic? The FL distribution (especially in 2016-2018) seems to have larger numbers of small dead pitch (<200mm FL). Perhaps these are Jacks without being identified as such? Note that these fish are mostly males, but not entirely. Not sure what to do with these fish as they give very low (sometimes negative) fecundity estimates.

# Age

1. In 2018 a lot of ages (n ~ 430) are only entered as **Total Ages** (although they’re erroneously in the **European Ages** column). So far, I have just turned these into NAs; however, I’m wondering if data exist somewhere that might help resolve these ages or convert them into the European style?

# Origin / Otolith thermal marks

1. What does *NS* mean? Not sampled? Currently I’m turning these into NAs.
2. What does thermal mark 0 mean? I suspect that it means no data as there are no entries of 1.

# Weight

1. Some smaller weight estimates need review. For example, one dead pitch fish is 56.8g and is male, therefore perhaps this fish is a jack? The other fish is 75.4g and is female – is this a reasonable spawner (dead pitch) weight? Seems unusually small.

# Fecundity

1. Are there more data? My fecundity estimates (from broodstock collection) end at 2016 and I assume post-2016 fecundity data exists somewhere. All I have is from Margot Stockwell’s files.
2. Get Athena to check my methods. I used the broodstock FL to fecundity (number of eggs) data and performed a linear regression (in R: *lm(eggs ~ FL, data = broodstock);* n = 413) to quantify the relationship between female fork length and fecundity. I then used this regression equation to estimate the fecundity of each dead pitch female with estimated FL values (see *Size - item 1*). This seems to work reasonably well, except for some of the fish below about 200mm which provide negative estimates for fecundity (same fish identified earlier, see *Size - item 2*).
3. Two ANOVAs suggest that both fork length and fecundity vary significantly between sampling years (although this might be the result of the smaller-than-expected 2016-2018 fish – needs checking). Therefore, should the fecundity estimates (based off fork length data) be estimated on a year-by-year basis? The Skaha paper (Hyatt et al. 2017) uses a pooled approach.