

Reviewer's comments

Dear authors,

First of all I apologize for the delay of my review.

I think that your paper is original and globally well written. This study is very interesting because it proposes a new approach for gathering data on fish populations. You showed here that the proportion of precocious young salmon is highly variable each year which is an important demographic feature of the populations. I really support such approach that makes field measurements more reliable.

In the comparison of phenotypic and ultrasound methods (Li158 – 178) it is difficult to understand clearly how environmental factors, which play an important (significant) role on precocious sexual maturation in young salmon, may influence the accuracy of each method. You presented results on the “probability to produce milt”. But your objective was to compare two different approaches for detecting the precocious state, not the drivers for this precocious state. You have to clarify the link between the “probability to produce milt” and the accuracy of each approach in rightly estimating if a salmon is a precocious individual.

You detected a strong year effect. That means that among the three sampling years the proportion of precocious salmon was highly variable. How this variability was assumed to influence the accuracy of both methods? One option could be to split your Table 1 in three parts, i.e. the same three lines repeated for 2015, 2016 and 2017.

some minor comments

Li4: Your title is short. You can add some words. Here is a proposition:

Field assessment of precocious maturation in salmon parr using ultrasound imaging

Li26: Atlantic salmon **parr**

Li29: in the wild **such as individual sexual maturation.**

Li40: in the future **under different climatic scenarios.**

Li40: , predictive **population dynamics** models

Li44: monitoring programs **without invasive or lethal methods.**

Li57: empirical studies **and in salmon population dynamics models.**

Li69: milt (**sperm**)

Li71: ~~However,~~ Hence,

Li86: young salmon (**i.e. < 2 years**)

Li118: ~~oriented~~ moved (?)

Li124: use the same than Li158

Li126-127: how did you calculated the probability?

Table 1: see before (split in three parts ; one for each year of sampling)

Figure 1: The figure 1 could be divided in two columns: left = phenotypic view and right = ultrasound image of the same sexual maturation state (three lines for three different stages). This could help us to better appreciate the differences between approaches.