

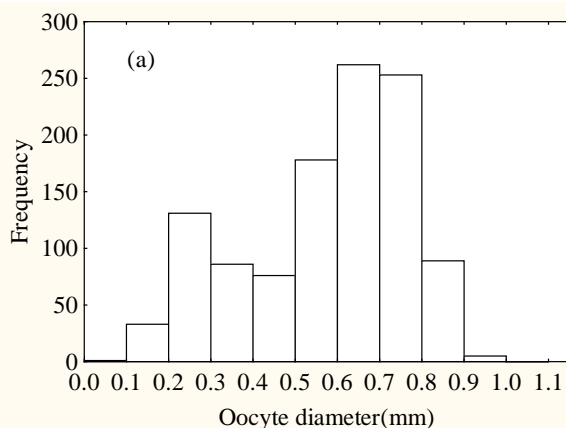
Response to Mark Costello and Richard McBride

I. 66-67 This sentence (Size-frequency ...as growing (Zhu 1985)) is better but could be improved. How about: "The size-frequency of the population becomes bimodal from Month to Month" or "The size-frequency of the population become bimodal during Name the season, when the fish are approximately X-X months old" citing Zhu 1985.

Response: It has been changed into "The size-frequency of the population becomes bimodal from Month to Month".

I. 193-203 I still believe you are describing that the oocytes develop synchronously. I understand that they are not advancing together—all at once—from one stage to the next. That would be unexpected for two reasons: 1) the stages are a rank variable system that describes what is fundamentally a continuous process, and 2) there are minor deviations between germ cells in their rate of development. Instead, what you are describing here is likely a continuous, normally-distributed mode of oocytes that advance together (synchronously). For example, in Figure 6, the proportion of pre-vitellogenic cells (Pp) is declining at a linear rate because the tail of the normal distribution is becoming smaller and smaller in a gradual manner. In terms of testing the hypothesis of asyn- versus synchrony, it is not necessary for the decline in Pp to occur all at once for it to be synchronous. This difficulty in distinguishing asyn- from synchronous development is the authors do not plot the oocyte diameter frequency. Again, look at McBride et al. (2015; attached) in Figure 3 for the expected differences in oocyte diameter distributions between these two types of oocyte development.

Response: I have checked the data in December and January and plotted the oocyte diameter frequency. Changes were made in the MS including materials and methods, results, discussion and the figure 6 changed into figure 7. The oocyte diameter distribution frequency in December showed the same as Example 3 in Figure 3 (McBride et al. 2015), but that in January showed the same as Example 1 in Figure 3 (McBride et al. 2015). See them below:

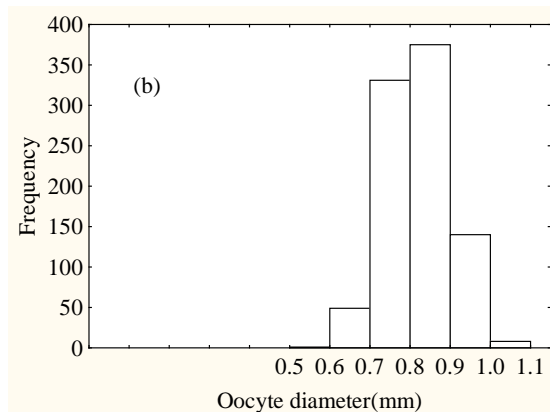


Commented [MC1]: Do you agree or disagree with this?

Commented [MC2]: I see you have done this, good

Commented [MC3]: What changes?

Commented [MC4]: But what are these plots?



Therefore, the oocytes development asynchronously in the same ovary due to the rather high relative fecundity without enough nutrition at the same time, but they won't be spawned until all of them were well developed when a spawning event happened. The data showed there wasn't a decline of oocytes number between January and December which was mentioned in the MS. The oocyte development and spawning pattern of *Protosalanx chinensis* should be an exception to the three examples of the paper (McBride et al., 2015) and a new insight into the reproductive biology of fish. therefore, this paper is of high value, which will also stop the arguments existing on this issue of *P. chinensis*.

Commented [MC5]: What is the point of telling me this?

I. 207 Is P really equal to 0? More likely it is < 0.001

Response: They have been changed into " < 0.001 ".

I. 211 I am not convinced that the decline in pre-vitellogenic oocytes means that the fish will spawn in a single spawning event. It is still possible that vitellogenic oocytes will mature and ovulate in multiple batches. Instead, if you are really seeing a depletion of pre-vitellogenic oocytes, that likely means this fish is semelparous because it does not maintain a reservoir of pre-vitellogenic oocytes for future years of spawning. Again, see attached, McBride et al. (2015) Figure 3 for an example.

Response: In Figure 6, we can see there is a depletion of pre-vitellogenic oocytes in most of the individuals which showed a maturing trend and meant they will spawn in a single spawning event. The decline in pre-vitellogenic oocytes means that the immature oocytes are developing in this period, which means they will mature and be spawned shortly but not waiting to the next year or season. This fish is semelparous.

Commented [MC6]: So are you disagreeing or agreeing with the referee? that the fish (1) spawn in a single event, and (2) only spawn once in a lifetime? Fish could spawn once a year and then the next year. But not if there are no pre-vitellogenic oocytes I presume.

