Preprint Journal Club Review of: "Diurnal active photolocation enhances predator detection in a marine fish"

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Diurnal active photolocation enhances predator detection in a marine fish

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Who we are:

We are a group of zoologists at different career stages with a diverse background. We have started a preprint review journal club in order to discuss topics across our different areas of concentration to stay up-to-date with the latest research and get practice writing reviews. We selected this preprint, "Diurnal active photolocation enhances predator detection in a marine fish," by Matteo Santon *et al.* due to the interesting experimental design and general interest of the topic.

This manuscript built upon a body of previous work in a logical, easy-to-read way. The authors demonstrate experimentally that diurnal active photolocation exists in diurnal fish and that it aids in predator detection. We were generally impressed by the experimental design and the thorough treatment of the topic. We do, however, have a few questions that we could not answer by reading the manuscript and also some comments on the presentation of the information.

Questions:

- For the lab experiment:

  a. What kind of glass was used for the partition between the triplet and the predator? This is explicitly stated for the field experiment (spectrally neutral Evotron Plexiglas), but we were wondering if the same glass was used in the laboratory experiments?

  b. What is the purpose of the "sub-optimal substrate" strip of gravel along the long side of the tank and why is it not included in the schematic drawing of the setup?

c. In lines 200-201, the authors state, "Both stimuli were simultaneously present in the tank, but only one was visible to the triplefins." Here we would like to know how they prevented visibility of one stimulus and suggest that the spatial relationship be stated or illustrated more clearly.

- For the field experiment: why was this performed only in the north-south direction, and not also east-west?
- For both experiments:

  a. How was the distance between fish and stimulus measured?

  b. Why did the authors choose to only model the blue spark, rather than the red spark?

  c. Does the hat treatment have an effect, not only on ocular spark production, but also on vision in general?

Major concerns:

- The fish were observed at only a few times throughout the day, and at fewer times for the field experiment than for the lab experiment. Increased observation time, e.g. with a video camera, could have given a more complete picture of the behavior of the fish.
- The entrance of an observer (scuba diving or entering the room) may have disturbed the fish and altered their behavior. This could also be improved using a video camera.
- Inter-individual relationships (e.g. sex, age, relatedness, differences in aggression) were not accounted for in the description of the experiment. Could this have had any effect on the behavior of the triplets? Due to the lack of video footage, some of the variables noted above could be accounted for in the model, and included in the discussion.

Minor concerns:

- Stimulus order was significant in some of your field experiments (lines 101, 104, 108). Do you have an explanation/ hypothesis for this effect?
- We did not understand the reason and way the pooling of the data was done, especially when looking at Figs. 2 and 3: Did you calculate a mean for the two controls of one triplet together in Fig. 2b? Then the symbols are not the average of 5 measurements but 10?
- Line 273 is missing a word: "Fish mildly sedated with [what?] (n=10) were placed..."
- Addition of a comma at line 276 for clarity: "...45° from normal, positioned at the same location as the fish."