

Elasmobranch measurement review: Stereo-DOV as a promising technique in controlled environments

Overview

This paper provides a review of 49 publications in which a particular technique was used to determine elasmobranch body size (length in sharks and width in many rays). There is considerable space in the introduction devoted to controlled/captive environments, but when looking at the 49 studies listed in Tables S1 and S2, only two apply to an aquarium situation; Govender et al (1991) on *C. taurus* is one, but I am not sure of the other. For this reason, I suggest altering the focus on the review, and eliminating any specific reference to the value of applying the techniques to captive studies. Baited BRUVs, stereo ROVs and UAVs have no place in aquaria and, as you state in the Conclusions, techniques using distance to the individual and bar photogrammetry are now obsolete. Therefore, in an aquarium only laser photogrammetry or stereo-DOV are suitable techniques. Stereo-photogrammetry is also used in baited BRUVs, which are widely used in the ocean.

Recommendation

Accepted after major revision.

Title:

Please give DOV in full.

My suggestion would be to revise the title (and the manuscript) along the lines of:

A review of techniques used to determine elasmobranch body size

Abstract

As I have stated in my comments on the title, I suggest deleting any specific mention of aquarium studies.

Introduction

This section is very long and can be greatly reduced by removing any mention of captive studies. We all know that the life history characteristics of most elasmobranchs render them very vulnerable to overfishing. Avoid the time-worn cliché of using this concern as a major justification for the study. I suggest deleting the section on different body length measurements (lines 107-122), as you make little or no reference to them later on, in terms of which is the most popular/useful.

Conclusions

As there was no Results section, all the findings of the study (apart from those presented in Tables S1 and S2) appear in this section. There is some useful summary information listing the number of species studied and the fact that *R. typus* and *M. alfredi* are the most studied species. I suggest highlighting the pioneer work of Klimley and Brown on *S. lewini* as early as 1983 using stereo DOV.

Obviously, these measurements are not 100% accurate, as stated, but I am uncertain as to how they can be used to determine population abundance (line 201). Bear in mind that small elasmobranchs, such as catsharks of well under 1 m in length, can easily be kept in aquaria and regularly caught and measured. Your recommendations and advice (lines 218-231) in which you compare stereo-Dovs with lasers are still valid in open ocean studies.

Table S1

This table was very informative, but it needs to be greatly condensed, which is easy to achieve. You regularly give findings which have nothing to do with photogrammetry in the Main Results (G cells) and should therefore be omitted. Some examples:

In the two photo-ID studies of *C. taurus*, to what extent were the body length measurements used in recognising the number of individuals numbers in cell G4 and G5? In G6 the fact that the largest female *M. alfredi* may be 18% larger than the largest male is not evidence of sexual dimorphism, which refers to shape and proportion. My concern also applies to the mating trains observed in *M. alfredi* in G7. Why highlight their predominance in winter? What does this have to do with photogrammetry. The same applies to the study of *S. mokarran*; everything listed refers to seasonal abundance, with no reference to photogrammetry.

Please correct several misspellings of *length*: G14 and G49. There are others.

Because this is a table, you are entitled to abbreviate the text and not use full sentences. Here is my condensation of the text in cell G49. Incidentally a linear relationship is not an exponential one. What is meant by *body width was found to greatest in the region*? Is this greater than other parts of the world, implying that Mexican whale sharks are fatter than individuals from other areas?

~~Pre-caudal length (PCL) and multiple body width measurements were taken from aerial images of 26 juveniles of 2.98-6.43 m in Mexico. Whale sharks, between November 2020 and February 2021 in Mexico. Pre-caudal length (PCL) ranged from 2.98 to 6.43m. An exponential relationship between PCL and body width Body width was found to be the greatest in the region. A linear relationship was found showing that whale sharks increase exponentially in overall body size as they increase in body length. This study highlights the benefits of using UAV photogrammetry to measure large marine fauna, to obtain valuable morphometric data to study their physiology and bioenergetics.~~

Table S2

Again, another very informative table. If Table S1 is condensed it may be possible to combine the two tables into one. I would like to see a combined table featuring in the main paper and not in the supplementary information, but I fear that with 50 rows it may be too large. Editor's advice, please!

Confidential comments to the editor

After reading the manuscript and before I looked at the two supplementary tables, I would be recommended that this manuscript would only be acceptable as a short note. Having studied the two tables, I am happy to revise that recommendation, but I feel that there is merit in trying to combine the two tables and including them in the main manuscript. I realise that it would be a very large table, which for a journal which has to consider page printing costs, would be prohibitive to publish. I am not sure how this applies to PeerJ. I assume it is only available in electronic form. I am happy for my name to be disclosed to the authors.