

DEVELOPMENT OF BODY CONDITION SCORE SCALE FOR FISH SPECIES

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Abstract

The practice of using a body condition score (BCS) to evaluate fat reserves and musculing on animals for determination of condition is commonly used for nutritional management and other husbandry practices. Terrestrial animals can be evaluated visually and palpated physically to determine body condition, and weights are often a consistent metric to observe changes and correlations to body condition. Aquatic fish present a unique challenge in that they cannot be physically palpated and are rarely weighed at the San Diego Zoo. Fish are often present in zoos as additions to exhibits or as biological controls, but there is currently no standard general BCS scale for fish. Clark *et al.* (2018) developed a BCS scale for zebrafish, a commonly used laboratory fish. However, there is a need for a BCS scale that encompasses the majority of fish species as there are a variety of species found in zoos. A BCS scale was developed for fish species using features noted by Clark *et al.* (2018) and by surveying healthy and unhealthy captive individuals. Species differences were also noted to develop a BCS scale applicable to most fish. Scale descriptions were developed by observing typical fat depositions in healthy or slightly over-conditioned or under-conditioned animals. Although no individuals demonstrated outermost condition scores, these were extrapolated by following trends of fat deposition or loss in current subjects and determining their appearance if they were to significantly gain or lose condition. The scale used is a 9-point scale based on visual observation of fat deposition in the abdomen, most notably near the pectoral fins, as well as along the spine. It also utilizes the proportion of the head to the body as the head does not change size with increases or decreases in body condition. A range of 1 to 3 indicates the subject is under-conditioned, while 4 to 6 indicates acceptable or good body condition, and a range of 7 to 9 indicates the subject is over-conditioned. This body condition score scale will be validated by having wildlife care specialists assess body condition of individuals from several different species to evaluate inter-observer reliability as well as scoring consistency between fish species. Having a visual standard of scoring fish will provide opportunities for improved nutrition, welfare, and husbandry of fish species at San Diego Zoo Wildlife Alliance.

Literature Cited

Clark T, Pandolfo L, Marshall C, Mitra A, and Schech J (2018) Body condition scoring for adult zebrafish (*Danio rerio*). *J Am Assoc Lab Anim Sci* 57(6): 698–702.