

Proportional Size Distribution (PSD): A Further Refinement of Population Size Structure Index Terminology

It has been little over a year since we proposed a new terminology for proportional stock density (PSD) and relative stock density (RSD; Guy et al. 2006). In that article, we stated that we would provide a follow-up piece regarding comments we received on the proposed terminology. We received 15 responses. Ten respondents agreed with the name change, one was indifferent, and four were opposed.

More interesting than the "agree or disagree" votes were the comments associated with the responses. For example, one person suggested that we use the term percent instead of proportion given that size structure values are multiplied by 100. Two people suggested that we drop the acronyms associated with length categories, such as Q-P for quality-to-preferred-length, in favor of actual length values. A few individuals thought that the name change was "small potatoes" and that a change would not increase the utility of the indices. Conversely, others liked the name change because it would help them better convey information to anglers. That is, size is what primarily interests anglers, not stock density. Further, several respondents agreed that the change would help with communication among scientists and make teaching the concept of size structure indices easier.

We considered all comments carefully in our contemporary decision. We were persuaded to continue with new terminology and revised our proposal because of comments from Richard Anderson, who initially developed PSD and RSD. Anderson proposed the term: "proportional size distribution," which he suggested would be more descriptive and accurate than proportional or relative stock density. We thought this was a better choice than ideas proposed in Guy et al. (2006) given it retains the use of PSD. Further, we decided to drop the term relative stock density because it was redundant with PSD (Table 1). We could not incorporate

all the comments and suggestions that we received, and believe that we have crafted a simple, sensible compromise.

We do not take the name change lightly and would not have proposed such a change had we not strongly believed that it would benefit the profession at all levels (i.e., from teaching undergraduate students about the concept to improving communication among practicing professionals). The history regarding the development of size structure indices (e.g., Willis et al. 1991; Anderson and Neumann 1996) need not be lost in the new terminology. Obviously, we do not want the profession to forget why size structure indices were originally developed, because understanding the meaning and history behind them is obviously more important than the name.

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Table 1. Old (proportional stock density [PSD]; relative stock density [RSD]) and new (proportional size distribution [PSD]) terminology for size-structure indices. Note that PSD = RSD-Q in the old terminology.

TERMINOLOGY	
Current	New
PSD	PSD
RSD-P	PSD-P
RSD-M	PSD-M
RSD-T	PSD-T
RSD S-Q	PSD S-Q
RSD Q-P	PSD Q-P
RSD M-T	PSD M-T

REFERENCES

- Anderson, R. O., and R. M. Neumann. 1996. Length, weight, and associated structural indices. Pages 447-482 in B. R. Murphy and D. W. Willis, eds. *Fisheries techniques*, second edition. American Fisheries Society, Bethesda, Maryland.
- Guy, C. S., R. M. Neumann, and D. W. Willis. 2006. New terminology for proportional stock density (PSD) and relative stock density (RSD): proportional size structure (PSS). *Fisheries* 31(2):86-87.
- Willis, D. W., B. R. Murphy, and C. S. Guy. 1993. Stock density indices: development, use, and limitations. *Reviews in Fisheries Science* 1:203-222.