

## FOREWORD

While the first methods for estimating growth from length-frequency data were proposed nearly 100 years ago, it is only in the last decades that these methods have begun to be based on rigorous algorithms, rather than on subjective interpretation of hand-drawn curves. This transition was accelerated, obviously, by the wide accessibility of computers, particularly those of the personal kind.

This Technical Report presents a study of the sensitivity of three methods, developed in the 1980s for the analysis of length-frequency data, to one of their key assumptions, namely that the variability of the growth of individual fishes is negligible.

As is shown here, this assumption is not valid, for either of the three investigated methods, and indeed, all three collapse when individual growth variability becomes too high.

This problem had been previously studied - although in less detail than here - for only one of the three methods. That it is shown to also be the case for the other two methods, is a new finding, and only in part a discouraging one.

The reason for continued optimism is essentially that it is better to know one's enemies, as it allows one to take countermeasures. In this case, this possibly involves (i) estimating, from one's data set, individual variability of length about relative age, to infer the degree to which one's growth parameter estimates are affected by individual growth variability and (ii) adjusting one's estimates in the appropriate directions, by an amount determined by the results in (i).

I expect, in any case, that investigations on the reliability of length-based methods will continue, hand in hand with the development of new approaches, and that these studies will eventually lead to methods much more robust than those now in use, but still straightforward to implement. The present contribution is, I believe, a big step in the right direction.

A standard foreword would end here, perhaps after some perfunctory praise to the author. What makes this special - to me at least - is the fact that Dr. Isaac, who wrote the thesis upon which this document is based, was my first PhD student, which certainly added to her problems - not to speak of the fact that I developed, and hence became particularly attached to, one of the methods she was submitting to such cruel tests. As her text shows, she withstood all that, and is to be congratulated.

DANIEL PAULY  
Manila, August 1990