

Use of Stock-Recruit Data in Estimating Biological Reference Points

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A bootstrap procedure was used to estimate the precision of biological reference points calculated from stock-recruitment data. A Beverton-Holt model was used for the Georges Bank yellowtail flounder stock while a Ricker model was used for the Northwest Atlantic stock of Atlantic mackerel. Results indicate this method should be useful in developing management strategies and control laws to allow for sustainable harvests of marine fish stocks on a long-term basis. Statistics and estimates of precision from bootstrap results can be used to develop risk averse management strategies, and thresholds for recruitment overfishing, examine fishery management policies and the utility of limit and target reference points, and to investigate sustainable levels of yield for fish stocks. A current goal of many organizations is the development of robust target and limit biological reference points for fisheries management; findings from this study seem appropriate for providing advice on this topic. The current study shows that even with highly variable stock-recruitment data, there are major benefits in managing fish stocks in a conservative fashion. Results from this study also emphasize the potential benefits of using S_{MSY} as a limit reference point and not a target reference point for fish stocks.