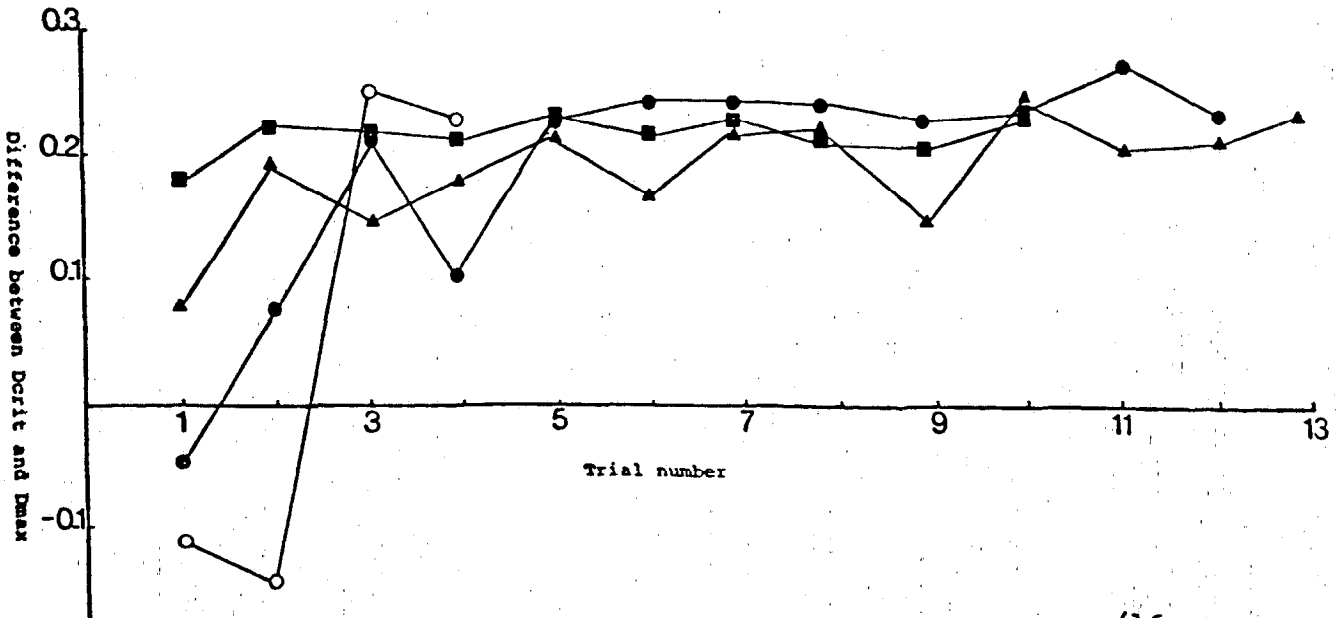
Discussion

The foregoing experiments underline the need for training of even 'experienced' fish length estimators in correctly estimating lengths while underwater. Presumably the observer's awareness that objects are larger underwater results in overcompensation and hence underestimation. It is evident however, that observers can be trained to correctly estimate length underwater with repeated practice, feedback on the kinds of errors being made and the use of a marked standard.

Although very few of the observed classifications were significantly different from the expected distribution, examination of the differences between Dcrit and Dmax over a series of trials demonstrates the improvement which can be achieved relatively quickly. This is shown (Appendix 2, Table 28 and Figure 1) where the difference between Dmax and Dcrit has been plotted against the trial number of observers.

Figure 1

Improvement in length estimation over a series of trials (Difference between Dcrit and Dmax from Kolmogorov-Smirnov test).



It is evident that fairly rapid improvement can be made to a level where the observed distribution closely approximates the expected distribution.

As a result of this exercise, the Workshop considers:

1. that observers classifying 50 sticks should be trained to where the differences between Dmas and Dcrit are 0.2 or greater;
2. that fish models, in addition to or instead of sticks should be used since sticks have no depth;
3. that, most desirably, real fish should be used, either by taking caught fish underwater or by estimating the length of a live fish underwater, then spearing it.

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