A direct comparison of 1-m^2 MOCNESS and Video Plankton Recorder zooplankton abundance estimates: possible applications for augmenting net sampling with video systems.

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ABSTRACT

A Video Plankton Recorder (VPR) was mounted on a 1-m^2 Multiple Opening and Closing Environmental Sensing System (MOCNESS) frame in May of 1997 during a GLOBEC process cruise to the southern flank of Georges Bank. A comparison of the abundance estimates produced by the two sampling methods was conducted using a series of sampling hauls taken along a mooring line encompassing the tidal front. Data sets were modified due to taxa abundance, organism size, or susceptibility to net damage, to contain only zooplankton that both gears sampled quantitatively. Both sets of gear show the same taxa distribution patterns along the transect. Copepod abundances derived from simultaneous sampling had a mean net interval concentration ratio of 1:1.9, 1-m^2 MOCNESS to VPR. Proportional taxa differences varied from 6.1% to 15.0% with a mean of 10.6% . Abundances derived from replicate sampling had a similar mean net interval concentration ratio of 1:2.2. Proportional tax abundances from the replicate sampling differed from 5.9% to 13.5% with a mean of 11.1%. A replicate comparison of the VPR with a 1/4m^2 MOCNESS with 64 μm mesh nets produced proportional differences ranging from 2.4% to17.3% with a mean of 7.1%. Net interval concentration ratios had a mean of 1:2.2. Vertically integrating the profiles lowered the mean concentration ratios to 1:1.7 for the 1-m^2 MOCNESS and 1:1.2 for the 1/4-m^2 MOCNESS. Comparison results were affected by mesh size, but were not influenced by sample volume or simultaneous vs. replicate sampling. Consideration was given to the improvements possible to plankton surveys, larval feeding studies, and coupled bio-physical modeling, from VPR integration with net samplers.

INTRODUCTION

Collection of plankton data has long been a important factor in the study and understanding of marine ecosystem dynamics (Sherman, 1980). Historical plankton data in the