



Ophiuroid growth within deep-sea sediment traps: A problem for carbon flux measurements at continental margins

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ABSTRACT: Large numbers of postlarvae of the bathyal ophiuroid *Ophiecten gracilis* were collected by two time-series sediment traps moored on the continental slope of the NE Atlantic for 102 d at 1,000 and 1,400 m deep (469 and 69 mab), respectively. With time, the organisms collected were progressively larger, suggesting that a single cohort was growing within the collection funnel of the traps but above the preservative solution. We believe that specimens from this cohort occasionally lost their grip on the funnel surface and fell into the preservative. This conclusion is supported by (1) the presence of food within the stomachs of postlarvae (these do not feed in their planktonic phase) and (2) the size of specimens (much larger than those previously found in the plankton). The upper trap was well above the benthic nepheloid layer, and suspension of these organisms by ambient currents is highly unlikely. Ophiuroids contributed up to 7% of the total daily flux of particulate organic carbon (POC) in the top trap and almost 30% in the bottom trap, and although they are not normally considered components of downward particle flux, these specimens had been growing on the material entering the traps and so should be included in this portion. Not all of the epifaunal population will have fallen into the collecting cups, but those that fell had requirements for growth and respiration that were a considerable proportion of the daily flux of POC into the traps (up to 16%). If this epifaunal community (a minimum estimate) was distributed evenly within the cone, a high proportion of the settling material would have come into contact with ophiuroids as it slid down the inside walls of the cone. This problem with the sediment trap technique is probably restricted to the continental slope and shelf and will not occur over abyssal depths.

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