Short Communication

Primary settlement of *Perna perna* (L.) on littoral seaweeds on St.Croix Island

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Field studies by Bayne (1964) which followed the sequence of young stages in *Mytilus edulis* have shown that settlement of mussel larvae on seaweeds is a natural prelude to permanent settlement in mussel beds and not a wasteful settlement on unsuitable substrata. On the west Cape coast Griffiths (1976) has recorded *Choromytilus meridionalis* spat settlement on the algae *Polysiphonia incompacta* and *Ulva* sp., whilst Isaac (1956) and Du Plessis (1977) have also found black mussel spat on *Gracilaria verucosa* in Saldanha Bay. Berry (1978) has reported heavy colonization of coralline algae by early plantigrades of the brown mussel, *Perna perna*, along the Natal coast.

Perna perna is abundant in the littoral zone of St.Croix Island (33°48'S 25°46'E) and it was thus interesting to find small *Perna* amongst seaweeds collected from the mid and lower shores of the island. The seaweeds on which these mussels were found were *Cheilosporum cultratum, Corallina* sp., *Gelidium pristoides, Gigartina paxillata, Hypnea spicifera, Jania* sp., *Laurencia* spp., *Plocamium corallorhiza* and *Pterosiphonia cloiophylla.*

From April 1976 to April 1977 monthly samples of *Gelidium pristoides* were collected at three sites on St Croix to study the composition of *Gelidium* epifauna (Beckley 1977) and all the *P. perna* in these samples were counted and measured. Although six tufts of *Gelidium* were collected at each of the sites the actual dry biomass of seaweed varied so that size frequency histograms of the *Perna* can only be given as percentages.

At the sampling site on the north coast of St.Croix, which is sheltered from direct wave action, adult *Perna* only occurred in small clumps between the barnacles and tufts of *G. pristoides.* At the other two sampling sites on the west and south coasts of the island (moderately exposed and very exposed to wave action respectively) dense beds of *Perna* were well defined with only very little overlap in the zonation of the mussels and *Gelidium.* These zonation patterns were reflected in the *Gelidium* epifauna as samples from the sheltered site had on average more *Perna* juveniles (10 g^{-1} dry mass of *Gelidium*) than samples from the other two sites (2 g^{-1} dry mass of *Gelidium*) where the other seaweeds mentioned earlier must provide a more easily accessible substrate for primary settlement.

The size frequency histograms in Fig. 1 show peaks of small mussels in April and September/October. Berry (1978) found that spawning of *Perna* reached its highest

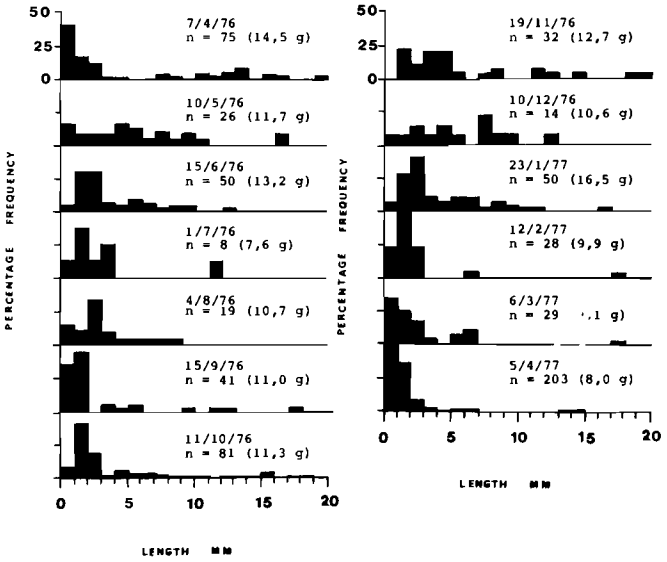

Fig. 1 Combined percentage size frequency histograms for *Perna perna* collected from *G. pristoides* at three sites on St.Croix Island. Figures in brackets give total dry mass of *Gelidium* sampled each month and n is total number of *Perna* collected from this mass of seaweed.

levels during the winter months but the breeding cycle was often extended. Most of the *Perna* associated with *Gelidium* were in the 0–10 mm size-range with the vast majority (82%) less than 5 mm and this would agree with Berry's observation that *Perna* in the 0–9 mm size-range are very mobile.

Although primary settlement of mussels does not only occur on seaweeds (Bayne (1964); Berry (1978) and Wilson & Hodgkin (1967) mention settlement on hydroids as well) commercial harvesting of seaweeds along the South African coast could have an effect on recruitment to adult populations of mussels. It is thus suggested that primary settlement of mussels on seaweeds should be an additional factor to be taken into consideration by authorities when drawing up management programmes for seaweed harvesting along the coast.

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