

Coral reef health monitoring in Dominica

STUDENTS at the Institute for Tropical Marine Ecology have spent the last three months monitoring Dominica's coral reefs. The focus has been on the long spine sea urchin *Diadema antillarum*, as well as the algae they eat, their competitors and their predators.

The *Diadema* sea urchin is important in controlling algae that would otherwise overgrow corals. This urchin suffered an extensive die-off in the Caribbean in 1983, killing up to 100% of the urchins in certain areas.

In Jamaica the loss of this important algal grazer, combined with high fishing pressure, has caused large economic losses. Without the presence of these urchins, and other grazers, algae have overgrown the coral reefs thus reducing their viability as fishing and recreational resources. Dominica's narrow island shelf makes its reef more susceptible to this kind of drastic change.

The preliminary data collected this year at seven monitoring sites along the west coast of Dominica, support previous findings that the density of *Diadema* individuals (an average of 1.3 individuals per square meter), and individual body size are both larger in Dominica than elsewhere in the Caribbean. These findings could indicate that the pathogen responsible for the mass mortality in the Caribbean may have never reached Dominica.

Alternatively Dominica's *Diadema* population may exhibit a higher recovery rate than the rest of the Caribbean. However, the preliminary data also show a decline in the body size of *Diadema* since 2001. This could suggest the presence of some new force acting on *Diadema*, causing this decrease in size.

The surveyed reef sites have a 65% algal cover composed of two types of algae: **Macro**, large bushy algae, and **turf**, small filamentous algae. In areas where *Diadema* densities are high, very little macro algae are present. Often when macro algae are present they are found in

areas that *Diadema* can't reach; such as in cracks or near the base of corals. Thus it is likely that *Diadema* acts like a lawnmower, keeping the algae cropped very short.

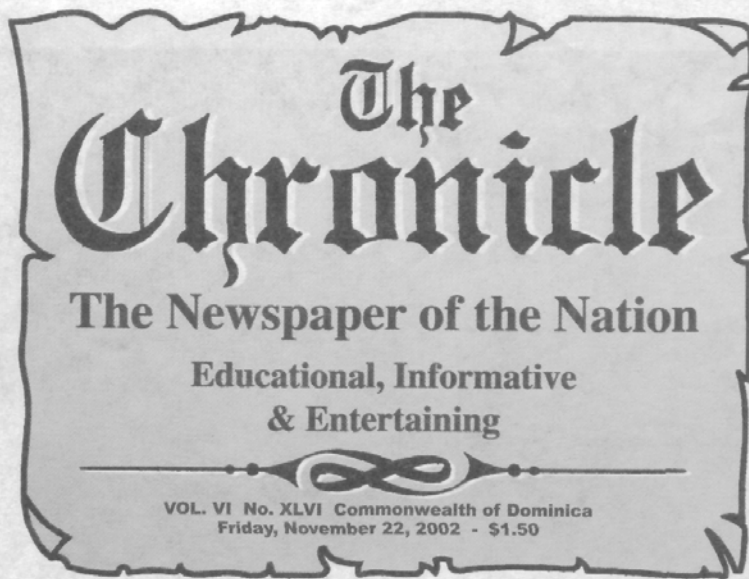
CONSUMERS

Both *Diadema* and grazing fish compete for algal food by exploiting as much of the resource as possible. When *Diadema* populations decline it has often been observed that the populations of grazing fish increase. However, in areas of heavy fishing pressure, the grazing fish population may be unable to keep the algal growth under control. Parrotfishes and surgeonfishes are the most significant consumers of algae and are commonly found along the reefs of western Dominica. However, damselfishes

and wrasses, which consume much less algae, are seen in much greater abundance.

There are several known fish and invertebrate predators of *Diadema*, including triggerfishes and Spiny Lobsters. Data collected thus far indicate that the number of these predators are relatively low. Preliminary data also show that these fish are in a small size class. The average size recorded is between 10 and 20 cm. The low abundance of *Diadema* predators may be one of the reasons that the population of this sea urchin is larger here in Dominica than in other Caribbean islands.

A presentation, open to the public, on these findings will be presented by the students of ITME at the University of the West Indies (Botanical Gardens) on November 28th at 7:00 p.m.



The
Chronicle
The Newspaper of the Nation
Educational, Informative
& Entertaining

VOL. VI No. XLVI Commonwealth of Dominica
Friday, November 22, 2002 - \$1.50