ABSTRACT

Several life history traits displayed by three populations of Tripneustes ventricosus off Barbados, together with a few of the life history traits of two populations from the Grenadines are studied.

Members of a Barbados population living on algae and fished commercially until recently have more rapid development, smaller adult size, smaller size and lower age at sexual maturity, higher reproductive effort and lower fecundity than members of a presently fished Barbados population living on algae. Members of the latter population have more rapid development, larger size at sexual maturity, larger adult size, higher reproductive effort and higher fecundity than members of an unfished Barbados population living on coral rubble and sand. Age at sexual maturity and spawning periodicity are similar in the latter two populations. Members of two unfished Grenadines populations living on algae have higher adult size and larger size at sexual maturity than members of all Barbados populations studied.

A variety of different causative factors of these differences are discussed. These include fishing pressures, diet in the form of both quality and quantity of food, population density, wave action and pollution.

Urchins transferred from the currently fished Barbados population to the once fished population, and urchins from both populations maintained on similar diets in onshore tanks, retain life history traits similar to their original populations. When maintained on similar diets, urchins from the unfished and currently fished Barbados populations display similar traits. Different food plants vary in test and gonad growth supporting value to T. ventricosus in the order: Sargassum ≥ Padina > Dictyota > Ulva > Hypnea > Galaxaura > Thalassia.

A description is given of the laboratory culture of T. ventricosus from egg to Stage II pluteus.