The availability of data sets covering more than a year is scarce for tropical environments. Advances in hardware and software speed-up the re-analysis of old data sets and facilitates the identification of hidden data patterns. From February 1984 to April 1987 (49 sampling dates), core samples (17.7cm², 15cm deep) were collected at low tide at a sand-mud flat in the mid upper Gulf of Nicoya estuary, Pacific, Costa Rica. Predator exclusion experiments (cages 0.5x0.5x0.2m, galvanized wire, mesh size 5mm), were conducted at the site in 1985 (dry and rainy seasons sets). Samples were preserved with 5% buffered formalin in sea water stained with Rose Bengal, and washed after 24 hours on a 500 micron mesh sieve. The 1,120 cores yielded a total of 112 morphological species of which the mollusks were represented by 23 species, and included the bivalves Tellina rubescens, Tagelus bourgeoisae, Dosinia dunkeri and Leukoma asperrima, and the gastropods, Natica unifasciata, Nassarius luteostomus, Costaanachis rugosa and Turbonilla sp. The 23 species are indicative of a relatively rich sedimentary molluscan fauna. T. bourgeoisae had a seasonal oscillation, with higher abundances during the rainy seasons. T. rubescens was not seasonal, but presented an oscillation with peaks at about 1.5 year intervals. Many empty shells of Cosmioconcha modesta, lower number of N. luteostomus and a few of T. rubescens were found with boreholes by the predatory snail N. unifasciata. T. rubescens was not significantly more abundant inside or outside cages. T. bourgeoisae showed a significant increase within the caged areas. The numerical fluctuations of the mollusks became more important during the rainy season of 1985. Red tide outbreaks in the Gulf of Nicoya in 1985 may have had an impact on the molluscan populations.

**Keywords**
Natica, Nassarius, Costaanachis, Turbonilla, Tagelus, Tellina, Dosinia, Leukoma, benthos, estuary, tidal flat, cages, boreholes, Gulf of Nicoya, Costa Rica.