TROPHIC STATUS AND ECOLOGY OF THE SEA URCHIN *DIADEMA ANTILLARUM* (PHILIPPI, 1845) IN GRAN CANARIA ISLAND (CANARY ISLANDS).

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The overpopulation of the sea urchin *Diadema antillarum* (Philippi, 1845) is causing negative effects on the subtidal rocky ecosystems in the Canary Islands. Populations of *D. antillarum* occur in high density in opposite to algal cover biodiversity which is decreasing (Aguilera *et al*. 1994; Garrido 2003; Lessios *et al.* 2001; Tuya *et al.* 2001, 2004). There are only a few studies on trophic chains. Our aim in this study is to understand the structural role of *D. antillarum* on Canary Islands bottoms. Our main hypothesis is that the trophic structure of *D. antillarum* depends on the type of substrate which they inhabit. We analyzed the availability of nutritional resources in four different regions of Gran Canaria Island in order to identify the potential food sources and which of them were assimilated by the sea urchin. Each region was defined by urchin barrens with different stages of maturation. Trophic positions were evaluated using a stable-isotopes approach according to Vander Zanden & Rasmussen (1999) and Phillips & Gregg (2001) models. For each region we quantified $\delta^{15}N$ and $\delta^{13}C$ from *D. antillarum* (muscle of Aristotle´s lantern and gonads) and from macroalgae bulk tissue. We also gathered morphometric data and population abundance of sea urchins. The overall abundance of *D. antillarum* was 6,19 ± 3,10 urchin/m^2. Data based on $\delta^{15}N$ and $\delta^{13}C$ revealed that *D. antillarum* exhibited different trophic structures depending on urchin barren maturation. Stable isotope ratios proved the role of *D. antillarum* under different conditions. Red algae appeared to be an important component of the diet of *D. antillarum* in zones where urchin barrens were matured. Our results support the evidence that *D. antillarum* shows a wide adaptability and can change its diet and feeding behaviour performing different trophic structures.

Aguilera, F., A. Brito, C. Castilla, A. Díaz, J.M. Fernández-Palacios, A. Rodríguez, F. Sabaté & J. Sánchez (1994) Canarias: economía, ecología y medioambiente. Ed. Francisco Lemus. La Laguna, 361 pp.

Garrido, M. (2003) Contribución al conocimiento de *Diadema antillarum* Philippi 1845, en Canarias. Tesis doctoral. Universidad de Las Palmas de Gran Canaria, 107 pp.

Lessios, H.A., M.J. Garrido, B.D. Kessing (2001) Demographic history of *Diadema antillarum*, a keystone herbivore on Caribbean reefs. *Proc. R. Soc. Lond. Ser B.* 268: 1-7.

Phillips, D. L. & J. W. Gregg (2001). Uncertainty in source partitioning using stable isotopes. *Oecologia.* 127: 171-179.

Tuya, F., J.A. Martín, G.M. Reuss & A. Luque (2001) Food preferences of the sea urchin *Diadema antillarum* in Gran Canaria (Canary Islands, central-east Atlantic Ocean). *J. Mar. Biol. Ass.UK.* 81: 845-849.

Tuya, F., A. Boyra, P. Sánchez-Jerez, C. Barbera & R. Haroun (2004) Relationships between rocky-reef fish assemblages, the sea urchin *Diadema antillarum* and macroalgae throughout the Canarian Archipielago. *Mar. Ecol.Prog. Ser*. 278: 157-169.

Vander Zanden, M.J. & J.B. Rasmussen (1996). A trophic position model of pelagic food webs: impact on contaminant bioaccumulation in lake trout. *Ecological Monographs*. 66: 451-477.