First insights in the trophic interactions and metal biomagnification in benthic food webs from Sechura Bay and Illescas Reserved Zone, Piura – Peru

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Scallops, potential predators and food sources (seston, POM…) were collected in the northern and southern location of Sechura Bay, and at Illescas Reserved Zone, during pre and post-raining season of ENSO 2016, in order to unravel the trophic interactions by using δ¹⁵N, δ¹³C, trace metals and biomarkers (fatty acids).

The crabs *Hepatus chilensis* and *Romaleon polyodon* showed the highest trophic level with δ¹⁵N values of 12.68 ‰ and 12.29 ‰, respectively. The lowest values (down to 1.10 ‰) were measured for the food sources. The Peruvian scallop *Argopecten purpuratus* was more δ¹⁵N-depleted (6.96 - 8.45 ‰) than its potential predators *H. chilensis*, *R. polyodon*, *Bursa ventricosa*, *Octopus mimus* and *Cymatium sp*. This points at its role as intermediate consumer and main food item for the predators in the benthic food webs of Sechura Bay and Illescas Reserved Zone.

Mean δ¹³C values for predators of *A. purpuratus* were between -12.25 and -15.26 ‰ during pre-raining season, and in a range of -12.71 to -14.93 ‰ during the post-raining season. Food sources showed high variations because the fresh and brackish-water input (i.e. sediments were from -0.65 till -1.88 ‰ in Illescas Reserved Zone and southern location). In terms of fatty acids, EPA, DHA and ARA were found in relevant concentrations but without any spatial differences between the locations. Lower EPA and DHA levels were measured in *A. purpuratus* tissue during the post-raining sampling in all locations.

In addition, trophic magnification factors (TMFs) for As and Cd were always >1 indicating As and Cd accumulation along the food web, but this was only significant for As and for Cd in Illescas Reserved Zone. We conclude that metal accumulation is relevant for all trophic leves studied here and thus the overall energy flow in the food webs in Sechura Bay and Illescas Reserved Zone.

**Keywords:** Benthos, metals, stable isotopes, fatty acids, Sechura Bay

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