



FEEDING ECOLOGY OF THE CAPE VERDEAN SHEARWATER (*Calonectris edwardsii*) POPULATION OF RASO ISLET, CAPE VERDE (P1-B-11)



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Raso Islet with only 5.76 km², is an area of great importance to Cape Verdean Shearwaters as we find one of the largest colonies of the species there. The great biological value of this islet is even more remarkable for hosting very large populations of other species, such as the Brown Booby, Red-billed Tropicbird and even the endemic Raso Lark, among others. Along with Branco Islet, also included in the Nature Reserve, both populations constitute about 75% of the nesting population of the Cape Verde islands (Fig. 1).

The Cape Verde Shearwater (Procellariiformes, Procellariidae) (Fig. 2) is an endemic species of Cape Verde and has recently been separated from *Calonectris diomedea* species, due to their morphological and genetic differences, and pelagic habits; feeding mostly on the open sea (Hazevoet 1995).

METHODOLOGY

The samples were collected between 14 October and 12 November, in two consecutive years, 2012 and 2013. We randomly obtained 80 samples of juvenile regurgitation. Each juvenile was sampled only once. During or after handling, juveniles tend to regurgitate stomach contents without the need to resort to the induced regurgitation method.

Juveniles are fed by the parents during the night and the capture and monitoring of birds was made during the early morning hours.

After collection, the individuals were marked with a numbered metal ring in its right leg, and the number of nest where they were captured was recorded, avoiding duplication of sampling and reducing the disturbance of the same individual.

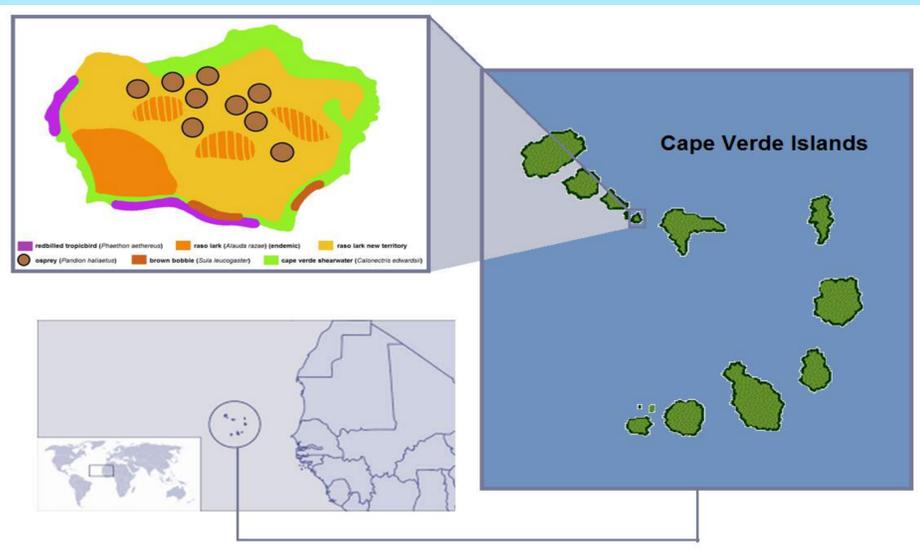


Fig. 1 Map of the Cape Verde islands, with location of the study area,



Fig. 2: A - Juvenile Cape Verde Shearwater, B,C- Capture of Shearwater in Raso, Cape Verde.

RESULTS

In total, 80 regurgitations from juvenile Cape Verde Shearwaters were collected; including 50 individuals sampled in 2012, and 30 individuals in 2013.

Based on knowledge of local fish populations and according to the current description, the identified prey of Cape Verde shearwaters belonged to 5 species distributed in 4 different families (*Platybelone argalus lovi* - Belontiidae; *Selar crumenophthalmus*, *Decapterus* sp - Carangidae; *Sardinella maderensis* - Clupeidae; *Loligo* sp. - Loliginidae).

In 2012, the Horse-Eye Jack (*Selar crumenophthalmus*) was the most frequently occurring prey (38%); identified in 21 samples, whereas in 2013 this species was replaced by the Sardine *Sardinella maderensis* (61%); represented by 25 samples (Fig. 3 & 4).

During the monitoring, it was noted that as time progressed, weight increased, but then began to fall; stabilizing, while the length of the wing increased (Fig. 5 & 6).

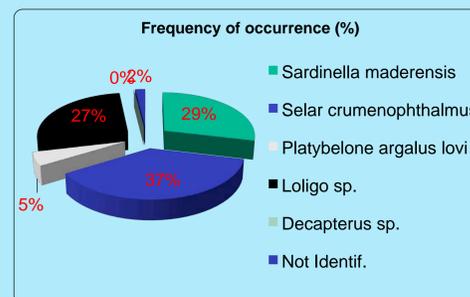


Fig. 3 Frequency of occurrence (%) of prey found in Shearwater regurgitations, Raso Islet in 2012.

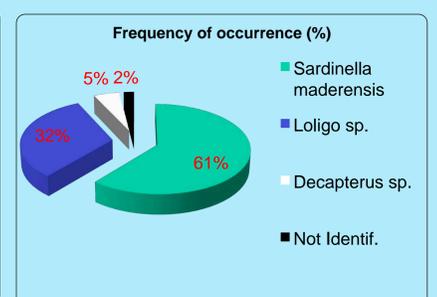


Fig. 4 Frequency of occurrence (%) of prey found in Shearwater regurgitations, Raso Islet in 2013.



Fig. 5: Evolution of average weight during the period of Shearwaters chick monitoring in Raso Islet in 2013.



Fig. 6: Change in average wing length during Shearwater juvenile development in Raso Islet in 2013.

DISCUSSION

The results showed that the diet of Cape Verde Shearwater is mostly rich in organisms of Superclass fish, and it may be related to the fact that they are more nutritional and energetic than Mollusca (Ainley et al., 2003). Cephalopods of Loliginidae, were not fully identified to species level, since the food capture process sometimes has difficulties in identifying and quantifying food items, which may cause some bias in the results (Duffy & Jackson, 1986).

The species that stood out in the diet of Cape Verde Shearwater in 2012 was the Horse-Eye Jack, with 38%. The spawning period of this species occurs mainly between October and December, coinciding with the time of sampling, which may correspond to a greater availability of this prey. However, in 2013, sardines represented 61% of chicks diet, suggesting that the Cape Verde shearwater changes diet according to food availability. There were no important differences in the interpretation of analyzes of the frequency of occurrence and number, which was fairly expected because, according to Zavala-Camin (1996), numerical frequency is a direct consequence of occurrence, as it is only possible to count what was identified.

Despite the reduced frequency of occurrence and number, the high energy of the cells indicates a greater role of these organisms in feeding the shearwater chicks. With regard to biometric data, the data obtained was expected, this is because Cape Verde shearwater chicks have a much higher weight in the early stages of development, but as they grow they begin to lose weight until they are able to fly.

Bibliography:

- AINLEY, D., BALLARD, G., BARTON, K., KARL, B., RAU, G., RIBIC, C., WILSON, P. 2003. Spatial and temporal variation of the Adélie penguins. The Condor, 105: 95–106 pp;
 HAZEVOET, C.J. (1995). The Birds of the Cape Verde Islands. British Ornithologists' Union. B.O.U. Check-list nº13. 192 ;
 DUFFY, D. E JACKSON, S. (1986). Diet studies of seabirds: a review of methods. Colonial Waterbirds 9: 1-17; ZAVALA-CAMIN, L.A. (1996). Introduction studies on natural food in Peixes.Maringá, EDUEM, Maringá. 129P.