

THE DIET OF FERAL CATS (*FELIS CATUS*) ON ALEGRANZA ISLAND (NORTH OF LANZAROTE, CANARY ISLANDS)

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Abstract

The diet of feral cats on Alegranza has been studied by analyzing 110 scats. A total of 199 prey items have been identified indicating that introduced mammals (*Oryzolagus cuniculus* and *Mus* sp.) constitute the basis of the diet appearing in 100 % of the samples and representing 99.5 % of the consumed biomass. Fortunately, it appears that breeding seabirds are not represented in their diet. However the species constitutes a potential threat to the birds if its present prey declines in number.

Introduction

The Feral Cat (*Felis catus*) is widely distributed over the Canaries and is a top predator in the food chain among the vertebrates in the islands.

To date, three studies have been made concerning the diet of this species in different habitats of the islands: in a pine forest on Gran Canaria Island (Santana & al. 1986), in Juniper forest on El Hierro (Nogales & al. 1988) and on high mountain on Tenerife (Nogales & al. 1990). The present paper constitutes the first study carried out in a variety of habitats within the confines of a relatively small island (10 km²).

Alegranza is one of the most important seabird colonies of the Archipelago, with breeding *Calonectris diomedea*, *Bulweria bulwerii*, *Puffinus assimilis*, *Hydrobates pelagicus*, *Larus argentatus* and *Oceanodroma castro* (Martín & al. 1988). This group of birds have suffered in other islands from the impact of alien predators, and many examples of population declines, local extinctions and some complete extinctions of species are well documented (Derenne 1976, Dilks 1979, Cook & Yalden 1980, Moor & Atkinson 1984, Kirkpatrick & Rauzon 1986, etc.). It seemed likely that the feral cats might prey upon the seabirds of Alegranza.

It is not known exactly when feral cats were brought to the island, but Topham (1957) commented that about 1942 the owners of Alegranza introduced approximately 15 individuals in order to reduce the rabbit population. The exact population now present is unknown, but we have observed at least two different animals. However it is probable that the population is higher, according to the wide distribution of recent scats.

Material and Methods

The study material comprised 110 scats which were collected in 17 places from 1987 to 1990. Due to the fact that an individual prey item can appear in several segments, the scats were analyzed each as a single sample (Delibes 1980). Each scat segment was immersed in water and the contents separated out.

Biomass values for prey were obtained by utilizing the average weight of individuals captured in the island. However, with respect to large such as rabbit (*Oryctolagus cuniculus*) which constitute more than the daily food intake, we followed the criteria of Fitzgerald & Karl (1979) in assigning a biomass of 170 g per day.

Study Area

Alegranza is the northernmost island in the Canary Archipelago, being situated about 17 km off the north coast of Lanzarote. The island is roughly circular in shape and the highest point is localized in La Caldera at 289 a.s.l. The surface is approximately 12 km² and the volcanic geological material corresponds with categories noted as series III and IV (Fuster & al. 1966).

The vegetation is constituted by the typical scrub species that cover the low lands of the Canaries. The density of the vegetation is very and the height of the most common plants ranges from several centimetres to one metre. These plants are quite well adapted to xerophytic conditions due to the islet has a desertic climate with dry summers and annual precipitations inferior to 250 mm. Some of the more common species include *Salsola vermiculata*, *Suaeda vera*, *Atriplex glauca*, *Mesembryanthemum crystallinum*, *Nicotiana glauca*, *Euphorbia obtusifolia*, *Euphorbia balsamifera*, *Chenoleoides tomentosa*, *Lycium intricatum*, etc. Moreover, the vegetation has suffered from the introduced herbivores (principally goats, sheep and rabbits), and is very much impoverished.

Results and Discussion

A total of 199 prey items were identified during the analysis of the scats, of which 94 % corresponded to the introduced mammals (*Oryctolagus cuniculus* and *Mus* sp.), the proportions being quite similar (Fig. 1). Both prey species constitute 99.5 % of the total biomass. In spite of precise data on the rabbit population size are not available, this species is very abundant suffering conspicuous oscillations in numbers.

Rabbits and mice appeared most frequently in the diet based on scat analyses (83.6 % and 54.5 %), and are the highest of all the habitats studied in the Canaries. It is possible that the high presence of alien mammals in the scats corresponds to the availability of those species in the islet. However, some authors have considered that feral cats are opportunistic predators (Coman & Brunner 1972, Veitch 1985).

Bird remains were found in 5.5 % of the scats, which is a lower proportion than at in the pine forest (Santana & al. 1986) and the juniper forest (Nogales & al. 1988), but are higher than that in the high mountain (Nogales & al. 1990).

Reptiles represented a low frequency (4.5 %), constituting the lowest found in the Archipelago. Birds and reptiles were barely present in the diet biomass (0.3 % and 0.1 % respectively).

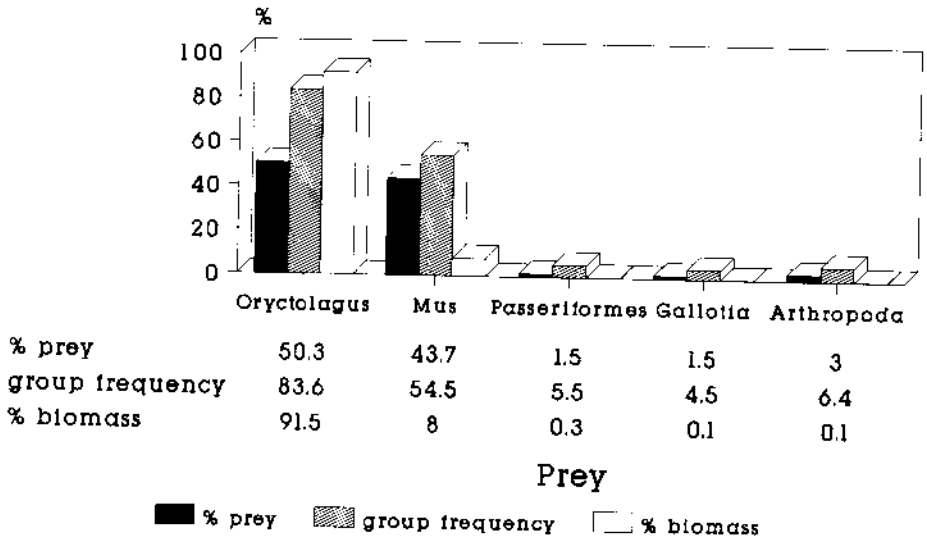


Fig. 1. Results of scats analysis of feral cats in Alegranza Island.

Arthropods appeared in 6.4 % of the groups only, constituting 0.1 % of the biomass consumed. This proportion is the lowest registered in the Canaries, but it is similar to those found in the pine forest (0.2 %) and high mountain (0.1 %), and lower than in the juniper forest (0.8 %).

The presence of some fragments of fish bones and shells of Crustacea and Mollusca could have been obtained by scavenging from human consumption.

Vegetal remains were found in 40.9 % of the scats. This fact has already been commented upon (Santana & al. 1986).

Conclusion

The dietary dependence of mainland feral cats on introduced mammals, where these are abundant, has been observed by numerous authors (Coman & Brunner 1972) and also in some other island ecosystems (Heidemann 1973, Jones 1977, Karl & Best 1982).

Reptiles were present in a low proportion in spite of their abundance. Possibly this could be explained by the fact that *Felis catus* is a generalised predator which shows a clear tendency to prey on the most abundant food sources (Fitzgerald 1988). It is also important that the abundance of prey coincide with the circadian rhythms of the feral cats.

The food spectrum in Alegranza is the most monotonous of the diets known from the Canary Islands, due possibly to the high density of introduced mammals (*Oryctolagus* and *Mus*) on a relatively small island. The absence of rats from the scats is due to the fact that until now the species has not been confirmed as present on the island, although Concepción (pers. comm.) may have seen an individual in the spring of 1990.

While seabirds were largely absent from the diet of feral cats on Alegranza, as a conservation measure, it is important to eradicate firstly the cats, since eradication

of rabbits would result in an alteration of the cat's diet which might create predation pressure on the breeding seabird populations.

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LITERATURE

- COMAN, B. J. & BRUNNER, H., 1972: Food habits of the feral house cat in Victoria. *The Journal of Wildlife management*, 36 (3): 838-853.
- COOK, L. M. & YALDEN, D. W., 1980: A note on the diet of feral cats on Deserta Grande. *Bocagiana*, 52: 1-4.
- DELIBES, M., 1980: El Lince Ibérico. Ecología y comportamiento alimenticio en el Coto Doñana, Huelva. *Doñana Acta Vertebrata*, 7 (3): 91-28.
- DERENNE, P., 1976: Notes sur la biologie du chat haret de Kerguelen. *Mammalia*, 40: 531-595.
- DILKS, P. J., 1979: Observations on the food of feral cats on Campbell Island. *N. Z. J. Ecol.*, 2: 64-66.
- FITZGERALD, B. M. & KARL, B. J., 1979: Food of feral house cats (*Felis catus* L.) in forest of the Orongorongo Valley, Wellington. *N. Z. J. Zool.*, 6: 107-126.
- FITZGERALD, B. M., 1988: The domestic cat: the biology of its behaviour. Ed. TURNER, D. C. & BATESON, P. Cambridge University Press. *Cambridge UK & New York*, 123-144 pp.
- FÜSTER, J. M., IBARROLA, E. & LOPEZ RUIZ, J., 1966: Estudio vulcanológico de las isletas de Lanzarote (Islas Canarias). *Estudios Geológicos*, 22: 185-200.
- HEIDEMANN, G., 1973: Weitere Untersuchungen zur Nahrungsökologie „wildernder“ Hauskatzen (*Felis sylvestrus* f. *catus* L., 1758). *Z. Säugetierkunde*, 38: 216-224.
- JONES, E., 1977: Ecology of the feral cat, *Felis catus* (L.) (Carnivora: Felidae) on Macquarie Island. *Aust. Wildl. Res.*, 4: 249-262.
- KARL, B. J. & BEST, H. A., 1982: Feral cats on Stewart Island; their foods, and their effects on Kakapo. *N. Z. J. Zool.*, 9: 287-294.
- KIRKPATRICK, R. D. & RAUZON, M. J., 1986: Food of feral cats *Felis catus* on Jarvis and Howland Islands, Central Pacific Ocean. *Biotropica*, 18 (1): 72-75.
- MARTIN, A., NOGALES, M., QUILIS, V., DELGADO, G., HERNANDEZ, E., TRUJILLO, O. & SANTANA, F., 1988: Las aves marinas de canarias. *La Garcilla*, 73: 8-11.
- MOORS, P. J. & ATKINSON, A. E.: Predation on seabirds by introduced animals, and factors affecting its severity. In CROXALL, J. P., EVANS, P.G.H. & SCHREIBER, R. W. (eds.): Status and Conservation of the World's Seabirds. *ICBP Technical Publ.* (2): 667-690.
- NOGALES, M., MARTIN, A., DELGADO, G. & EMMERSON, K., 1988: Food spectrum of the feral cat (*Felis catus* L., 1758) in the juniper woodland on El Hierro (Canary Islands). *Bonn. Zool. Beitr.*, 39 (1): 1-6.
- NOGALES, M., ABDOLA, M., ALONSO, C. & QUILIS, V., 1990: Premières données sur l'alimentation du chat haret (*Felis catus* L., 1758) du Parc National du Teide. Ténérife (Iles Canarias). *Mammalia*, 54 (2): 189-196.
- SANTANA, F., MARTIN, A. & NOGALES, M., 1986: Datos sobre la alimentación del gato cimarrón (*Felis catus* Linnaeus, 1758) en los montes de Pajonales, Ojeda e Inagua (Gran Canaria). *Vieraea*, 16: 113-117.
- TOPHAM, G., 1957: Desde Barcelona se interesan por la adquisición de otra isleta lanzaroteña. *Antena*, 4-5.
- VEITCH, C. R., 1985: Methods of eradicating feral cats from offshore islands in New Zealand. In: MOORS, P. J. (ed.): Conservation of Island Birds. *ICBP Technical Publ.*, (3): 125-141.

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