

ORIGINAL INVESTIGATION

Feeding habits of Geoffroy's cat (*Leopardus geoffroyi*) in southern Brazil

Kleisson S. Sousa^a, A. Bager^{b,*}^aInstituto Pró-Pampa (IPPampa), Avenida Adolfo Fetter, 1112, Bairro: Recanto de Portugal, Pelotas, RS 96083000, Brazil^bLaboratório de Manejo e Conservação Ambiental, Universidade Estadual do Rio Grande do Sul, Av. Assis Brasil, 842, São Francisco de Paula, RS 95400 000, Brazil

Received 3 January 2007; accepted 19 April 2007

Abstract

The present study was carried out from 2001 to 2005, with the objective of analyzing the diet of *Leopardus geoffroyi* in extreme southern Brazil, through analyses of stomach contents and scats. The importance of each prey type found in the scats ($n = 66$) was determined from the frequency of occurrence and percentage of occurrence. In the stomachs ($n = 9$), the importance of each prey was determined using Pianka's index of relative importance (IRI). The food spectrum of *L. geoffroyi* included mammals, birds, serpents, amphibians and insects. Mammals were the most abundant items, present in 95.5% of the scats and representing 74.4% of the total prey, reaching an IRI of 13296.3 in the stomachs. The principal prey types found in the stomachs and scats were small rodents (*Cavia* spp., *Oligoryzomys* spp., *Necomys* spp. and *Holochilus brasiliensis*) and large-sized rodents (*Myocastor coypus*), of terrestrial, arboreal or semi-aquatic habit. Probably, the high percentage of these prey items in the diet is related to their availability and abundance. The index of niche breadth was low in both the stomach and scat analyses (respectively, $B_{sta} = 0.18$ and 0.17), demonstrating the high degree of specialization of these cats.

© 2007 Deutsche Gesellschaft für Säugetierkunde. Published by Elsevier GmbH. All rights reserved.

Keywords: Geoffroy's cat; Diet; Niche; Southern Brazil

Introduction

Leopardus geoffroyi is a small, neotropical feline that lives in the subtropical and temperate regions of South America, in Argentina, Chile, Uruguay, southern Paraguay, Bolivia and Brazil (Wilson and Reeder 1993; Eisenberg and Redford 1999). In Rio Grande do Sul, it occurs only in the central-southern part of the state (Eizirik et al. in press). These cats are nocturnal and solitary (Díaz and Barquez 2002), and are good climbers (Cabrera and Yepes 1960; Ximénez 1973). The males are larger-bodied (Lucherini et al. 2006) and have more

extensive ranges than the females (Johnson and Franklin 1991).

The species has been commercially exploited since the 1960s. Between 1976 and 1979, nearly 350000 pelts were exported from Argentina (Nowell and Jackson 1996). *L. geoffroyi* is now considered a threatened species, globally as well as within Brazil (Nowell 2002; Machado et al. 2005). In the state of Rio Grande do Sul, *L. geoffroyi* is also considered threatened, in the "vulnerable" category (Indrusiak and Eizirik 2003).

The main factors contributing to the decline of Geoffroy's cat are habitat destruction and hunting (Indrusiak and Eizirik 2003; Margarido and Braga 2004). However, because little is known of its ecological requirements, it is impossible to evaluate the impacts of these factors (Nowell and Jackson 1996). In Brazil,

*Corresponding author.

E-mail address: abager@uol.com.br (A. Bager).

L. geoffroyi is the second-least-known species of feline in terms of published reports (IBAMA 2004). This lack of knowledge about the species is repeated in the southern part of Rio Grande do Sul, an area that has been profoundly transformed by ranching and agriculture, and is presently passing through a new and rapid transformation because of the establishment of extensive plantations of *Eucalyptus* spp. for cellulose production.

The present investigation had the objective of analyzing the feeding habit of *L. geoffroyi*, using stomach contents and scats, as well as evaluating the degree of dietary specialization. The population studied lives within a protected area and in its surroundings.

Material and methods

Study area

The collections were made in extreme southern Brazil, in an area protected by a Conservation Unit, the Taim Ecological Station (ESEC Taim), and its surroundings. This area is located within the municipalities of Rio Grande and Santa Vitória do Palmar (Latitude 32°23'S and 32°50'S, Longitude 52°23'W and 52°32'W) (SEMA 1987). The area is part of the southern, outer coastal plain (Justus et al. 1986), which is an extension of the lowlands. The steeper reliefs are formed by coastal dunes, which form a barrier several kilometers wide along the Atlantic Ocean (Gomes et al. 1987). The ESEC Taim covers 33,000 ha. The local habitat mosaic includes marshes, lakes, open fields, and active and obliterated dunes, of which marshes occupy more than 81%. Surrounding the station are extensive areas of irrigated ricefields, cattle ranches, and plantations of exotic trees (*Pinus* and *Eucalyptus* spp.).

Data collection and analysis

During the period from July 2001 to December 2005, the stomach contents of nine road kill animals and 66 scats belonging to *L. geoffroyi* were collected. The scats of felids were differentiated from those of other families of carnivores by means of odor, form, dimensions, consistency and nearby tracks. The species of feline was determined from the hairs from self-cleaning present in the scats, taking into account aspects such as thickness, color, banding, malleability and waviness. The hairs were also identified microscopically, based on the patterns of the pith and cuticle of the guard-hair shaft, according to the techniques proposed by Quadros and Monteiro-Filho (2006a, b).

The prey items were identified by means of structures such as teeth, claws, beak, scales, limbs, hairs and feathers. In some cases, bird feathers were identified by the method of Day (1966), based on barbule nodules of the down.

The importance of each prey item in the diet was determined by the frequency of occurrence and percentage of occurrence of the prey items found in the scats and stomach contents. The frequency of occurrence was calculated from the number of scats in which each prey type occurred, divided by the total number of scats and multiplied by 100 (Korschgen 1980). The

percentage of occurrence was calculated by dividing the number of occurrences of a certain species by the total occurrences of all prey types, multiplied by 100 (Johnson and Franklin 1991).

Both frequency and percentage of occurrence overestimate the smaller prey types such as insects, treating them as equally important as prey with larger biomass. To minimize this effect, we used the index of relative importance (IRI) of the prey types found for stomachs (Pianka et al. 1971), calculated as follows:

$$\text{IRI} = \text{RF}\%(\text{N}\% + \text{V}\%),$$

where N% is the numerical percentage (number of individuals of a certain prey type divided by the total number of all prey types), RF% is the relative frequency of a category (number of scats in which a certain prey type is present, divided by the total number of presences of all prey types), and V% is the real volume (net volume weight) consumed of a certain prey type, divided by the total weight of all the prey types found in the contents.

To estimate the degree of feeding specialization, we calculated the breadth of the food niche using the “*B*” index of Levins (Krebs 1989).

$$B = 1/\sum p_j^2,$$

where p_j is the percentage of individuals in category j . To make the calculation, the prey types were organized in the following categories: (1) mammals, (2) birds, (3) reptiles (ophidians), (4) amphibians (anurans) and (5) insects. The niche measurement was standardized (B_{sta}), calculated according to Colwell and Futuyma (1971):

$$B_{\text{sta}} = B - 1/B_{\text{max}} - 1,$$

where B_{max} is the number of categories found. Niche values close to 1 signify a uniformly distributed diet, with no single prey type predominating (generalist diet). Values close to zero indicate that a few prey are consumed in high proportions (specialist diet).

The prey types found in the scats and stomachs were organized into size categories, such as: small mammals (<1000 g), large mammals (>1000 g), small birds (<200 g) and large birds (>200 g) (*sensu* Manfredi et al. 2004).

The analysis of seasonal variation in the diet compared the differential predation of each food category between the months of winter (June–August, $n = 26$ scats) and spring (September–November, $n = 28$ scats), using Yates’ G test. The months of autumn and summer were excluded, because of the insufficient number of samples ($n = 12$). The values of G were calculated from 2×2 contingency tables, developed by a binary data matrix, adopting a significance level of 0.05. The tests were done using the program BIostat version 2.0 (Ayes et al. 2000).

Results

In the stomach contents and scats, we identified 17 species of vertebrates, including mammals ($n = 10$), birds ($n = 4$) and reptiles ($n = 2$). Amphibians were also found, but it was not possible to identify them to species level. Among the mammal species, small rodents

Download English Version:

<https://daneshyari.com/en/article/2194194>

Download Persian Version:

<https://daneshyari.com/article/2194194>

[Daneshyari.com](https://daneshyari.com)