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Feeding Habits of the Egyptian Mongoose or Ichneumon in Spain

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We have analysed 83 gut contents and 105 faeces of *Herpestes ichneumon* (Linnaeus, 1758), the only mongoose in Europe. Samples come of the whole range of the species in Spain. The basis of the diet is of animal origin, mainly rabbits (which occur in 77% of the samples) and reptiles (45%). Also, birds and eggs, amphibians, fish, insects, other invertebrates, carrion, berries and mushrooms are consumed. Prey weight varies from a few tenths of a gram to one or two kilograms, but prey weighing 128—512 gr seem to be preferred. A sexual dimorphism in diet does not exist, even though males on average weigh 20% more than females. There is a statistically greater consumption of reptiles in Spring-Summer. The food changes locally according to prey availability. We conclude that: 1. The Egyptian mongoose is a generalist predator of animals living on or under the ground. 2. Availability of young rabbits and reptiles around the year limits the range of the species in Europe. 3. The rudimentary sociality of this mongoose could be related with cooperative hunting. 4. The ichneumon differs of other carnivores in Mediterranean Spain because of its diurnal habits and the important role of reptiles in its diet.

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1. INTRODUCTION

The Egyptian mongoose or ichneumon *Herpestes ichneumon* (Linnaeus, 1758) is the only *Herpestinae* in Europe, where it is limited to the Southwestern of the Iberian peninsula. There are few studies on the ecology and life history of this species either in Africa (Michaelis, 1972) or Europe (Delibes, 1981). A recent work on the biology of the Egyptian mongoose in Israel (Ben-Yaacov & Yom-Tov, 1983) paid scant attention to its feeding habits. In this paper we describe the food of the ichneumon in Spain qualitative and quantitatively, analysing seasonal and local variations, sexual dimorphism in diet, the size and habits of prey, etc. This information permits us to determine the place of the ichneumon in the carnivore taxocenose of Mediterranean Iberia and helps to explain the success of its colonization and the limits of its range in Europe.

2. MATERIAL AND METHODS

We have analysed 188 food samples (83 gut contents and 105 droppings), which include some preliminary data already published by Delibes (1976, 1981). Hunters, trappers and taxidermists were the source of the carcasses and we collected the faeces. Gut contents and droppings were analysed in the usual manner: washed,

dried, identification and counting of prey. When recognition of the actual number of items was impossible by our method (i.e. eggs, earthworms, mushrooms...) each occurrence was counted as one item. To estimate the consumed biomass, we gave a weight to each individual prey according to its size by comparison with collected specimens. If its size was unknown we assigned a standard weight for each species that never exceeded 250 gr, the maximum amount of food found in a stomach.

Rabbits as prey have been classified roughly into three categories: naked baby rabbits under 100 gr taken from the nest, young rabbits between 100 gr and 250 gr, and "other rabbits" above 250 gr. Weight of the rabbits was estimated from a reference collection of bones and teeth. We do not consider as prey many minute beetles, snails, ants and other invertebrates, probably present in the stomachs of the ichneumon's prey. The material comes from the whole range of the species in Spain, that is, Mediterranean scrublands of the Southwestern quadrant of the country (Delibes, 1982).

3. RESULTS

3.1. Food Spectrum

The general diet of the ihneumon ranges from fruit and mushrooms to mammals of medium size (Table 1). The basis is of animal origin,

Table 1

Relative importance of the main prey categories in the food of the Spanisch ichneumon.

	Frequency of occurrence (n=188)	Percent of the number of items (n=949)	Percent of biomass
Rabbits	77.1	17.8	71
Other mammals	27.7	6.1	6.9
Birds	11.7	2.6	6.5
Reptiles	45.2	12.3	9
Amphibians	9.6	2.3	0.7
Fisch	1.6	0.3	0.3
Insects	63.8	50.7	0.7
Other invertebrates	16.5	3.8	0.1
Plant matter	2.7	0.7	0.2
Eggs	12.7	2.5	1
Poultry	2.6	0.5	2.5
Carrion	1	0.2	1

mainly rabbits (which occur in 77% of the samples and supply 71% of the consumed biomass) and reptiles (45% and 9% respectively). All other prey are supplementary, including insects, which although frequently eaten (they occur in 64% of the samples), represent less than 1% of the biomass. Food accounted for by human activities (poultry, garbage, etc) is of little importance to the Spanish ichneumon.

3.2. The Prey

The number of occurrences, the number of items and the estimated percent of biomass for each type of food are shown in Table 2.

3.2.1. Mammals

The rabbit *Oryctolagus cuniculus* (Linnaeus, 1758) is the most frequently captured vertebrate and the prey that represents the greatest biomass. More than 20% of the rabbits are babies taken by digging them

Table 2

Diet of the Spanish ichneumon as indicated from the analysis of 83 gut contents and 105 droppings.

Prey species	Number of occurrences	Number of items	Percent of biomass
MAMMALS			
Crocidura russula	3	3	—
Suncus etruscus	1	1	—
Oryctolagus cuniculus	145	169	71
(naked baby rabbits)	(23)	(34)	(6.9)
(young rabbits)	(39)	(42)	(17.0)
(other rabbits)	(93)	(93)	(47.1)
Lepus granatensis	1	1	0.5
Eliomys quercinus	9	9	1
Arvicola sapidus	7	7	2.1
Pitymys duodecimcostatus	9	9	0.4
Apodemus sylvaticus	17	18	0.9
Mus sp.	3	3	0.1
Rattus rattus	3	3	0.9
Rattus sp.	2	2	0.6
Small mammal (unident.)	1	1	—
Mustela nivalis	1	1	0.2
BIRDS			
Fulica atra	1	1	0.5
Alectoris rufa	9	9	4.4
Streptopelia turtur	1	1	0.2
Hirundo rustica	1	1	—
Turdus merula	2	2	0.4
Turdus sp.	1	1	0.2
Fringilla coelebs	1	1	—
Fringillidae (unident.)	1	1	—
Sturnus sp.	1	1	0.2
Paridae (unident.)	1	1	—
Pica pica	1	1	0.2
Passeriformes (unident.)	4	4	0.2
Bird (unident.)	1	1	0.1
REPTILES			
Mauremys leprosa	1	1	—
Blanus cinereus	13	14	0.1
Lacerta lepida	18	18	3
Podarcis hispanica	3	3	—
Psammodromus hispanicus	2	2	—
Psammodromus algirus	37	41	0.7
Psammodromus sp.	4	4	—
Acanthodactylus erithrurus	2	2	—
Lacertidae (unident.)	2	2	—
Chalcides chalcidese	1	1	—
Macroprotodon cucullatus	1	1	—
Elaphe scalaris	5	5	1
Malpolon monspessulanus	8	8	2.7
Natrix natrix	2	2	0.2
Colubridae (unident.)	11	11	0.9
Vipera latasiti	1	1	—
Reptilia (unident.)	1	1	—

AMPHIBIANS			
Discoglossus pictus	2	4	0.1
Pelobates cultripes	1	1	—
Bufo bufo	2	2	0.1
Bufo calamita	1	1	—
Hyla meridionalis	2	2	—
Rana perezi	5	6	0.2
FISH			
Micropterus salmoides	1	1	0.2
Rutilus alburnoides	1	1	—
Leuciscus cephalus	1	1	—
INVERTEBRATES			
Gasteropoda	2	2	—
Arachnida	2	3	—
Crustacea	1	1	—
Myriapoda	24	27	0.1
Oligochaeta	1	1	—
Coleoptera	93	356	0.5
Orthoptera	63	107	0.2
Other insects	16	20	—
OTHER PRODUCTS			
Plant matter	5	—	0.2
Eggs	24	—	1
Poultry	5	5	2.5
Carrion	2	2	1

out of warrens and 25% are young under 250 gr. The commonest small mammal in the diet is the wood mouse *Apodemus sylvaticus* (Linnaeus, 1758), which is also the most abundant rodent in the Mediterranean forest ecosystem. Other significative prey are *Pitymys duodecimcostatus* (de Sélys Longchamps, 1839), *Eliomys quercinus* (Linnaeus, 1766) and *Arvicola* is a characteristic species of streams and marshes. The smallest *Apodemus* and *Rattus,* which occasionally climb trees, all of the consumed mammalian species have ground habits or are burrowers, or both. *Arvicola* is a characteristic species of streams and marshes. The smallest mammalian prey is *Suncus etruscus* (Savi, 1822), weighing about 2 gr, and the largest is *Lepus granatensis* Rosenhahuer, 1856, which as an adult weighs more than 2000 gr. A weasel *Mustela nivalis* Linnaeus, 1766 is the only carnivore found among the prey.

3.2.2. Birds and Eggs

We have identified 11 species of birds as prey, of which only the blackbird *Turdus merula* Linnaeus, 1758 and the red-legged partridge *Alectoris rufa* (Linnaeus, 1758) occur more than once. This confirms the occasional nature of such captures. At least one of the partridges had pellets in its flesh, suggesting that it was dead or wounded when captured by the mongoose. Another four came from 8 ichneumons trapped in Medina-Sidonia (Cádiz) during the week following a shooting party in which more than 600 partridges were killed. The unusually high number of mongooses and the finding of partridges in 50% of their guts suggest that this predator concentrates in shooting areas to take

advantage of game not recovered by hunters. Similar behaviour has been cited for the lynx *Lynx pardinus* (Temminck, 1824) in Doñana (Valverde, 1967) and it is usually mentioned by country people in connection with the fox *Vulpes vulpes* (Linnaeus, 1758).

Eggs are present only in the Spring-Summer diet. Most of them (66.7%) appearing in droppings found near Medina-Sidonia and probably belong to red-legged partridges which are very common in the area. We found waterfowl eggs (*Anatidae* and *Rallidae*) in three samples and in five the eggs of Passerines nesting on the ground. In the Doñana National Park a mongoose was seen taking four eggs, one after the other, from the nest of a mallard (*Anas platyrhynchos* Linnaeus, 1758) which looked on from a short distance.

3.2.3. Reptiles

The ichneumon eats all the reptiles living in its habitat, aquatic as *Natrix* spp. and *Mauremys leprosa* (Schweigger, 1812) as well as terrestrial. We have found no less than 13 species. Probably frequency and size determine prey selection, since most of those caught are also the commonest (*Psammodromus algirus* (Linnaeus, 1758) and *Lacerta lepida* (Daudin, 1802), with the occasional exception of small lizards. The role of *Blanus cinereus* (Vandelli, 1797) in the diet is another instance of the ichneumon's ability to dig for food. Mongooses are well known as snake killers (Hinton & Dunn, 1967; Rosevear, 1974). In our area lizards are more important prey than snakes, even though we have found some *Elaphe scalaris* (Schinz, 1822) and *Malpolon monspessulanus* (Hermann, 1804), of large size, as well as a viper *Vipera latasti* Boscá, 1878 and other species.

3.2.4. Amphibians

The 22 emphibians as prey belong at least to 6 species of *Salientia*. The most outstanding is *Rana perezi* (Seoane, 1885), an inhabitant of proximities to water, followed by *Discoglossus pictus* Otth, 1837.

3.2.5. Invertebrates

The numbers of invertebrates are superior to those of any other group in the food of the ichneumon. Insects are 93% of the total of invertebrates. *Scarabaeidae* (genus *Geotrupes, Copris, Typhoeus, Tripinota, Bubas)* occupy the first place, followed by *Tenebrionidae (Asida, Tentiria), Carabidae (Carabus, Calathus)* and a large series of less important families. Of *Orthoptera* the most frequently caught are *Acrididae (Oedipoda, Aiolopus, Platicleis)* and *Tettigonidae. Myriapoda,* mainly *Scolopendra,* make up 75% of the remaining invertebrates. We also found

some scorpions (*Buthus* sp.), snails, earthworms and an American crayfish (*Procambarus* sp.).

3.2.6. Other food

On five occasions we found poultry. This is a low percentage when we consider that the ichneumons that attack hens run a greater than average risk of being killed (and hence studied). Three other animals had eaten fish, easily caught in the almost dry streams of Southern Spain during the Summer (a captive mongoose had no problem catching fish in a washtub by totally submerging its head and shoulders). Mushrooms made up most of the plant matter but there were also some blackberries (*Rubus* sp.). Remains of red deer *Cervus elaphus* Linnaeus,

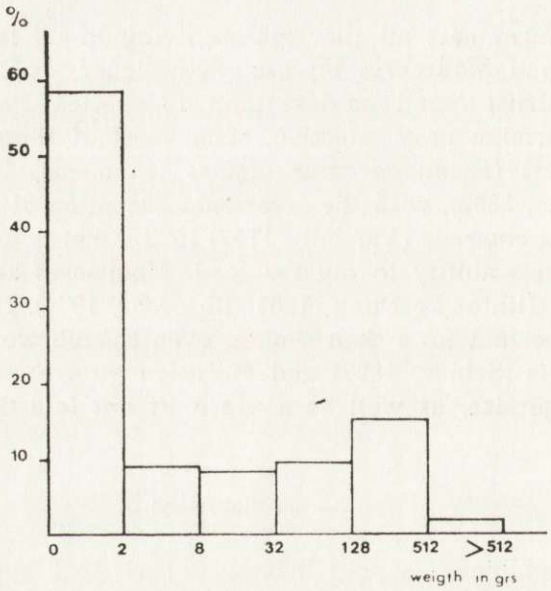

Fig. 1. Distribution of the prey items of the Spanish ichneumon in six weight categories.

1758 were found in one animal and those of sheep in another. Both were undoubtably carrion. Occasionally groups of mongooses have been seen eating from the carcasses of roe deer *Capreolus capreolus* (Linnaeus, 1758) in the province of Cadiz.

3.3. Prey Size

The ichneumon consumes prey varying in weight from a few tenths of a gram (in the case of some insects) to one or two kilograms (adults rabbits and hares). If we assume that small species are much more numerous than large ones (Van Valen, 1973), we see that the mongoose

behaves as a generalist, capturing more small prey than large, but there appears to be a noticeable tendency to prey on a medium to large size: 57.2% of the prey items weigh under 2 gr and 15.5% between 128 and 512 gr, all the remaining categories including smaller percentages (Fig. 1).

3.4. Sexual Dimorphism in Diet

Spanish mongooses are dimorphic in size, males weighing on an average 20% more than females (males 2879 ± 95 gr, n=11; females 2411 ± 93 gr, n=8). This difference is statistically significant (Student *t* test; $p<0.01$; Delibes, unpublished). Sexual dimorphism in diet could be a result of this, as it does occur in other small and medium size carnivores as *Mustela nivalis* Linnaeus, 1766 (Erlinge, 1975), *Mustela erminea* Linnaeus, 1758 (Erlinge, 1979), *Martes martes* (Linnaeus, 1758) (Yurgen-

Table 3

Comparison of the frequency of occurrence of the main prey categories in the guts of both sexes. Chi-square values are not significant.

	Males (n=47)	Females (n=34)	chi-square
Rabbits	63.8	67.6	0.12
(Babies)	(17.0)	(23.5)	(0.52)
(Young)	(29.8)	(23.5)	(0.39)
(Other)	(23.4)	(29.4)	(0.37)
Small mammals	25.5	41.2	1.60
Birds	8.5	20.5	2.45
Reptiles	46.8	44.1	0.05
Amphibians	12.8	8.9	0.31
Insects	61.7	67.6	0.30
Other invertebrates	12.7	17.6	0.37

son, 1947) and *Lynx rufus* (Schreber, 1776) (Fritts & Sealander, 1978). On the other hand ichneumons are known to live in groups and to share some prey (Valverde, 1967; Ben-Yaacov & Yom-Tov, 1983; Delibes, unpublished). Thus, sexual dimorphism in size could be not significant for food habits. Results confirm the latter view, as the frequency with which the main groups of prey occur in the guts of males and females does not differ statistically (Table 3). However, the five specimens that had eaten poultry were males.

3.5. Seasonal Variations in Diet

Mediterranean areas are characterized by two well defined seasons, the warm and dry Summer and the mild and wet Winter. In Mediterranean Spain the period with hydric deficit lasts approximately from April to September (Walther & Lieth, 1960). So, we have compared the diet of the ichneumon in the periods April-September (Spring-Summer)

Table 4

Seasonal variation in the food the Spanish ichneumon. [1] $p<0.05$; [2] $p<0.01$

	Frequency of occurrence		
	Spring-Summer (n=23)	Autumn-Winter (n=56)	chi-square
Rabbits	60.9	66.0	0.19
(Baby+young rabbits)	(47.8)	(42.9)	0.16
(Other rabbits)	(21.7)	(26.7)	0.22
Small mammals	17.4	39.2	3.53
Other mammals	4.3	0.0	
Birds	13.0	12.5	0.01
Eggs	8.7	0.0	
Reptiles	69.5	30.3	10.30 [2]
Amphibians	8.7	12.5	0.23
Fish	0.0	3.7	
Insects	47.8	75.0	5.45 [1]
Other invertebrates	26.1	10.7	2.99
Poultry	8.7	5.5	
Plant matter	8.7	5.5	
Carrion	4.3	1.8	

and October-March (Autumn-Winter). Only gut contents are considered as comparisons between heterogeneous material (stomachs and droppings) are problematical (Table 4).

There is a statistically greater consumption of reptiles in the Spring-Summer. Eggs are eaten only during the same period. Insects are consumed statistically more often in the Autumm-Winter. No statistical differences occur in other groups.

3.6. Local Variations in Diet

As the range of the ichneumon in Europe is very limited and its habitat uniform, we cannot expect defined geographical trends in its food. However, local conditions affecting prey availability do produce chan-

Table 5

Comparison of the frequencies of occurrence of the main prey categories in the Spring-Summer samples of a humid area (La Rocina) and of the pooled remaining localities. [1]$p<0.05$; [3]$p<0.001$.

	La Rocina (n=16)	Other areas (n=112)	chi-square
Rabbits	62.5	83.9	4.220 [1]
Small mammals	43.7	18.7	5.123 [1]
(Arvicola sapidus)	(43.7)	(0.0)	
Birds	12.5	10.7	0.046
Eggs	31.2	16.7	2.183
Reptiles	43.7	52.7	0.447
Amphibians	43.7	3.5	23.771 [3]
Fish	6.2	0.0	
Insects	75.0	58.9	1.519
Other invertebrates	6.2	21.4	2.052

ges in the diet. To test this hypothesis we compared the Spring-Summer food of the mongoose in the area of La Rocina, at the edge of the Guadalquivir Marismas, with that of the pooled remaining areas in the same period. Prey that are characteristic of aquatic environments, such as water voles and amphibians, appear with statistically more frequency in the samples of La Rocina, while the capture of rabbits there is rarer (Table 5).

4. DISCUSSION

4.1. Sources of Error

The validity of our results is open to speculation as there are several potential sources of error. The more important question concerns the number of individual prey and the amount of consumed biomass. A large prey can be eaten by several individuals (see 4.5) and will appear in different guts or droppings. Thus, the importance of the larger prey in the diet could be overestimated. On the other hand, food such as mushrooms and eggs leave little trace and probably have been underestimated in our study. Also, local variations in diet could have affected results, given the fact that we have pooled many separate localities. In spite of these criticisms we think that our data give an accurate picture of the diet of the ichneumon in the Iberian Peninsula.

4.2. The Ichneumon as a Generalist

Results of this study confirm previous non quantitative information about general feeding habits of *Herpestes ichneumon*. Pienaar (1964) says that in South Africa this mongoose eats small terrestrial vertebrates, eggs of land nesting birds, crabs and fishes, while Smithers (1966, 1971) cites as the main prey in Rhodesia (now Zimbabwe) frogs, rats and mice, reptiles, grasshoppers and beetles, and Michaelis (1972) gathering information from other authors, states that ichneumons eat all sorts of food but mainly meat, particularly lizards, small and medium size birds, small mammals, snakes and insects. Ben-Yaacov & Yom-Tov (1983) remark the diversity of the mongooses' diet.

As a generalist, the mongoose is an opportunistic hunter, catching the more abundant or vulnerable prey as the occasion demands. Thus, reptiles are eaten more in the dry period when they are most active and eggs are an important part of the diet during the breeding season of birds.

Nevertheless, the distribution of prey sizes (Fig. 1) suggests the existence of a trend towards the selection of the largest prey within the range of those sizes rewarding for the predator. This could be because our method overestimates the larger prey (see 4.1.) or also because prey that

weigh between 128 and 512 gr are more available than those of weigh less in the habitat of the mongoose. However we think that prey of 128—512 gr, probably optimal for the ichneumon from an energetical point of view, are positively preferred. As a food opportunist therefore the mongoose will habitually behave as a number maximizer in relation to prey, but will take advantage of any opportunity to act as an energy maximizer, according to the terminology of Griffiths (1975). This fits other theoretical models according to which the favourite prey will always be eaten when found, while the others will become a part of the diet according to their abundance (Hugues, 1979; Stenseth & Hansson, 1979).

4.3. Food as a Possible Factor Limiting the Ichneumon Distribution

Although a generalist, the ichneumon depends heavily for its food on rabbits and to a lesser extent on reptiles. Therefore it is possible that the reduced range of the species in Europe can be explained by changes in the abundance and distribution of its main prey. *Herpestes ichneumon* is at present limited to mesomediterranean Iberia where rabbits can breed during nine months of the year (Delibes & Calderón, 1979; Soriguer & Rogers, 1981). Cold winters in the North and Northeast and aridity in the East reduce the period of reproductive activity of rabbits. Therefore, ichneumons do not exist where baby rabbits are absent during a great part of the year. Also, the abundance and diversity of reptiles increase from North to South in Iberia, whilst in the arid Southeast the annual period of activity is shortened.

4.4. Prey Characteristics

Characteristics of the prey can help explain the preferences and the hunting abilities of the predator. We know that the ichneumon is able to catch prey of varying sizes but those greater than 500 gr are exceptional (Fig. 1). Taking into account only identified vertebrate prey, between 45% and 78% (depending of whether we consider that rabbits other than babies are captured on or under the ground; both possibilities exist) are inhabitants of the ground, i.e. many snakes, and lizards, partridges, etc. Between 14% and 47% (depending on the same) art typical underground dwellers, as baby rabbits, *Blanus*, *Pitymys*, etc. Many of the birds (*Turdus* spp., *Fringilla*, *Sturnus*) use different perches, but usually feed on the ground. Approximately 5% of the vertebrate prey are associated with aquatic environments, such as *Arvicola sapidus*, *Fulica*, *Natrix*, *Mauremys*, *Rana* and fish. From this it follows that mongooses hunt on or below the ground and frequently in humid areas. With regard to this, it is well know that *Herpestinae* differ from other *Viverridae* because of their scarce ability to climb (Dücker, 1965), so they are restricted to ground activities. Dücker (1957) and Ben-Yaacov

& Yom-Tov (1983) have described the digging behaviour of *Herpestes ichneumon* searching for food, while the preference for wet zones was pointed out by Flower (1932) in Egypt, Smithers (1971) in Bostwana, Delibes (1976) in Spain and Ben-Yaacov & Yom-Tov (1983) in Israel. Braza (pers. comm.) has seen an ichneumon chasing young ducks across shallow water in the Doñana National Park.

4.5. Are Ichneumons Cooperative Hunters?

Gorman (1979) states that mongooses of the genus *Herpestes* are solitary animals. However, ichneumons are known to live in groups; seven in the largest group observed in Spain (Valverde, 1967). Ben-Yaacov & Yom-Tov (1983) prove that these groups have family origin and include alloparents. Field observations in Spain suggest that occasionally individuals of these groups cooperate to harass and kill subadult and adult rabbits (and probably other prey) and certainly share the meal, although there is some threatening among them (Delibes, unpublished). Up to this date, cooperative hunting has only been documented for species of the *Canidae, Hyaenidae* and *Felidae* (Macdonald, 1983). As in other social *Viverridae,* the ichneumon is a member of the subfamily *Herpestinae* and has diurnal habits. However, other social mongooses are smaller and insectivorous, sociality probably having evolved because of antipredator necesities (Gorman, 1979; Rood, 1983). As an *Herpestinae,* the ichneumon can show a certain preadaptation or phylogenetic inertia (Wilson, 1975) for social life. Thus, the evolutionary catalyst for social life, using the same words as Macdonald (1983), could have been the same for the ichneumon and the smaller social mongooses *(Helogale, Mungos, Suricatta),* even if the first one is larger and a facultative cooperative hunter and the latter are insectivorous and cooperative in defense. Whatever the case, although the role of social hunting in the predator behaviour of the ichneumon appears minor, it deserves to be studied in more detail.

4.6. The Place of the Ichneumon in the Carnivora Taxocenose of Mediterranean Spain

Within the Iberian range of the ichneumon we more or less know the diet of the red fox *Vulpes vulpes* (Amores, 1975), the genet *Genetta genetta* (Linnaeus, 1758) (Delibes, 1974), the stone marten *Martes foina* (Erxleben, 1777) (Amores, 1980), the polecat *Mustela putorius* Linnaeus, 1758 (Ballarin *et al,* 1980), the wildcat *Felis silvestris* Schreber, 1777 (Aymerich *et al.,* 1980; Aymerich, 1982), the badger *Meles meles* (Linnaeus, 1758) (Martín-Franquelo, 1980), the lynx *Lynx pardinus* (Delibes, 1980; Aymerich, 1982), the otter *Lutra lutra* (Linnaeus, 1758) (López-Nieves & Hernando, 1984) and a lesser degree the wolf *Canis lupus*

Linnaeus, 1758 (Valverde, 1972; Castroviejo *et al.*, 1975). We have not considered the weasel *Mustela nivalis* as there is nothing known of its food in the area.

The genet prey mainly on woodmice *Apodemus sylvaticus*, the stone marten on invertebrates and small mammals, and the otter on fish. All the remaining species including the ichneumon mainly eat rabbits. However, the lynx and the wildcat do not capture baby rabbits and rarely invertebrates, and the fox consumes more plant matter and garbage. The polecat eats more amphibians. The diet of the badger most resembles that of the ichneumon. Both species use the same biotopes, catch their prey on or under the ground and mainly eat rabbits and invertebrates. Nevertheless, the badger digs more, eats more fruits and catches amphibians more often than reptiles, perhaps due to its nocturnal habits, since active prey are easier to detect (Curio, 1976). Its diurnal activity (Valverde, 1967; Delibes, unpublished) and the frequent hunting of reptiles (possibly related to its circadian pattern) are what make the ichneumon different from other carnivores in its range. This can explain the successful colonization of Southern Europe by this mongoose.

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STOSUNKI POKARMOWE U MANGUSTY EGIPSKIEJ W HISZPANII

Streszczenie

Dokonano analizy zawartości 83 przewodów pokarmowych i 105 kolekcji kału mangusty egipskiej *Herpestes ichneumon* (Linnaeus, 1758), zamieszkującej tereny Hiszpanii. Podstawą diety tego gatunku jest pokarm zwierzęcy, głównie króliki, których występowanie stwierdzono w 77% próbek, oraz gady (występowanie w 45% próbek) (Tabela 1). Lista zjadanych pokarmów jest względnie długa i zawiera ptaki (i ich jaja), płazy, ryby, owady oraz inne bezkręgowce. Ponadto stwierdzono, że mangusty zjadają jagody i grzyby (Tabela 2). Pobierany pokarm może być różnej wielkości, masa jego waha się od kilkudziesięciu gramów do dwóch kilogramów, ale preferowana wielkość zamyka się między 128 a 512 gramów (Ryc. 1). Nie stwierdzono by dieta samic różna była od diety samców (Tabela 3), choć samce ważą o około 20% więcej niż samice. Istnieją natomiast sezonowe zróżnicowania diety, gdyż wiosną i latem mangusta egipska łowi gady w istotnie większym stopniu niż w pozostałych sezonach. Zaobserwowano także środowiskowe zmiany w stosunkach pokarmowych tego gatunku na terenie Hiszpanii (Tabela 5).

Wyniki wykonanych badań wskazują, że mangusta egipska odżywia się wieloma gatunkami zwierząt żyjących na powierzchni gleby, jak też i w glebie. Autorzy wnioskują także, iż dostępność młodych królików i gadów w ciągu roku stanowi o zasięgu występowania *H. ichneumon* w Europie. Stwierdza się również, iż szczątkowe zachowanie socjalne może być objaśniane zbiorowym zdobywaniem pokarmu. Mangusta egipska różni się od innych *Carnivora* Hiszpanii swą dzienną aktywnością i dużym udziałem gadów w diecie.