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The diet of feral cats on islands: a review and a call for more studies

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Abstract Cats are among the most successful and damaging invaders on islands and a significant driver of extinction and endangerment. Better understanding of their ecology can improve effective management actions such as eradication. We reviewed 72 studies of insular feral cat diet from 40 islands worldwide. Cats fed on a wide range of species from large birds and medium sized mammals to small insects with at least 248 species consumed (27 mammals, 113 birds, 34 reptiles, 3 amphibians, 2 fish and 69 invertebrates). Three mammals, 29 birds and 3 reptiles recorded in the diet of cats are listed as threatened by the IUCN. However, a few species of introduced mammals were the most frequent prey, and on almost all islands mammals and birds contributed most of the daily food intake. Latitude was positively correlated with the

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predation of rabbits and negatively with the predation of reptiles and invertebrates. Distance from landmass was positively correlated with predation on birds and negatively correlated with the predation of reptiles. The broad range of taxa consumed by feral cats on islands suggests that they have the potential to impact almost any native species, even the smallest ones under several grams, that lack behavioral, morphological or life history adaptations to mammalian predators. Insular feral cat's reliance on introduced mammals, which evolved with cat predation, suggests that on many islands, populations of native species have already been reduced.

Keywords Domestic cat · *Felis catus* · Feeding behaviour · Food web · Island ecosystem · Conservation

Introduction

Invasive species, particularly mammals, have caused population declines, local extinctions and global extinctions of many island endemic species making them leading contributors to biodiversity loss (Diamond 1989; Fritts and Rodda 1998; Balmford 1996; Stattersfield and Capper 2000; Atkinson 2001; Dowding and Murphy 2001; Courchamp et al. 2003; Long 2003; Aguirre-Muñoz et al. 2008). Cats *Felis catus* (Driscoll et al. 2007) were first introduced to islands in the Mediterranean in 9000 BP (Vigne et al. 2004; Driscoll et al. 2007), and have since been introduced to islands worldwide from the sub Antarctic to the sub Arctic including the most arid and mesic islands (Courchamp et al. 2003). Cats are successful invaders on islands because they can survive without access to fresh water, have high fecundity, are highly adaptable to new environments, and have generalist predatory behaviours that allow them to feed on the most available prey species (Van Aarde 1986; Konecny 1987; Say et al. 2002; Fitzgerald 1988; Fitzgerald and Turner 2000; Pearre and Maass 1998; Stattersfield and Capper 2000).

Cats are one of the most widespread invasive predator on islands causing strong negative impacts on native wildlife (Fitzgerald 1988; Macdonald and Thom 2001) and are responsible, at least in part, for 8% of global bird, mammal and reptile extinctions and a significant threat to almost 10% of critically endangered birds, mammals and reptiles (Medina et al. In Review). Eradicating cats from islands can protect native species from the threat of extinction (Keitt and Tershy 2003; Nogales et al. 2004; Ratcliffe et al. 2009) and research on the ecology of insular feral cats can improve the efficacy and prioritization of cat eradications, particularly when (i) complex biotic interactions occurred on multi-invaded islands and (ii) highly vulnerable native prey are present (Fitzgerald 1988; Fitzgerald and Turner 2000; Macdonald and Thom 2001).

Here, we reviewed all available published studies of insular feral cat diet to determine: (1) what general patterns define the diet of feral cats on islands, (2) how does biogeography influence the diet of feral cats, (3) what are the taxonomic and size diversity of cat prey species, and (4) how many threatened species were found in the diet of feral cats on islands?

Materials and methods

Data compilation

We compiled data from published literature using electronic databases (Webspire, Web of Knowledge, Ovid SP, Inist, Blackwell Publishing, Science Direct) using the key words: cat(s), feral cat(s), *Felis catus*, island(s), diet, predation, and native species. Data compilation was conducted through July 2008. References cited in the resulting papers were examined for additional sources. The diet studies we analyzed used three types of samples: scats, gut contents and stomach contents. Some studies utilized more than one of these sample types. For the analyses in this study we did not differentiate between the types of samples because several studies found only minor differences between sample types (Lozano et al. 2006; Souza and Bager 2008), but see Jones et al. (2003). When studies used more than one type of sample, we analyzed each sample type as a separate study (e.g. Berruti 1986; Fitzgerald et al. 1991; Martínez-Gómez and Jacobsen 2004). Australia was excluded from our review because it is traditionally defined as a continent and cat diet in Australia has been reviewed elsewhere (Dickman 1996; Burbidge and Morris 2002). Lastly, we selected only data from feral cats, feeding on wild prey (Artois et al. 2002) and only incorporated data from papers giving detailed information about cat diet.

The following data were extracted from each paper: geography (latitude, distance from landmass, elevation and area) of each study island, study date, type of sample analyzed (guts, stomachs and scats), prey sample size and characteristics of sampling sessions (i.e. number of sessions, periods of the year).

Global patterns of feral cat diet

To describe global patterns of feral cat diet, when one study described cat diet on the same island but with two different sample types (i.e. scats and stomachs), we eliminated the less representative, i.e. the one with the smallest sample size, to avoid redundancy. We calculated the percentage of the 66 studies where the main prey categories (i.e. mammals, birds, reptiles, fishes, invertebrates) were represented by at least one species. Then we constructed a global diet pattern for the main prey categories using data from papers that gave feral cat diet in frequencies of occurrences (% FO) for all taxa (65 studies).

Biogeographical patterns of feral cat diet

For the following analyses, we only selected the most representative (the largest sample size and the most number of seasons covered) study per island, avoiding those based on excessively small sample size and which described diet with insufficient accuracy (less than 30 samples). We tested for correlations between the frequency of occurrence (%FO) of the six main prey categories (rabbits, rats, mice, birds, reptiles and invertebrates such as dependent variables) and five biogeographical variables (latitude, distance from nearest continental landmass, area, elevation, area*elevation). The dependent variables were arcsine transformed and the quantitative descriptive variables were log transformed for normality (Sokal and Rohlf 1995). Variables not normally distributed after transformation were analyzed using Spearman rank tests.

We also performed a PCA analysis, using the %FO as dependent variable, to obtain a spatial ordination of the different main prey categories and islands included in this review. For this, we applied a varimax rotation in order to identify the contributions of the different prey items. In all analyses, all data concerning %FO were arcsin transformed to better meet the assumption of normality (Tabachnick and Fidell 1996; Fowler et al. 1998).

Diet diversity and species threatened by feral cats

Levin's index (trophic niche breadth) was applied to calculate diet diversity. This index reaches maximum values when all diet items are consumed in equal proportions, the minimum value indicating more specialized diets. The normalized Levin's index (hereafter Levin's-std) was used to avoid variation caused by different samples sizes (Krebs 1989). We also tested for correlations between the Levin's-std index and the five biogeographic variables mentioned, and we performed Spearman correlation tests when variables were not normally distributed, even after transformation. Then, mean weights (from the literature) of vertebrates species preyed on by feral cats were listed. This information was not available for invertebrates.

Lastly, we compared the prey species from our review to those listed in a review of feral cat impacts on insular endangered species (Medina et al. In Review) with an emphasis on prey species that were listed by the IUCN 2008 Red List of Threatened Species in one of the five most threatened categories of the (Extinct, Extinct in the Wild, Critically Endangered, Endangered and Vulnerable).

Results

Data compilation and global patterns of feral cat diet

We reviewed 58 papers with data on the diet of feral cats on islands. Those papers described results from 72 diet studies (Appendix 1) conducted on 40 different islands (Fig. 1). Studies of feral cat diets on islands were not evenly distributed with relatively few studies in the tropics and no studies in important biogeographic regions including the Caribbean, Indonesia, Japan and French Polynesia (Fig. 1). Most of the studies were of diet found in scat and covered only one or two seasons with a single sample session (18/56) (Table 1).

Mammal and bird species were found in nearly all diet studies we reviewed, followed by reptiles and invertebrates (Fig. 2a). For the subset of studies that recorded frequency of occurrence, mammals were most frequent (Fig. 2b).

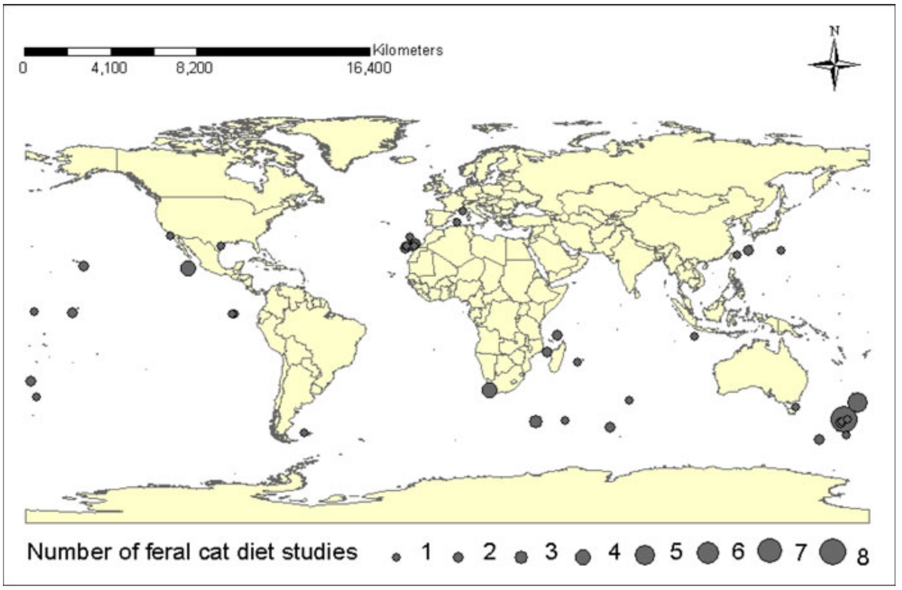

Fig. 1 Location of the diet studies of feral cats carried out on islands worldwide

Table 1 Sampling description of the diet studies of feral cats: type of samples, sample size; seasons covered by sampling sessions and their number

Samplings	Number of studies
Sample type	
Scats	46
Guts	13
Stomachs	13
Sample size	
0-9	3
10-49	24
50-99	12
100-499	27
>500	6
Studies covered	
1 season	18
2 seasons	17
3 seasons	6
All year	24
Not mentioned	7
Number of samplings	
1	19
2	12
3	4
Several (collected occasionally)	19
Several (planned)	8
Not mentioned	10

Biogeographical patterns of feral cat diet

Latitude was positively correlated with %FO of rabbits and negatively with %FO of reptiles and invertebrates in feral cat diet. Distance from landmass was positively correlated with %FO of birds and negatively with %FO of reptiles (Table 2).

The first three components of the PCA analysis explained 75.6% (PCI = 35.9%, PCII = 21.2%, and PCIII = 18.5%) of the whole variance. We represented these three main PCA components and the islands in order to understand the spatial ordination (Fig. 3a, b). The first two components separated those islands where rabbits were important in cat diet (component I with negative values), grouping sub-Antarctic and subtropical islands (e.g. Canaries) (Fig. 3a) and where rats were important (component I, with positive values) like Galapagos, Port-Cros island, Japanese islands and some islands north of New Zealand. The component II segregated those islands where the consumption of birds (with negative values) was an important component of the diet (e.g. Herekopare, Marion, or Jarvis), than the rest of prey items. With respect to the components I and III (Fig. 3b), the first separated well those islands with diet characterized by the presence of rabbits (negative values) from those in which rats were the main component (positive values) was relevant (e.g. tropical and subtropical archipelagos such as Aldabra,

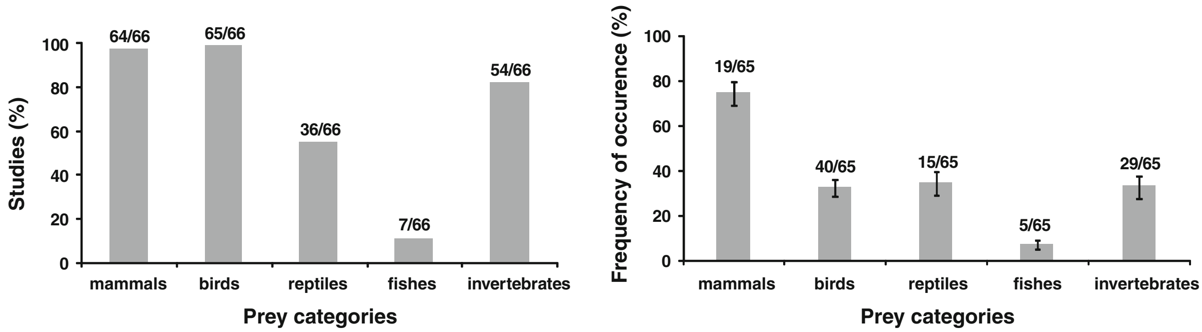

Fig. 2 **a** The percentage of diet studies in which the main prey categories were found. The number of studies is given above each bar. **b** The frequencies of occurrences of main prey categories in each diet study. The number of studies with frequencies of occurrences is given above each bar. The *error bars* represent standard deviation

Table 2 Spearman Rank tests describing the frequencies of occurrence of rats, rabbits, mice, birds, reptiles and invertebrates in the diet of feral cats related to biogeographic variables

		Number of samples	Statistical values	Explanatory variables				
				Latitude	Distance from landmass	Area	Elevation	Area * Elevation
Dependent variables	FO of rats	34	*R*	−0.2284	0.1501	0.0569	0.0598	0.0761
			P	ns	ns	ns	ns	ns
	FO of rabbits	34	*R*	0.4104	−0.3229	0.1781	0.1939	0.2285
			P	*	ns	ns	ns	ns
	FO of mice	34	*R*	0.0920	−0.1947	−0.0996	0.1878	0.0386
			P	ns	ns	ns	ns	ns
	FO of birds	34	*R*	−0.0995	0.4626	−0.0891	−0.0717	−0.0836
			P	ns	**	ns	ns	ns
	FO of reptiles	34	*R*	−0.4532	−0.4216	0.2983	0.1071	0.1866
			P	**	*	ns	ns	ns
	FO of invertebrates	34	*R*	−0.4164	0.1116	−0.0381	0.1652	0.0585
			P	*	ns	ns	ns	ns

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$

Galapagos or Canaries). Table 3 showed the factor loadings of the main components of the diet. The factor I indicated that while rabbits are highly preyed on by cats, birds show a scarce presence in the diet. The factor 2 and 3 were related to a negative relationship between the consumption of reptiles vs. mice and birds, respectively.

Diet diversity and species threatened by feral cats

The studies we reviewed identified 248 prey species in the diet of insular feral cats: 27 mammals (12 natives and 17 non-natives), 113 birds (38% of which were seabirds), 34 reptiles, 3 amphibians, 2 fishes and 69 invertebrates, mostly insects (Appendix 2). The Levin's-std index was only calculated for 21 studies where prey number was given (Table 4). This index was positively correlated with distance from landmass, elevation and area*elevation (Table 5). The size of feral cat prey ranged from several grams to more than 2 kg; lagomorphs and seabirds (mainly Procellariidae) constituted the largest species, while small rodents (mice) and reptiles (lizards and geckos) were the smallest (Fig. 4).

We identified 36 IUCN-listed threatened species (3 mammals, 29 birds, 3 reptiles and 1 amphibian (not represented in the figure) that were preyed upon by cats (Fig. 5).

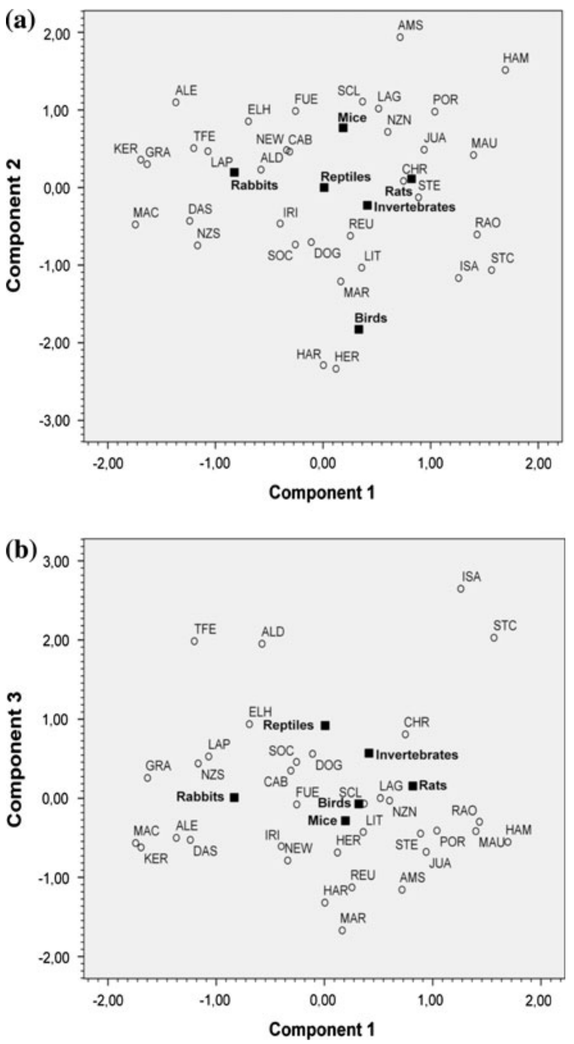

Fig. 3 Plot of the location of the main %FO of the main prey consumed by feral cats on islands. Key to island legend: *ALD* Aldabra, *ALE* Alegranza, *AMS* Amsterdam, *CAB* Cabrera, *CHR* Christmas, *DAS* Dassen, *ELH* El Hierro, *FUE* Fuerteventura, *GRA* Gran Canaria, *DOG* Great Dog, *HAM* Hahajima, *HER* Herekopare, *IRI* Iriomote, *ISA* Isabela, *JAR* Jarvis, *JUA* Juan de Nova, *KER* Kerguelen, *LAG* La Gomera, *LAP* La Palma, *LIT* Little Barrier, *MAC* Macquarie, *MAR* Marion, *HAW* Hawaii (the big island), *NEW* New Island, *NZN* New Zealand North, *NZS* New Zealand South, *POR* Port-Cros, *RAO* Raoul, *REU* Réunion, *SCL* San Clemente, *STC* Santa Cruz, *SOC* Socorro, *STE* Stewart, *TFE* Tenerife

Discussion

Data compilation

We compiled 58 scientific papers, describing 72 studies on the diet of feral cats, in different archipelagos worldwide. Few data were available on feral cat diet from islands in the Caribbean, Indonesia or French Polynesia, three biodiversity hotspots with large numbers of threatened endemic species (Brooks and Smith 2001; Long 2003). Surprisingly, there were also only a few studies from the Mediterranean Basin, despite the presence of cats on some islands since 9000 BP (Vigne et al. 2004), and on Japanese islands. Studies in undersampled regions will undoubtedly add new species of prey items to the nearly 250 reported here.

Scats were the most frequent type of sample analyzed (Mukherjee et al. 2004). A minimum size of ~100 scats is considered necessary to identify principal prey remains occurring in 5% of scats and ~100 samples is also required when comparing diets to distinguish moderate effects over time or between areas (Trites and Joy 2005). Less than half of the 72 studies were based on more than 100 samples, thus most diet studies reviewed here probably missed some prey items (Table 1a). Moreover, most diet studies were conducted with fewer than two sampling sessions and during just part of the year (Table 1b). This effort is likely to miss rare species, which suggests that the 36 of IUCN listed threatened species we found may be a conservative estimate.

Table 3 Principal component analysis of the correlation matrix between percentages of %FO (arc-sin transformed) for the main prey items included in the diet of feral cats (*Felis catus*) on the different islands studied

Main prey items	Factor loadings		
	F1	F2	F3
Rabbits	**−0.70**	0.49	0.06
Rats	**0.60**	−0.48	0.34
Mice	−0.39	**−0.63**	0.43
Birds	**0.64**	−0.03	**−0.66**
Reptiles	0.42	**0.60**	**0.56**
Invertebrates	**0.76**	0.20	0.25

Factor loadings >0.5 and <-0.5 are indicated in boldface type

Global patterns of feral cat diet

Feral cats feed on a wide range of prey from large birds to small insects (Langham 1990; Tidemann et al. 1994; Peck et al. 2008), yet mammals and birds were present in practically all studies. Introduced mammals (mainly rabbits, rats and mice) were the main prey and birds, reptiles and invertebrates were often consumed as

Table 4 Diet studies of feral cats expressed in prey number. In this study sample, Levin's index was calculated

Studies	Islands	Latitude	Distance from landmass (km)[a]	Area (km^2)	Elevation (m)	Prey number	Number of prey categories	Levin's-std
Jones (1977)	Macquarie	54.3	1990.0	128.0	240.0	60	7	0.387
Karl and Best (1982)	Stewart	47.3	1792.0	1746.0	979.0	737	5	0.451
Apps (1983) (/year)	Dassen	33.3	8.5	2.2	19.0	138	6	0.128
Fitzgerald and Veitch (1985)	Herekopare	46.5	1792.0	0.3	90.0	90	9	0.157
Van Rensburg (1985)	Marion	46.5	1725.0	316.0	1230.0	294	10	0.208
Santana et al. (1986)	Gran Canaria	27.6	196.5	1560.0	1949.0	332	23	0.246
Fitzgerald et al. (1991)	Raoul	29.2	2784.5	31.8	516.0	103	9	0.243
Nogales et al. (1992)	Alegranza	29.4	168.5	10.2	289.0	199	5	0.312
Medina and Nogales (1993)	Tenerife	28.2	288.0	2034.0	3717.0	477	10	0.294
Nogales and Medina (1996)	La Gomera	28.1	335.0	372.0	1487.0	57	8	0.440
García-Márquez et al. (1999)	El Hierro	27.5	383.0	278.0	1501.0	326	8	0.421
Smucker et al. (2000)	HawaT	19.5	3705.0	117.0	4205.0	290	3	0.651
Espinosa-Gayosso et al. (2006)	San Jose	28.0	20.0	194.0	133.0	159	5	0.088
Medina et al. (2006)	La Palma	28.4	416.5	706.0	2400.0	967	14	0.282
Bonnaud et al. (2007)	Port-Cros	43.0	8.5	6.4	119.0	667	14	0.115
Peck et al. (2008)	Juan de Nova	17.0	296.5	4.4	10.0	228	12	0.316
Phillips et al. (2007)	San Clemente	32.6	100.0	56.8	599.0	14246	13	0.185
Matias and Catry (2008)	New Island	51.4	401.5	1.97	100	842	14	0.335
Medina et al. (2008)	Fuerteventura	28.2	96.5	1660	807	614	27	0.210
Kawakami and Mashiko (2008)	Haha-jima	26.4	142.09	1968.0	20.2	210	16	0.230
Faulquier et al. (2009)	La Reunion	21.1	677.0	2512.0	3069.0	336	7	0.519

[a] Australia was considered as the landmass for New Zealand islands and its surrounding islands

Table 5 Results of the Spearman Rank test describing the Levin's index of the diet of feral cats related to biogeographical variables

		Number of samples	Statistical values	Explanatory variables				
				Latitude	Distance from landmass	Area	Elevation	Area * Elevation
Dependent variables	Levin's-std	21	*R*	−0.2532	0.6186	0.3013	0.4961	0.4390
			P	ns	**	ns	*	*

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$

secondary prey. Birds were important on islands that harbour important colonies of seabirds and, in these cases, they constitute the main source of biomass in the diet of feral cats (Jones and Barmuta 1998; Bonnaud et al. 2007; Nogales and Medina 2009, Peck et al. 2008, Faulquier et al. 2009). This observation is enhanced by cats eating bird eggs, which are undetectable in the gut, but amount to a significant loss of birdlife in certain areas (Rauzon 1983). Reptiles and invertebrates were not systematically recorded in feral cat diets but they were frequently eaten when present, particularly on tropical and subtropical islands (Konecny 1983; Nogales et al. 1990, Seabrook 1990). However, due to their small size, reptiles rarely represented a significant percentage of prey biomass (Nogales et al. 1988; Medina and Nogales 1993; Casañas-Acosta et al. 1999) but cat predation can have a high impact on them.

Large differences in the diet of cats between islands indicated considerable trophic plasticity, with feral cats eating the most available items on each island (Arnaud et al. 1993; Martínez-Gómez and Jacobsen 2004). This same pattern was also seen between

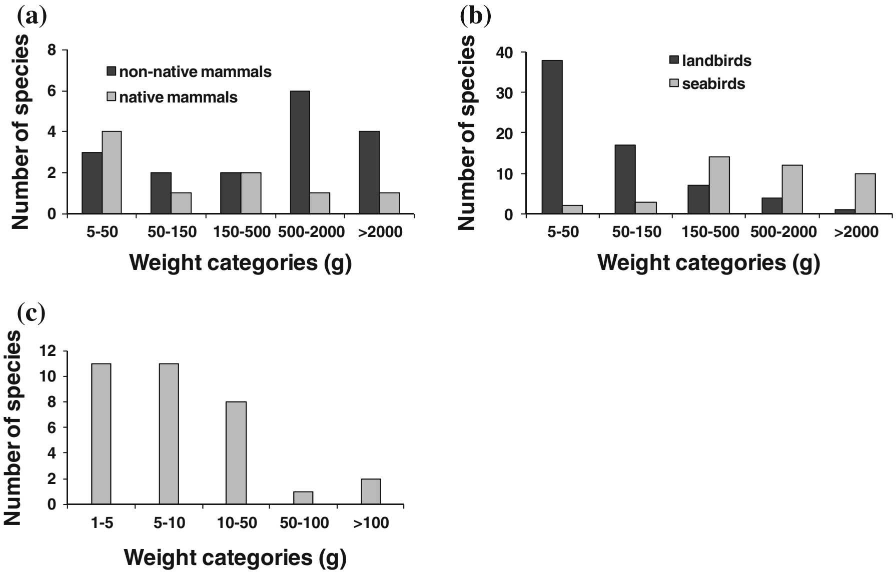

Fig. 4 The weight pattern of vertebrates preyed on by feral cats on islands: **a** mammals, **b** birds, **c** reptiles

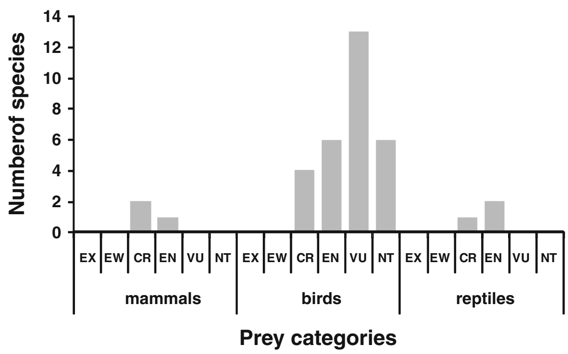

Fig. 5 A comparison between endangered species listed in diet studies (this review) with those listed in the review of the impact of feral cats on globally threatened insular species. *Legend*: *EX* Extinct, *EW* Extinct in the wild, *CR* Critically endangered, *EN* Endangered, *VU* Vulnerable and *NT* Near threatened

habitats and seasons within an island (Clevenger 1995; Nogales and Medina 1996; Medina et al. 2006).

This ability to seasonally adjust diet preference on an island has significant ramifications for native species, especially seabirds. Both rabbits and rats were regular items in the diet of insular feral cats (Dilks 1979; Fitzgerald et al. 1991; Nogales et al. 1992; Fitzgerald and Turner 2000; Medina et al. 2006). However, during months when breeding seabirds are present on an island they can become the preferred prey item (Rauzon 1983, Bloomer and Bester 1990, Keitt et al. 2002, Peck et al. 2008). The presence of the alternative prey items, rabbits or rats, means the feral cat population can sustain itself at a larger population throughout the year and thus cat impacts on native species are likely to be exacerbated via hyperpredation (Taylor 1979; Jones 2002; Keitt et al. 2002; Oro et al. 2004). This can also facilitate the complete eradication of native seabirds because the alternative prey source allows the feral cat population to sustain itself even as the seabird resource moves to a zero population (Courchamp et al. 1999; Roemer et al. 2002). Conversely, feral cats can eradicate populations of rodents when seabirds are absent during severe climatic conditions (Rauzon et al. In Review 2011).

Biogeographical patterns of feral cat diet

The increase in rabbit consumption with latitude can be explained by their presence on most sub-Antarctic islands where this lagomorph has become a staple prey inside a low prey diversity environment. The increase of birds in the diet of cats on more geographically isolated islands probably reflected the relative absence of native mammals on these insular areas (Vitousek et al. 1995; Whittaker and Fernández-Palacios 2007). These results reinforced the opportunistic feeding behavior of feral cats. As expected by the global distribution of reptiles, higher latitudes support fewer reptiles (Schall and Pianka 1978), and pointed out by Fitzgerald (1988), the presence of reptiles in insular feral cat diet decreased with increasing latitude. The same trend was recorded for invertebrates suggesting that cats eat a wide range of prey as soon as they are available.

The PCA analysis showed that on most islands cats had primary prey like rabbits, rats, mice or birds and this preference depended on the availability and phenology of prey in the different islands. Some general trends indicated that (i) rats were the main prey especially where rabbits were absent, (ii) rabbit predation could mitigate bird predation and (iii) reptiles and invertebrate consumption was higher in tropical and subtropical islands probably due to the higher abundance of these prey.

Diet diversity and species threatened by feral cats

The 179 different vertebrate prey species we found in the diets of feral cats on islands confirmed the wide niche breadth of this efficient generalist. Introduced rodents and lagomorphs, large and small birds and small reptiles appeared more regularly in island cat diet. Data on invertebrate prey species diversity was much less consistently reported, however, cats preyed upon a large range of invertebrate prey taxa from small hymenoptera to large crustaceans. Insects were the invertebrates most frequently preyed on by feral cats (Fitzgerald and Karl 1979; Kirkpatrick and Rauzon 1986, Konecny 1987; Medina and García 2007) and most insect orders were recorded, with Orthoptera, Coleoptera and Lepidoptera most commonly recorded.

As predicted by island biogeography theory (Vitousek et al. 1995; Whittaker and Fernández-Palacios 2007), diet diversity increased with elevation and area*elevation. Surprisingly, however, diet diversity also increased with distance from nearest landmass. Perhaps this is due to confounding variables of islands size and distance from shore, because (i) more oceanic islands were more highly invaded, or (ii) more evolutionarily naïve prey species are present on oceanic islands, or (iii) more eradications were done and save island species.

Feral cats have contributed to over 8% of all bird, mammal and reptile extinctions and to the declines of almost 10% of critically endangered birds, mammals and reptiles (Medina et al. In Review). However, we found relatively few globally threatened vertebrates in the diet of feral cats (Fig. 4). Globally threatened species were underrepresented in our study because there was no study of cat diet on islands within their range and because most studies we reviewed were not designed to detect rare prey species (Blackburn et al. 2004). Threats to birds and other native species when they are the primary prey are obvious; however, there is no clear relationship between frequency of prey in the diet and impact of the predator on that prey species. Moreover, the effects of predation are usually inversely dependent on prey density when native species are not the primary prey (Sinclair et al. 1998; Cuthbert 2002). Although none of the studies in our analysis accounted for time since cat introduction, it is likely that the most vulnerable native prey were reduced in number or extirpated long before diet data were collected.

Conclusions

This study confirms that feral cats on islands are extremely opportunistic, generalist predators capable of consuming most available vertebrate species. This combined with their ability to survive without drinking water and their large thermal tolerance (Bradshaw 1992) explains their tremendous geographic range. Our metadata analysis also suggests that cats can negatively impact a large percentage of the native vertebrates on any island. Future studies of cat diet on islands should be, (1) conducted so as to sample during the presence of "temporary" prey such as seabirds, (2), represented by a sufficient number of samples (> 100), (3) published by indicating the results at least for the main prey categories not only in frequency of occurrence but also in prey frequencies, biomass and index of relative abundance, and (4) preferentially dedicated to under-sampled and under-studied insular regions (e.g. Caribbean, Indonesia, Japan and French Polynesia).

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Appendix

See table 6, 7 & 8.

Table 6 Table of all the diet studies listed in this diet review with specific information noted

Reference number	Studies	Site	Latitute	Longitude	Distance from landmass (km)[a]	Area (km^2)	Elevation (m)	Study date	Samplings	Sampling size
1	Marshall (1961)	Little Barrier, NZ	−36.2	−175.1	2176.0	28.0	722.0	1959	Scats	94
2	Derenne (1976)	Kerguelen, FR	−49.2	69.3	2800.0	6675.0	1850.0	1970	Stomachs	89
3	Derenne and Mougin (1976)	Crozet, FR	−46.1	50.1	2376.5	25.0	770.0	1976	Stomachs	12
4	Jones (1977) (Jones 1980)	Macquarie, AU	−54.3	158.6	1990.0	128.0	240.0	1973–1975	Scats	756
5	Jones (1977) (Jones 1980)	Macquarie, AU	−54.3	158.6	1990.0	128.0	240.0	1974	Guts	41
6	Dilks (1979)	Campbell, NZ	−52.3	169.8	2233.5	115.0	569.0	1970–1971; 1975–1976; 1976–1977	Scats	20
7	Fitzgerald and Karl (1979) (Fitzgerald 1980)	North island, NZ	−38.3	174.6	1877.5	114453.0	2797.0	1969–1973	Scats	677
8	Cook and Yalden (1980)	Deserta Grande, PT	32.3	−16.3	639.0	9.0	479.0	1970	Scats	8
9	Van Aarde (1980)	Marion, ZA	−46.5	37.5	1725.0	316.0	1230.0	1974–1976	Stomachs	116
10	Karl and Best (1982)	Stewart, NZ	−47.3	167.5	1792.0	1746.0	979.0	1977–1980	Scats	229
11	Apps (1983)	Dassen, ZA	−33.3	18.1	8.5	2.2	19.0	1979–1980	Scats	208
12	Konecny (1983) (Konecny 1987)	Isabela, EC	−0.5	−91.0	1098.0	4588.0	1707.0	1980	Scats	318
13	Konecny (1983) (Konecny 1987)	Santa Cruz, EC	−0.5	−92.0	1030.5	986.0	864.0	1980	Scats	172
14	Fitzgerald and Veitch (1985)	Herekopare, NZ	−46.5	168.1	1792.0	0.3	90.0	1970	Stomachs	30
15	Rauzon (1985)	Jarvis, US	−0.2	−160.0	5711.0	4.5	7.0	1982	Stomachs	54
16	Van Rensburg (1985)	Marion, ZA	−46.5	37.5	1725.0	316.0	1230.0	1981–1983	Stomachs	143
17	Apps (1986)	Dassen, ZA	−33.3	18.1	8.5	2.2	19.0	1979–1982	Stomachs	45
18	Berruti (1986)	Dassen, ZA	−33.3	18.1	8.5	2.2	19.0	1984	Scats	21
19	Berruti (1986)	Dassen, ZA	−33.3	18.1	8.5	2.2	19.0	1985	Stomachs	10
20	Santana et al. (1986)	Gran Canaria, ES	27.6	−15.4	196.5	1560.0	1949.0	1985	Scats	133
21	Kirkpatrick and Rauzon (1986)	Jarvis, US	−0.2	−160.0	5711.0	4.5	7.0	1979; 1982	Stomachs	73
22	Kirkpatrick and Rauzon (1986)	Howland, US	0.5	−176.4	5711.0	1.8	6.0	1979	Stomachs	5
23	Pierce (1987). In Murphy et al. (2004)	South Island, NZ	−45.5	169.1	1641.5	150718.0	3754.0	1984–1986	Scats	358
24	Nogales et al. (1988)	El Hierro, ES	27.5	−18.0	383.0	278.0	1501.0	1986	Scats	248
25	Baker (1989). In Gillies (2001)	South Island, NZ	−45.5	169.1	1641.5	150718.0	3754.0	Before 1989	Guts	34
26	Furet (1989)	Amsterdam, FR	−37.5	77.4	3201.0	55.0	867.0	1985–1986	Scats	241
27	Seabrook (1989) (Seabrook 1990)	Aldabra, SC	−9.5	46.5	626.0	155.4	8.0	1985–1986	Scats	52
28	Seabrook (1989) (Seabrook 1990)	Aldabra, SC	−9.5	46.5	626.0	155.4	8.0	1985–1986	Guts	16

Table 6 continued

Reference number	Studies	Site	Latitute	Longitude	Distance from landmass (km)[a]	Area (km^2)	Elevation (m)	Study date	Samplings	Sampling size
29	Bloomer and Bester (1990)	Marion, ZA	−46.5	37.5	1725.0	316.0	1230.0	1986–1989	Stomachs	587
30	Langham (1990)	North island, NZ	−38.3	174.6	1877.5	114453.0	2797.0	1983–1987	Scats	361
31	Nogales et al. (1990)	Tenerife, ES	28.2	−16.3	288.0	2034.0	3717.0	1986	Scats	221
32	Fitzgerald et al. (1991)	Raoul, NZ	−29.2	−177.5	2784.5	31.8	516.0	1972	Guts	57
33	Fitzgerald et al. (1991)	Raoul, NZ	−29.2	−177.5	2784.5	31.8	516.0	1978–1980	Scats	38
34	Rodriguez-Estrella et al. (1991)	Socorro, MX	18.5	−110.6	575.0	132.0	1130.0	1990	Scats	31
35	Hayde (1992)	Great Dog, AU	−40.3	148.2	197.5	6.8		Before 1992	Guts	91
36	Nogales et al. (1992)	Alegranza, ES	29.4	−13.5	168.5	10.2	289.0	1987–1990	Scats	110
37	Arnaud et al. (1993)	Socorro, MX	18.5	−110.6	575.0	132.0	1130.0	1990	Scats	46
38	Medina and Nogales (1993)	Tenerife, ES	28.2	−16.3	288.0	2034.0	3717.0	1993	Scats	200
39	Ryan (1994). In Murphy et al. (2004)	South Island, NZ	−45.5	169.1	1641.5	150718.0	3754.0	1993–1994	Scats	57
40	Snetsinger et al. (1994)	Mau Kea, US	19.5	−155.2	3705.0	117.0	4205.0	Before 1994	Scats	87
41	Tidemann et al. (1994)	Christmas, AU	−10.3	105.4	1314.0	135.0	305.0	1981; 1984; 1987; 1988	Guts	92
42	Clevenger (1995)	Cabrera, ES	38.4	4.2	236.5	11.5	175.0	1992–1993	Scats	290
43	Pascoe (1995). In Gillies (2001) and In Murphy et al. (2004)	South Island, NZ	−45.5	169.1	1641.5	150718.0	3754.0	1992–1994	Guts	45
44	Pascoe (1995). In Murphy et al. (2004)	South Island, NZ	−45.5	169.1	1641.5	150718.0	3754.0	1992–1994	Scats	56
45	Middlemiss (1995). In Gillies (2001)	South Island, NZ	−45.5	169.1	1641.5	150718.0	3754.0	Before 1995	Guts	25
46	Alterio (1996)	South Island (otago peninsula), NZ	−45.5	170.4	1641.5	360.0	408.0	1995	Scats	83
47	Bramley (1996)	North Island, NZ	−38.3	174.6	1877.5	114453.0	2797.0	1993–1994	Guts	9
48	King et al. (1996)	North Island, NZ	−38.3	174.6	1877.5	114453.0	2797.0	1982–1987	Guts	13
49	Nogales and Medina (1996)	La Gomera, ES	28.1	−18.1	335.0	372.0	1487.0	1986–1994	Scats	135
50	Alterio and Moller (1997)	South Island, NZ	−45.5	169.1	1641.5	150718.0	3754.0	1983–1993	Guts	43
51	Gillies (1998). In Gillies (2001)	North island, NZ	−38.3	174.6	1877.5	114453.0	2797.0	Before 1998	Guts	105

Table 6 continued

Reference number	Studies	Site	Latitute	Longitude	Distance from landmass (km)[a]	Area (km^2)	Elevation (m)	Study date	Samplings	Sampling size
52	Casañas-Acosta et al. (1999)	Alegranza, ES	29.4	−13.5	100.0	10.5	289.0	1997	Scats	44
53	García-Márquez et al. (1999)	El Hierro, ES	27.5	−18.0	383.0	278.0	1501.0	1992–1993; 1995–1997	Scats	143
54	Smucker et al. (2000)	Mau Kea, US	19.5	−155.4	3705.0	117.0	4205.0	1992–1997	Scats	101
55	Pontier et al. (2002)	Kerguelen, FR	−49.2	69.2	2800.0	6675.0	1850.0	1998–1999	Scats	149
56	Kawauchi and Sasaki (2002)	Okinawa, JAP	26.4	128.1	638.5	1207.7	503.0	1998–1999	Scats	11
57	Jogahara et al. (2003)	Okinawa, JAP	26.4	128.1	638.5	1207.7	503.0	2001	Scats	28
58	Watanabe et al. (2003)	Iriomote, JAP	24.2	123.5	427.5	284.0	469.0	1997–2001	Scats	31
59	Martínez-Gómez and Jacobsen (2004)	Socorro, MX	18.5	−110.6	575.0	132.0	1130.0	1993–1996	Scats	37
60	Martínez-Gómez and Jacobsen (2004)	Socorro, MX	18.5	−110.6	575.0	132.0	1130.0	1993–1996	Stomachs	46
61	Murphy et al. (2004)	South Island, NZ	−45.5	169.1	1641.5	150718.0	3754.0	1997–2001	Guts	375
62	Harper (2005) (Harper 2004)	Stewart, NZ	−47.3	167.5	1792.0	1746.0	979.0	1999–2001	Scats	219
63	Espinosa-Gayosso et al. (2006)	San José, MX	28.0	−96.8	20.0	194.0	133.0	2005	Scats	48
64	Medina et al. (2006)	La Palma, ES	28.4	−17.5	416.5	706.0	2400.0	2000–2001	Scats	500
65	Bonnaud et al. (2007)	Port-Cros, FR	43.0	6.2	8.5	6.4	119.0	2000–2004	Scats	1219
68	Phillips et al. (2007)	San Clemente, US	32.6	−118.3	100.0	56.8	599.0	1992–1994	Scats	602
69	Matias and Catry (2008)	New Island, RU	−51.4	−61.2	401.5	19.7	174.0	2004–2005	Scats	373
70	Medina et al. (2008)	Fuerteventura, ES	28.2	−14.0	96.5	1660.0	807.0	2003	Scats	209
66	Peck et al. (2008)	Juan de Nova, FR	−17.0	42.4	296.5	4.4	10.0	2006	Scats	104
67	Peck et al. (2008)	Juan de Nova, FR	−17.0	42.4	296.5	4.4	10.0	2006	Stomachs	26
71	Kawakami and Mashiko (2008)	Haha-jima Island, JAP	26.4	142.1	1968.0	20.2	463.0	1998–2007	Scats	108
72	Faulquier et al. (2009)	La Réunion, FR	−21.1	55.3	677.0	2512.0	3069.0	2005	Scats	217

Reference number	Sampling period	Diet analysis	Rat presence	Mouse presence	Rabbit presence	Cat presence	Predation on endangered species (IUCN)
1	Summer; winter	%FO	Yes	No	No	Before 1870 to 1980	*Cyanoramphus n. novaezelandiae* (CR); *Pterodroma c. cooki* (EN); *Nestor meridionalis septentrionalis* (EN)
2	All the year	%FO	Yes	Yes	Yes	Since 1876	
3	Summer; autumn	%FO	No	Yes	Yes	Since 1887	

Table 6 continued

Reference number	Sampling period	Diet analysis	Rat presence	Mouse presence	Rabbit presence	Cat presence	Predation on endangered species (IUCN)
4	All the year	%FO	Yes	Yes	Yes	From 1810–1820 to 2000	*Gallirallus australis scotti* (VU)
5	All the year	%FO; prey number	Yes	Yes	Yes	From 1810–1820 to 2000	*Gallirallus australis scotti* (VU)
6	Summer	%FO	Yes	No	No	From 1900 s to 1990 s	
7	All the year	%FO; percent weight; prey number	Yes	Yes	Yes	Since 1830	
8	Summer	%FO	No	Yes	Yes	Before 1920	
9	All the year	%FO; prey remains; Energy requirements	No	Yes	No	Since 1949	*Procellaria aequinoctialis* (VU)
10	Summer; winter	%FO; percent weight; prey number	Yes	No	No	Around 1850	*Eudyptes pachyrhynchus* (VU)
11	Spring; winter	%FO; weight; prey number	No	Yes	Yes	Late 19th	*Spheniscus demersus* (VU)
12	All the year	%FO; caloric values	Yes	No	No	Since 18th century	
13	All the year	%FO; caloric values	Yes	Yes	No	Since 18th century	
14	Winter	%FO; number of individuals	No	No	No	From 1925 to 1970	
15	June-July	%FO	No	Yes	No	From 1935 to 1983	
16	Spring; summer; autumn	%FO; prey number; Energy requirements	No	Yes	No	From 1949 to 1991	*Procellaria aequinoctialis* (VU)
17	Autumn	%FO; weight; prey number/year	No	Yes	Yes	Late 19th	*Spheniscus demersus* (VU)
18	Autumn	%FO; percent weight	No	Yes	Yes	Late 19th	*Spheniscus demersus* (VU)
19	Autumn	%FO; percent weight	No	Yes	Yes	Late 19th	*Spheniscus demersus* (VU)
20	Spring; summer	%FO; percent biomass; percent prey	Yes	Yes	Yes	Around 15th	
21	May–July	%FO; percent volume	No	Yes	No	From 1935 to 1983	
22	May	%FO; percent volume	No	Yes	No	Since 1966	
23	All the year	%FO	Yes	Yes	Yes	Since ∼ 1850	
24	Autumn	%FO; prey number; percent biomass	Yes	Yes	Yes	Around 15th	
25	?	%FO	Yes	Yes	Yes	Since ∼ 1850	
26	All the year	%FO; percent weight	Yes	Yes	No	Before 1930	*Diomedea chlororhynchos bassi* (EN); *Eudyptes chrysocome moseleyi*(VU)
27	All the year	%FO	Yes	No	No	Late 19th	*Chelonia mydas* (EN)
28	All the year	%FO	Yes	No	No	Late 19th	*Chelonia mydas* (EN)

Table 6 continued

Reference number	Sampling period	Diet analysis	Rat presence	Mouse presence	Rabbit presence	Cat presence	Predation on endangered species (IUCN)
29	Summer	%FO; prey number	No	Yes	No	From 1949 to 1991	*Thalassarche chrysostoma* (VU); *Procellaria aequinoctialis* (VU)
30	All the year	%FO; weight frequency	Yes	Yes	Yes	Since 1830	
31	Autumn	%FO; percent biomass; prey number; percent prey	Yes	Yes	Yes	Around 15th	
32	Spring	%FO; number of individuals	Yes	No	No	Since 1850	
33	Summer, spring	%FO; number of individuals	Yes	No	No	Since 1850	
34	Winter; spring	%FO	No	Yes	No	Late 1950 s	*Urosaurus auriculatus* (EN)
35	Autumn; winter	%FO, mean prey number	Yes	Yes	No	From ? to 1992	
36	?	%FO; percent biomass; percent prey	No	Yes	Yes	Around 15th	
37	Winter; spring; autumn	%FO	No	Yes	No	Late 1950 s	*Urosaurus auriculatus* (EN)
38	Summer; autumn	%FO; biomass	Yes	Yes	Yes	Around 15th	
39	Spring; summer; autumn	%FO	Yes	Yes	Yes	Since ~ 1850	
40	?	%FO, number of individuals	Yes	Yes	No	With European settlers	
41	Winter	%FO; prey weight; percent weight	Yes	Yes	No	Since 1888	*Ducula whartoni* (VU); *Zosterops natalis* (VU)
42	All the year	%FO; percent volume	Yes	Yes	Yes	Around 15th	
43	All the year	%FO	Yes	Yes	Yes	Since ~ 1850	
44	All the year	%FO	Yes	Yes	Yes	Since ~ 1850	
45	?	%FO	Yes	Yes	Yes	Since ~ 1850	
46	Autumn; winter	%FO	Yes	Yes	Yes	Since ~ 1850	
47	Spring; summer	%FO	Yes	Yes	Yes	Since 1830	
48	Autumn; winter; srping	%FO	Yes	Yes	Yes	Since 1830	
49	?	%FO; percent biomass	Yes	Yes	Yes	Around 15th	
50	Spring; summer	%FO; percent weight	Yes	Yes	Yes	Since ~ 1850	
51	?	%FO	Yes	Yes	Yes	Since 1830	
52	Spring	%FO; biomass	No	Yes	Yes	20th to 2001	
53	All the year	Prey frequency; prey number	Yes	Yes	Yes	Around 15th	*Gallotia simonyi* (CR)

Table 6 continued

Reference number	Sampling period	Diet analysis	Rat presence	Mouse presence	Rabbit presence	Cat presence	Predation on endangered species (IUCN)
54	All the year	%FO and frequency of total occurrence of prey; min number of prey	Yes	Yes	No	With European settlers	
55	Summer; winter	%FO; PCA	Yes	Yes	Yes	Since 1876	*Eudyptes chrysolophus* (VU); *Eudyptes chrysocome* (VU); *Procellaria aequinoctialis* (VU)
56	May; June	%FO	Yes	Yes	No	?	*Erithacus komadori namiyei* (NT)?
57	March-August	%FO; dry weight	Yes	Yes	No	?	
58	All the year	%FO	Yes	Yes	No	?	
59	Winter; spring; summer	%FO	No	Yes	No	Late 1950 s	*Puffinus auricularis* (CR); *Mimus graysoni* (CR); *Urosaurus auriculatus* (EN)
60	Winter; spring; summer	%FO	No	Yes	No	Late 1950 s	*Puffinus auricularis* (CR); *Mimus graysoni* (CR); *Urosaurus auriculatus* (EN)
61	All the year	%FO	Yes	Yes	Yes	Since ~ 1850	
62	All the year	%FO	Yes	No	No	Since 1800	
63	Spring	Number of individuals; %FO	No	No	No	?	
64	All the year	%FO; percentage of prey; biomass	Yes	Yes	Yes	Around 15th	
65	All the year	%FO; prey number; biomasse for 1 year	Yes	Yes	Yes	Since 19th	
66	All the year	%FO; %FO of prey	Yes	Yes	No	?	
67	Summer	%FO; prey number	Yes	Yes	Yes	At least 1965	*Eudyptes chrysocome* (VU)
68	All the year	%FO; prey number; percent prey number; percent biomass; IRI	Yes	Yes	Yes	Around 15th	
69	Winter	%FO; prey number	Yes	Yes	No	Early 20th	
70	Winter	%FO; prey number	Yes	Yes	No	Early 20th	
71	Opportunistic ?	%FO; prey number;	Yes	Yes	No	~1,900	
72	Summer; autumn	%FO; prey number	Yes	Yes	Yes	17th	*Pterodroma baraui* (EN)

[a] Australia was considered as landmass for New Zealand islands and its surrounding islands

Table 7 Table of all the species listed in cat diets of this review

	IUCN status
Mammals	
Apodemus sylvaticus	LC
Arctocephalus tropicalis	LR
Atelerix algirus	LR
Atlantoxerus getulus	LC
Bos taurus	LR
Chaetodipus spinatus	LR
Crocidura watasei	LC
Diplothrix legata	EN
Dipodomys insularis	CR
Mus musculus	LR
Mus sp.	
Neotoma lepida	LR
Oryctolagus cuniculus	LR
Peromyscus fraterculus	
Peromyscus maniculatus	LR
Pteropus melanotus	LR
Rattus exulans	LR
Rattus norvegicus	LR
Rattus rattus	LR
Rattus sp.	
Suncus murinus	LR
Sylvilagus mansuetus	LR
Sylvilagus sp.	
Tenrec ecaudatus	LC
Tokudaia muenninki	CR
Unidentified goat	LR
Unidentified hedgehog	
Unidentified pig	LR
Unidentified rodent	
Unidentified sheep	LR
Seabirds	
Anous stolidus	LC
Bulweria bulwerii	LC
Calonectris diomedea	LC
Chionis minor	LC
Chloephaga hybrida	LC
Chloephaga picta	LC
Crested penguin	VU
Eudyptes chrysocome	VU
Eudyptes chrysocome moseleyi	VU
Eudyptes chrysolophus	VU
Eudyptula minor	LC
Eudyptula minor iredalei	

Table 7 continued

	IUCN status
Halobaena caerulea	LC
Lugensa brevirostris	LC
Oceanites oceanicus	LC
Oceanodroma castro	LC
Pachyptila belcheri	LC
Pachyptila desolata	LC
Pachyptila salvini	LC
Pelecanoides georgicus	LC
Pelecanoides n. urinatrix	LC
Phaethon rubricauda	LC
Phalacrocorax capensis	NT
Procellaria aequinoctialis	VU
Procellaria cinerea	NT
Pterodroma c. cooki	EN
Pterodroma baraui	EN
Pterodroma lessonii	LC
Pterodroma macroptera	LC
Pterodroma mollis	LC
Puffinus auricularis	CR
Puffinus g. gavia	LC
Puffinus pacificus	LC
Puffinus tenuirostris	LC
Puffinus yelkouan	DD
Pygoscelis papua	NT
Sooty shearwater	NT
Spheniscus demersus	VU
Sterna fuscata	LC
Thalassarche cartei	EN
Thalassarche chlororhynchos	EN
Thalassarche chrysostoma	VU
Unidentified anatidae	
Unidentified petrel	
Unidentified prion	
Unidentified procellariidae	
Unidentified shag	
Unidentified sphenicidae	
Landbirds	
Anthus berthelotii	LC
Alectoris rufa	LC
Amaurornis phoenicurus	LC
Anthornis melanura	LC
Calidris sp.	LC
Caprimulgus europaeus	LC
Carduelis sinica	LC
Chalcophaps indica	LC

Table 7 continued

	IUCN status
Chalcophaps indica yamashinai	VU
Collocalia esculenta	LC
Columba janthina	NT
Columba livia	LC
Columba sp.	
Columbina passerina	LC
Coturnix coturnix	LC
Cyanoramphus n. novaezelandiae	VU
Ducula whartoni	VU
Erithacus komadori namiyei	VU
Erithacus rubecula	LC
Foudia madagascariensis	LC
Fringilla coelebs	LC
Gallirallus australis scotti	VU
Halcyon coromanda bangsi	EN
Ixos amaurotis	LC
Jynx torquilla	LC
Luscinia megarhynchos	LC
Mimodes graysoni	CR
Mimodes sp.	
Mimus polyglottos	LC
Mohoua albicilla	LC
Monticola solitarius	LC
Nestor meridionalis septentrionalis	EN
Numida meleagris	LC
*Parula pitiayum*i	LC
Parula sp.	LC
Parus major	LC
Petroica australis longipes	LC
Petroica macrocephala toitoi	LC
Phoenicurus phoenicurus	LC
Phoenicurus sp.	LC
Phylloscopus collybita	LC
Pipilo maculatus	LC
Prosthemadera n. novaezelandiae	LC
Prunella modularis	LC
Pyrrhocorax pyrrhocorax	LC
Rhipidura fuliginosa placabilis	LC
Sapheopipo noguchii	CR
Serinus canarius	LC
Streptopelia sp.	LC
Strigops habroptilus	CR
Sturnella loyca	LC
Sturnus sp.	LC
Sylvia atricapilla	LC

Table 7 continued

	IUCN status
Sylvia conspicillata	LC
Sylvia melanocephala	LC
Sylvia sp.	
Thyromanes sissonii	NT
Troglodytes troglodytes	LC
Turdus falcklandii	LC
Turdus merula	LC
Turdus philomelos	LC
Turdus poliocephalus	LC
Zenaida macroura	LC
Zosterops lateralis	LC
Zosterops natalis	VU
Unidentified Alaudidae	
Unidentified Columbina	
Unidentified Fantail	LC
Unidentified Gallinago	
Unidentified Morepork	LC
Unidentified Parakeet	
Unidentified Phasianidae	
Unidentified Pipit	LC
Unidentified Rallidae	
Unidentified redpoll	LC
Unidentified starling	
Unidentified Sylviidae	
Unidentified thryomanes	
Unidentified Turdidae	
Reptiles	
Anolis carolinensis	LC
Ateuchosaurus pellopleurus	
Chalcides viridanus viridanus	
Chelonia mydas	EN
Cryptoblepharus boutoni	
Cryptoblepharus boutoni nigropunctatus	
Cryptoblepharus egeriae	
Crytodactylus sp.	
Drydalia coronoides	
Emoia atrocostata	
Emoia nativitatis	
Gallotia atlantica	
Gallotia caesaris	LC
Gallotia galloti	LC
Gallotia galloti caesaris	
Gallotia simonyi	CR
Gallotia sp.	
Hemidactylus frenatus	

Table 7 continued

	IUCN status
Hemidactylus mabouia	
Hemidactylus mercatorius	
Japarula polygonata	
Lepidodactylus sp.	
Lerista bougainvillii	
Lygosomona bowringii	
Niveoscincus metallicus	
Niveoscincus ocellatus	
Notechis ater	
Phelsuma abbotti abbotti	
Podaricis muralis	LC
Tarentola angustimentalis	LC
Tarentola boettgeri hierrensis	
Tarentola delalandii	LC
Urosaurus auriculatus	EN
Uta stansburiana	LC
Xantusia riversiana	LC
Unidentified gecko	
Unidentified Lacertilia	
Unidentified skink	
Amphibians	
Echinotriton andersoni	EN
Rana sp.	
Unidentified frog	
Fishes	
Unidentified Osteichthyes	
Unidentified eel	
Invertebrates	
Achatina fulica	
Anax imperator	LC
Anisolabis maxima	
Apotrechus ambulans	
Australomyia rostrata	
Brachyderes rugatus	
Calliphora stygia	
Calliphora vicina	
Cantatopidae sp.	
Cardiodactylus novaeguineae	
Cercophanius squama	
Chalcidoid wasp	
Chlorochiton sp.	
Coniocleonus excoriatus	
Conocephalus maculatus	
Conorhynchus conicirostris	
Costelytra zelandica	

Table 7 continued

	IUCN status
Dericorys lobata	
Duolandrevus coulonianus	
Eucolapsis sp.	
Euconocephalus thunbergi	
Gecarcinus planatus	
Gecarcoidea natalis	
Gonocephalum adpressiforme	
Grapsus tenicrustatus	
Gromphadorhina sp.	
Gryllotalpa australis	
Hegeter sp.	
Herpisticus calvus	
Hexathele sandersoni	
Hieroglyphus annulicornis	
Holotrichia loochooana	
Ichneumonid wasp	
Ixodes anatis	
Labidura sp.	
Laparocerus sp.	
Lepas anatifera	
Macropathus sp.	
Meimuna boninensis	
Meimuna iwasakii	
Oryctes nasicornis	
Oxycanus fuscomaculatus	
Pachydema sp.	
Paivaea hispida	
Periplaneta americana	
Persectania ewingii	
Phaulacridium vittatum	
Philaenus trimaculatus	
Phyllognathus excavatus	
Pimela laevigata costipennis	
Pimelopus nothus	
Protaetia orientalis	
Protaetia pryeri pryeri	
Rumia decollata	
Saprinus sp.	
Scolopterus tetracanthus	
Sericospilus sp.	
Shield tick	
Sicyonia brevirostris	
Stanwellia pexa	
Teleogryllus occipitalis	
Tenodera australasiae	

Table 7 continued

	IUCN status
Thalycrodes sp.	
Theba geminata	
Unidentified Anobildae	
Unidentified Coccinellidae	
Unidentified Odonata	
Unidentified Pentatomidae	
Unidentified Tenebrionidae	
Unidentified Vespidae	
Vegetation	
Cenchrus echinatus	
Ficus microcarpa	
Lepturus repens	
Morus australis	
Oxalis sp.	
Solanum nigrum	

Table 8 Table of all the taxa listed in cat diets of this review

Mammals
Rattus spp.
Unidentified lagomorphs
Unidentified possums
Elephant seal
Large mammals
Unidentified mammals
Seabirds
Large birds
Medium birds
Small birds
Unidentified seabirds
Fairy prion/Broad-billed prion
Prion/blue petrel
Petrels total
Large petrel
Gulls terns
Fregata spp.
Downy chicks
Landbirds
Unidentified landbirds
Non passerines
Unidentified non-passerines
Passeriformes total
Unidentified Passeriformes
Balckbird/Thrush

Table 8 continued

Other birds
Unidentified birds
Unidentified birds (juveniles)
Reptiles
Unidentified lizard
Tarentola spp.
Gallotia spp.
Chalcides spp.
Unidentified snakes
Unidentified reptiles
Invertebrates
Invertebrates spp.
Mollusca
Gastropoda
Snails
Cephalopoda
Mollusc shells
Unidentified arthropodes
Other arthropodes
Crustacean
Unidentified decapodes
Unidentified crab
Geograpsus spp.
Unidentified crayfish
Unidentified Isopoda
Unidentified Scorpiones
Unidentified Arachnids
Araneae
Unidentified spider
Opiliones unidentified
Chilopoda
Scolopendra sp.
Geophilomorpha
Diplopoda
Insects total
Unidentified Cicada
Unidentified Orthoptera
Unidentified Tettigonidae
Acrididae
Unidentified Acrididae
Unidentified grasshopper
Schistocera spp.
Unidentified Gryllidae
Cockroach (Blattidae)
Odonata indet.
Coleoptera

Table 8 continued

Coleoptera indet.
Unidentified beetle
Carabidae
Scarabaeidae indeter.
Tenebrionidae
Curculionidae
Unidentified Dermaptera
Anisolabididae
Unidentified dragonfly
Unidentified blowfly
Unidentified flea
Cicadidae
Heteroptera
Hymenoptera
Unidentified Hymenoptera
Anthophoridae indet.
Unidentified Formicidae
Unidentified Lepidoptera
Unidentified Mantidae
Unidentified Elateridae
Blattidae and Gryllidae
Unidentified insect
Unidentified/other
Antropogenic refuse
Eggs
Miscellaneous
Miscellaneous and carions
Milk
Other
Soil
Carrion
Seeds
Stones
Unidentified animal matter

References

Aguirre-Muñoz A, Croll DA, Donlan CJ et al (2008) High-Impact conservation action: a case study from the islands of western Mexico. Ambio 37:101–107

Alterio N (1996) Secondary poisoning of stoats (*Mustela erminea*), feral ferrets (*Mustela furo*), and feral house cats (*Felis catus*) by the anticoagulant poison, brodifacoum. N Z J Zool 23:331–338

Alterio N, Moller H (1997) Diet of feral house cats *Felis catus*, ferrets *Mustela furo* and stoats *M.* erminea in grassland surrounding yellow-eyed penguin Megadyptes antipodes breeding areas, South Island, New Zealand. J Zool 243:869–877

Apps PJ (1983) Aspects of the ecology of feral cats on Dassen Island, South Africa. S African J Zool 18:353–362

Apps PJ (1986) A case study of an alien predator (*Felis catus*) introduced on Dassen Island: selective advantages. Suid-Afrik Antarkt Navors 16:118–122

Arnaud G, Rodríguez A, Ortega-Rubio A et al (1993) Predation by cats on the unique endemic lizard of Socorro Island (*Urosaurus auriculatus*), Revillagigedo, Mexico. Ohio J Sci 93:101–104

Artois M, Duchene M-J, Pericard J-M et al. (2002) Le chat domestique errant ou haret. Encyclopédie des carnivores de France, Société Française pour l'Étude et la Protection des Mammifères, Bourges

Atkinson IAE (2001) Introduced mammals and models for restoration. Biol Conserv 99:81–96

Balmford A (1996) Extinction filters and current resilience: the significance of past selection pressures for conservation biology. Tree 11:193–196

Berruti A (1986) The predatory impact of feral cats *Felis catus* and their control on Dassen Island. S African J Antarc Res 16:123–127

Blackburn TM, Cassey P, Duncan RP et al (2004) Avian extinction and mammalian introductions on oceanic islands. Science 305:1955–1957

Bloomer JP, Bester MN (1990) Diet of a declining feral cat *Felis catus* population on Marion Island. S African J Wildl Res 20:1–4

Bonnaud E, Bourgeois K, Vidal E et al (2007) Feeding ecology of a feral cat population on a small Mediterranean island. J Mammal 88:1074–1081

Bradshaw JWS (1992) The behaviour of the domestic cat. CABI Publishing, Wallingford

Bramley GN (1996) A small predator removal experiment to protect North Island weka (*Gallirallus australis greyi*) and the case for single-subject approaches in determining agents of decline. N Z J Ecol 20:37–43

Brooks T, Smith ML (2001) Caribbean Catastrophes. Science 294:1469–1471

Burbidge A, Morris K (2002) Introduced mammal eradications for nature conservation on Western Australian islands: a review. In: Veitch CR, Clout MN (eds) Turning the Tide: The Eradication of Invasive Species Proceedings of the International Conference on Eradication of Islands Invasives. IUCN Species Survival Commission, New Zealand, pp 64–70

Casañas-Acosta N, Yebra-Mora L, Medina FM (1999) Distribución y variación temporal de la dieta del gato cimarrón (*Felis catus* Linnaeus, 1758) en Alegranza, islas Canarias (Mammalia, Carnivora). Vieraea 27:165–172

Clevenger AP (1995) Seasonality and relationships of food resource use of *Martes martes*, *Genetta genetta* and *Felis catus* in the Balearic Islands. Rev d' Ecol (Terre et Vie) 50:109–131

Cook LM, Yalden DW (1980) A note on the diet of feral cats on Deserta Grande. Bocagiana 52:1–4

Courchamp F, Langlais M, Sugihara G (1999) Control of rabbits to protect island birds from cat predation. Biol Conserv 89:219–225
Courchamp F, Chapuis J-L, Pascal M (2003) Mammal invaders on islands: impact, control and control impact. Biol Rev 78:347–383
Cutberth R (2002) The role of introduced mammals and inverse density-dependent predation in the conservation of Hutton's shearwater. Biol Conserv 108:69–78
Derenne P (1976) Notes sur la biologie du chat haret de Kerguelen. Mammalia 40:531–593
Derenne P, Mougin JL (1976) Données écologiques sur les mammifères introduits de l'Ile aux Cochons, Archipel Crozet. Mammalia 40:21–53
Diamond J (1989) Overview of recent extinctions. In: Western D, Pearl MC (eds) Conservation for the twenty-First Century. Oxford University Press, Oxford, pp 37–41
Dickman CR (1996) Overview of the impacts of feral cats on Australian native fauna. Australian Nature Conservation Agency, Canberra and Institute of Wildlife Research, University of Sydney
Dilks PJ (1979) Observations on the food of feral cats on Campbell Island. N Z J Ecol 2:64–66
Dowding JE, Murphy EC (2001) The impact of predation by introduced mammals on endemic shorebirds in New Zealand: a conservation perspective. Biol Conserv 99:47–64
Driscoll CA, Menotti-Raymond M, Roca AL et al (2007) The Near Eastern origin of cat domestication. Science 317:519–523
Espinosa-Gayosso CV, Álvarez-Castañeda ST (2006) Status of *Dipodomys insularis*, an endemic species of San José Island, Gulf of California, Mexico. J Mammal 87:677–682
Faulquier L, Fontaine R, Vidal E et al (2009) Feral cats *Felis catus* threaten endangered endemic Barau's Petrel *Pterodroma baraui* at Réunion Island (western Indian Ocean). Waterbird 32:330–336
Fitzgerald BM (1980) Feeding ecology of feral house cats in New Zealand forest. Carniv Genet News 4:67–71
Fitzgerald BM (1988) Diet of domestic cats and their impact on prey populations. In: Turner DC, Bateson P (eds) The Domestic Cat: The Biology of Its Behaviour. Cambridge University Press, Cambridge, pp 123–147
Fitzgerald BM, Karl BJ (1979) Foods of feral house cats (*Felis catus* L.) in forest of the Orongorongo Valley, Wellington. N Z J Zool 6:107–126
Fitzgerald BM, Turner DC (2000) Hunting behaviour of domestic cats and their impact on prey populations. In: Turner DC, Bateson P (eds) The Domestic Cat: the biology of its behaviour. Cambridge University Press, Cambridge, pp 152–175
Fitzgerald BM, Veitch CR (1985) The cats of Herekopare Island, New Zealand; their history, ecology and affects on birdlife. N Z J Zool 12:319–330
Fitzgerald BM, Karl BJ, Veitch CR (1991) The diet of feral cats (*Felis catus*) on Raoul Island, Kermadec group. N Z J Ecol 15:123–129
Fowler J, Cohen L, Jarvis P (1998) Practical statistics for field biology. Wiley, Chichester
Fritts TH, Rodda GH (1998) The role of introduced species in the degradation of island ecosystems:a case history of Guam. Ann Rev Ecol Evol Syst 29:113–140
Furet L (1989) Régime alimentaire et distribution du chat haret (*Felis catus*) sur l'île Amsterdam. Rev d'Ecol (Terre et Vie) 44:33–45
García-Márquez M, Caetano A, Bello I et al (1999) Ecología del gato cimarrón en el ecosistema termófilo de El Hierro (Islas Canarias) y su impacto sobre el lagarto gigante (*Gallotia simonyi*). Monogr Herpetol 4:207–222
Gillies C (2001) Advances in New Zealand mammalogy 1990–2000: House cat. J Royal Soc N Z 31:205–218
Harper GA (2004) Feral cats on Stewart Island/Rakiura. DOC Science Internal Series 174. New Zealand Department of Conservation, Wellington
Harper GA (2005) Numerical and functional response of feral cats (*Felis catus*) to variations in abundance of primary prey on Stewart Island (Rakiura). N Z Wildl Res 32:594–604
Hayde KA (1992) Ecology of the feral cat *Felis catus* on Great Dog Island. PhD, University of Tasmania
IUCN (2008). 2008 IUCN Red List of Threatened Species. http://www.iucnredlist.org (accessed December 2008)
Jogahara T, Ogura G, Sasaki T et al (2003) Food habits of cats (*Felis catus*) in forests and villages and their impacts on native animals in the Yambaru area, northern part of Okinawa Island, Japan. Mamm Science 43:29–37
Jones E (1977) Ecology of the feral cat. Felis catus (L.), (Carnivora: Felidae) on Macquarie Island. Austral Wildl Res 4:249–262
Jones E (1980) A survey of burrow-nesting petrels at Macquarie Island based upon remains left by predators. Notornis 27:11–20
Jones C (2002) A model for the conservation management of a "secondary" prey: sooty shearwater (*Puffinus griseus*) colonies on mainland New Zealand as a case study. Biol Conserv 108:1–12
Jones ME, Barmuta LA (1998) Diet overlap and relative abundance of sympatric dasyurid carnivores:a hypothesis of competition. J Anim Ecol 67:410–421
Jones M, Dickman C, Archer M (eds) (2003) Predators with pouches: the biology of carnivorous marsupials. CSIRO, Collingwood
Karl BJ, Best HA (1982) Feral cats on Stewart Island; their foods, and their effects on kakapo. N Z J Ecol 9:287–294
Kawakami K, Mashiko M (2008) Food habits of cat *Felis catus* on Haha-jima Island, Bonin Islands, Japan. Bulletin of the Bonin Islands study of Tokyo Metoropolitan University. 31:41–48
Kawauchi N, Sasaki T (2002) Foods habits and distribution of the three introduced Carnivores (mongoose, feral cat, feral dog) in forest region of northern part of Okinawa Island. Biol Mag Okinawa 40:41–50
Keitt BS, Tershy BR (2003) Cat eradication significantly decreases shearwater mortality. Anim Conserv 6:307–308
Keitt BS, Wilcox C, Tershy BR et al (2002) The effect of feral cats on the population viability of black-vented shearwaters (*Puffinus opisthomelas*) on Natividad Island, Mexico. Anim Conserv 5:217–223
King CM, Flux M, Innes JG et al (1996) Population biology of small mammals in Pureora forest park: 1. Carnivores (Mustela erminea, M. furo, M. nivalis, and Felis catus). N Z J Ecol 20:241–251

Kirkpatrick RD, Rauzon MJ (1986) Foods of feral cats *Felis catus* on Jarvis and Howland Islands, Central Pacific Ocean. Biotropica 18:72–75

Konecny MJ (1983) Behavioral ecology of feral house cats in the *Galapagos Islands,* Ecuador. Unpubl. Ph. D. dissertation. Univ. Florida, Gainesville

Konecny MJ (1987) Food habits and energetics of feral house cat in the Galapagos Islands. Oikos 50:24–32

Krebs CJ (1989) Ecological methodology. Harper Collins Publishers, New York

Langham NPE (1990) The diet of feral cats (*Felis catus* L.) on Hawke′s Bay farmland, New Zealand. N Z J Zool 17:243–255

Long JL (2003) Introduced mammals of the world: their history, distribution, and influence. CABI Publishing, Wallingford

Lozano J, Moleón M, Virgós E (2006) Biogeographical patterns in the diet of the wildcat, *Felis silvestris* Scherber, in Eurasia: factors affecting the trophic diversity. J Biogeogr 33:1076–1085

Macdonald DW, Thom MD (2001) Alien carnivores: unwelcome experiments in ecological theory. In: Gittleman JL, Funk SM, Macdonald DW et al (eds) Carnivore conservation. Cambridge University Press, Cambridge, pp 93–122

Marshall WH (1961) A note on the food habits of feral cats on Little Barrier Island, New Zealand. N Z J Sci 4:822–824

Martínez-Gómez JE, Jacobsen JK (2004) The conservation status of Townsend's shearwater *Puffinus auricularis auricularis*. Biol Conserv 116:35–47

Matias R, Catry P (2008) The diet of feral cats at New Island, Falkland Islands, and impact on breeding seabirds. Polar Biol 31:609–616

Medina FM, García R (2007) Predation of insects by feral cats (Felis silvestris catus L., 1758) on an oceanic island (La Palma, Canary Island). J Insect Conserv 11:203–207

Medina FM, Nogales M (1993) Dieta del gato cimarrón (*Felis catus* L.) en el piso basal del Macizo de Teno (Noroeste de Tenerife). Doñana Acta Vert 20:291–297

Medina FM, García R, Nogales M (2006) Feeding ecology of feral cats on a heterogeneous subtropical oceanic island (La Palma, Canarian Archipelago). Acta Theriol 51:75–83

Medina FM, López-Darias M, Nogales M et al (2008) Food habits of feral cats (*Felis silvestris catus* L.) in insular semiarid environments (Fuerteventura, Canary Islands). Wildl Res 35:162–169

Medina FM, Bonnaud E, Nogales M et al. (2010) A global review of the impacts of invasive cats on insular endangered vertebrates (In Review in Biological Review)

Mukherjee S, Goyal SP, Jonhsingh AJT et al (2004) The importance of rodents in the diet of jungle cat (*Felis catus*), caracal (*Caracal caracal*) and golden jackal (*Canis aureus*) in Sariska Tiger Reserve, Rajasthan, India. J Zool 262:405–411

Murphy EC, Keedwell RJ, Brown KP et al (2004) Diet of mammalian predators in braided river beds in the central South Island, New Zealand. Wildl Res 31:631–638

Nogales M, Medina FM (1996) A review of the diet of feral domestic cats (*Felis silvestris* f. catus) on the Canary Islands, with new data from the laurel forest of La Gomera. Z Säugetier 61:1–6

Nogales M, Medina FM (2009) Trophic ecology of feral cats (*Felis silvestris* f. catus) in the main environments of an oceanic archipelago (Canary Islands): an updated approach. Mammal Biol 74:169–181

Nogales M, Martín A, Delgado G et al (1988) Food spectrum of the feral cat (Felis catus L., 1758) in the juniper woodland on El Hierro (Canary Islands). Bonn zool Beitr 39:1–6

Nogales M, Abdola M, Alonso C et al (1990) Premières données sur l'alimentation du chat haret (Felis catus L., 1758) du Parc National du Teide. Ténérife (Iles Canaries). Mammalia 54:189–195

Nogales M, Rodríguez JL, Delgado G et al (1992) The diet of feral cats (*Felis catus*) on Alegranza Island (north of Lanzarote, Canary Islands). Folia Zool 41:209–212

Nogales M, Martín A, Tershy BR et al (2004) A review of feral cat eradication on islands. Conserv Biol 18:310–319

Oro D, Aguilar JS, Igual JM et al (2004) Modelling demography and extinction risk in the endangered Balearic shearwater. Biol Conserv 116:93–102

Pearre S Jr, Maass R (1998) Trends in the prey size-based trophic niches of feral and house cats *Felis catus* L. Mammal Rev 28:125–139

Peck DR, Faulquier L, Pinet P et al (2008) Feral cat diet and impact on sooty terns at Juan de Nova Island, Mozambique Channel. Anim Conserv 11:65–74

Phillips RB, Winchell CS, Schmidt RH (2007) Dietary overlap of an alien and native carnivore on San Clemente Island, California. J Mammal 88:173–180

Pontier D, Say L, Debias F et al (2002) The diet of feral cats (*Felis catus* L.) at five sites on the Grande Terre, Kerguelen archipelago. Polar Biol 25:833–837

Ratcliffe N, Bell M, Pelembe T et al (2009) The eradication of feral cats from Ascension Island and its subsequent recolonization by seabirds. Oryx 44:20–29

Rauzon MJ (1983) Feral cats of Jarvis Island: their effects on seabirds and their eradication. M.Sc Thesis, University of Hawaii, Manoa

Rauzon MJ (1985) Feral cats on Jarvis Island: their effects and their eradication. Atoll Res Bull 282:1–32

Rauzon MJ, Forsell DJ, Flint EN et al. (2011-in press) Howland, Baker and Jarvis Islands 25 years after cat eradication: recovery in a bio-geographical context

Rodríguez-Estrella R, Arnaud G, Álvarez S et al (1991) Predation by feral cats on birds at Isla Socorro, Mexico. Western Birds 22:141–143

Roemer G, Donlan C, Courchamp F (2002) Golden eagles, feral pigs, and insular carnivores: How exotic species turn native predators into prey? Proc Nat Acad Sci, USA 99:791–796

Santana F, Martín 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

Say L, Devillard S, Natoli E et al (2002) The mating system of feral cats (*Feliscatus* L.) in a sub-Antarctic environment. Polar Biol 25:838–842

Schall JJ, Pianka ER (1978) Geographical trends in numbers of species. Science 201:679–686

Seabrook W (1989) Feral cats (*Felis catus*) as predators of hatchling green turtles (*Chelonias mydas*). J Zool 219:83–88

Seabrook W (1990) The impact of the feral cat (*Felis catus*) on the native fauna on Aldabra Atoll, Seychelles. Rev d'Ecol (Terre et Vie) 45:135–145

Sinclair ARE, Pech RP, Dickman CR et al (1998) Predicting effects of predation on conservation of endangered prey. Conserv Biol 12:564–575

Smucker TD, Lindsey GD, Mosher SN (2000) Home range and diet of feral cats in Hawaii forests. Pacific Conserv Biol 6:228–237

Snetsinger TJ, Fancy SG, Simon JC et al (1994) Diets of owls and feral cats in Hawaii. Elepaio 54:47–50

Sokal RR, Rohlf JF (1995) Biometry: the principles and practice of statistics in biological research. Freeman and Co, New York

Sousa KS, Bager A (2008) Feeding habits of Geoffroy's cat (*Leopardus geoffroyi*) in Southern Brazil. Mammal Biol 73:303–308

Stattersfield AJ, Capper DR (2000) Threatened birds of the world. Lynx Edicions and BirdLife International, Barcelona

Tabachnick BG, Fidell LS (1996) Using multivariate statistics. Harper Collins Collegue Publishers, New York

Taylor RH (1979) How the Macquarie island parakeet became extinct. NZ J Ecol 2:42–45

Tidemann CR, Yorkston HD, Russack AJ (1994) The diet of Cats, *Felis catus*, on Christmas Island, Indian Ocean. Wildl Res 21:279–286

Trites AW, Joy R (2005) Dietary analysis from scat samples:how many scats are enough? J Mammal 86:704–712

Van Aarde RJ (1980) The diet and feeding behaviour of feral cats, *Felis catus* at Marion Island. S African J Wildl Res 10:123–128

Van Aarde RJ (1986) A case study of an alien predator (*Felis catus*) introduced on Marion Island:selective advantages. S African J Antarc Res 16:113–114

Van Rensburg PJJ (1985) The feeding ecology of a decreasing feral house cat, *Felis catus*, population at Marion Island. In: Siegfried WR, Condy PR, Laws RM (eds) Antarctic Nutrient Cycles and Foods Webs. Springer-Verlag, Berlin Heidelberg, pp 620–624

Vigne J-D, Guilaine J, Debue K et al (2004) Early taming of the cat in Cyprus. Science 304:259

Vitousek P, Loope L, Adsersen H (1995) Islands: biological diversity and ecosystem function. Ecological Studies 115. Wûrburg and Mooney, Lange, Stanford

Watanabe S, Nakanishi N, Izawa M (2003) Habitat and prey resource overlap between the Irimote cat *Prionailurus iriomotensis* and introduced feral cat *Felis catus* based on assessment of scat content and distribution. Mamm Study 28:47–56

Whittaker RJ, Fernández-Palacios JM (2007) Island biogeography: ecology, evolution and conservation. Oxford University Press, Oxford