

Feeding habits of urban peregrine *Falco peregrinus brookei* in eastern Sicily

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Riassunto – *Comportamento alimentare del pellegrino Falco peregrinus brookei in un'area urbana della Sicilia orientale.* In questa ricerca abbiamo analizzato la dieta e il comportamento di caccia del pellegrino *Falco peregrinus brookei* nell'area urbana costiera della città di Catania (Sicilia orientale). Le prede identificate sono riferite a 203 episodi di caccia e 23 tra borre e resti alimentari. *Columba livia* è risultata la specie di maggiore importanza in termini di biomassa nella dieta. Frequenti sono risultate essere specie di migratori, che il pellegrino cattura nei dormitori o durante la migrazione. I chiropteri sono risultati essere relativamente frequenti.

The peregrine *Falco peregrinus* breeds in urban environments both in north American (Cade and Bird 1990) and European countries (Mebs 1969, Sömmer 1989, Péske 1995) and many studies focused on its diet (Cade *et al.* 1996, Schneider and Wilden 1994, Takenaka and Takenaka 1995, Serra *et al.* 2001). Doves, *Columba* sp., and starlings, *Sturnus* sp., are the most common prey of urban peregrines worldwide (Barber and Barber 1983, 1988, Schneider and Wilden 1994, Takenaka and Takenaka 1995). However, this falcon can feed on a larger variety of prey items (see Cade *et al.* 1996 for a review). Here, we describe the diet and foraging strategies of this falcon in a Sicilian coastal urban area. In Sicily, the peregrine *F. p. brookei* is a common breeder on rock cliffs near small and medium urban areas but also in several cities (Lo Valvo *et al.* 1994).

The city of Catania, located in the eastern coast of Sicily, has a natural gulf with a large seaport. Our dataset include observations conducted throughout the years from 1990 to 1997 and in 1999. Although we observed courtship flights, no nests were found. Each year we observed at least a stable pair in the harbour areas, while on the whole period, 3–5 individuals were observed in a larger territory, including urban surroundings and coasts.

We collected prey remains and pellets during 1996–1997 ($N = 23$). The mean weight and size of prey were derived from the literature (mammals) and from beaks, sternum and humerus bones (birds) (Morris and Burgis 1988,

Schober and Grimmberger 1993). We assumed an average size of 200 g for pigeons through wings found in prey remains (wing length = 20–22 cm; $N = 10$). We multiplied the number of each prey item by its average weight (Tab. 1), summed the products and divided the sum by the total number of prey to calculate the mean prey weight (MWP). Total prey biomasses were calculated based on both pellet analysis and feeding observations (Tab. 1). We recorded attacks mainly in downtown and coastal surroundings ($N = 203$) including some strikes at sea. In order to standardize results, we treated feeding observations as suggested by Paine *et al.* (1990), by considering only corpses from successful hunting events (Tab. 1).

Overall, we identified 57 prey items with a MPW of 119 g, ranging from *Pipistrellus pipistrellus* bats (7 g) to the moorhen *Gallinula chloropus* (350 g; Tab. 1). Pigeons made up more than 65% of the total biomass (Barber and Barber 1983, 1988, Tab. 1). Our results confirm the tendency by peregrines to predate partially white pigeons (80% of pellets and 11% of hunting attempts, Bird and Cade 1990). In downtown, falcons often attacked starlings at nocturnal roosts ($N = 28$ attacks, Takenaka and Takenaka 1995), where they preyed on both the resident population of spotless starling *Sturnus unicolor* and migratory *S. vulgaris*. Although roosts of other species attracted peregrines (Bird and Cade, 1990), the energetic gain should be negligible, as could be witnessed by the relatively low success of attacks. For example, they captured three individuals out of 70 fast stoop attacks on small groups of white wagtails *Motacilla alba* (weight: 23 g). The presence of a small sandy delta in the port surroundings widened diet composition (Tab. 1, Thiollay 1982). Some migrant birds (*Turdus merula*, *Coturnix coturnix*, *Upupa epops*) were probably seized during migration along the coast (Tab. 1). Peregrines often performed bat hunting ($N = 31$ observations). As described by Byre (1990), we observed that peregrines attacked victims from behind and grabbed the belly, rump or wings, but did not eat them in flight. The total time elapsed between the capture, handling and ingestion of bats varied from 60 to 180 s. This time range was greater than previously recorded (1535 s, Byre 1990), but compatible with that reported in other raptors (30300 s, Fenton *et al.* 1994). The success rate of bat capture was relatively low (23%), but their exploitation was optimized by rapid handling during capture (Fenton *et al.* 1994).

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Table 1. Diet of the peregrine in Catania (Sicily) according to observations of hunting episodes, pellets and prey remains. – *Dieta del pellegrino nella città di Catania (Sicilia) valutata sulla base di episodi di caccia, borre e resti.*

Prey	Flight attacks (<i>N</i> = 203)	Successful attacks (<i>N</i>)	Eaten corpses (<i>N</i> = 23 pellets and remains)	Total prey items (<i>N</i>)	Biomass (%)
Birds					
<i>Columba sp.</i>	55	13	10	23	68.0
<i>Streptopelia turtur</i>	-	-	1	1	1.9
<i>Upupa epops</i>	2	2	-	2	2.1
<i>Sturnus vulgaris</i>	20	8	-	8	8.8
<i>S. unicolor</i>	8	2	-	2	2.5
<i>Gallinula chloropus</i>	-	-	1	1	5.2
<i>Larus ridibundus</i>	-	-	1	1	3.7
<i>Coturnix coturnix</i>	1	1	-	1	1.6
Waders unidentified	-	-	1	1	0.5
<i>Turdus merula</i>	1	1	-	1	1.5
<i>Motacilla alba</i>	70	3	3	6	2.3
<i>Passer sp.</i>	15	3	-	3	1.2
Mammals					
<i>P. pipistrellus</i>	31	7	-	7	0.7

We identified only 13 prey types, which is less than reported by other Italian studies on urban peregrines (Serra *et al.* 2001), but compatible with the range of 10–22 species observed in Europe (Schneider and Wilden 1994, Rejt 2001). Though peregrines may behave as opportunistic predators, feeding upon the most available seasonal food resources, resident pigeons nevertheless constituted the bulk of the diet in terms of both frequency and biomass (Tab. 1; Barber and Barber 1983, 1988). Although hunting success on starlings was larger (36%) than that on pigeons (24%), our data are consistent with a preference for larger prey (Schneider and Wilden 1994), which were more profitable in terms of biomass per capture event (Tab. 1, Thiollay 1982, Takenaka and Takenaka 1995).

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