

Diet of the Eagle Owl (*Bubo bubo*) in Mediterranean Spain

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Introduction and area of study

The diet of the Eagle Owl (*Bubo bubo*) in temperate Europe is well known. However, data on its feeding habits in the Mediterranean areas of western Europe are missing (for the localization of Mediterranean areas, see Emberger et al., 1963; H. Ashaman, 1973). From these areas, only data published by Pérez Chiscano (1974) and Ruiz y Camacho (1974) are known but this does not add up to a hundred preys. It is interesting to understand the diet of this species in the Iberian Peninsula, as it is the most common of the large size predator birds in existence there.

In this work, we study the diet of the *Bubo bubo* in Spain, and its geographical and seasonal variations. These results are compared with those obtained by other authors in different points of temperate Europe. This part of the study will be developed extensively in a work now under preparation.

Area of study

The area studied in the Iberian Peninsula, comprises localities which are representatives of the climate existent in the province of Burgos (localities n° 25 & 26) and Mediterranean localities situated in Sierra Nevada (localities n° 1, 2 and 3); Penibética range of mountains near Málaga (localities n° 4 & 5); Sierra de Cabra (locality n° 28); Sierra Morena (localities n° 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 & 16); Extremadura (localities n.º 17, 18 and 27); Toledo (localities n° 20 & 21); South of Salamanca (localities n° 22, 23 and 24).

Owing to the altitude above sea level, all the localities are situated in an area half way up the mountains, never rising above an altitude of 1,100 metres.

Table 1

Height, attitude, biotope and small game reserves of the different nests.

NEST	HEIGHT	LATITUDE	BIOTOPE	SMALL GAME RESERVES
1	921	36 59 40	Uncultivated land and pine groves of <i>P. Halepensis</i> .	not
2	1084	37 09 33	Uncultivated land, pasture land and hillsides of chestnut groves.	not
3	1022	37 13 08	Light pine groves of <i>P. pinaster</i> .	not
4	799	36 39 23	Bare chalky land, evergreen oaks with brambles and groves of silver firs <i>A. pinsapo</i> .	not
5	565	36 43 05	Bare chalky land and uncultivated land. Rivers of shallow open water.	yes
6	406	37 56 40	Repopulated pine groves of <i>P. pinex</i> and evergreen oak pasture-land.	yes
7	406	37 56 40	Terrain of rock roses and eucalyptus of less than 3 years.	not
8	406	37 56 40	Terrain of rock roses and evergreen oak pasture-land.	yes
9	406	37 56 40	Terrain of rock roses and evergreen oak pasture-land.	yes
10	406	37 56 40	Terrain of rock roses and evergreen oak pasture-land.	yes
11	406	37 56 40	Terrain of rock roses and evergreen oak pasture-land.	yes
12	406	37 56 40	Terrain of rock roses and evergreen oak pasture-land.	yes
13	626	37 50 15	Terrain of rock roses and evergreen oak pasture-land.	not
14	327	37 40 33	Terrain of rock roses and evergreen oak pasture-land.	yes
15	327	37 40 33	Terrain of rock roses and evergreen oak pasture-land.	yes
16	599	37 55 54	Terrain of rock roses and evergreen oak pasture-land. Open river bed.	not
17	404	39 01 50	Uncultivated land, olive groves and light evergreen oaks.	not
18	241	39 07 56	Evergreen oaks with bramble. Open ditches.	not
19	351	39 25 25	Evergreen oaks with bramble.	not
20	498	40 09 20	Granite soil with bramble of <i>Cistus sp.</i> and <i>Juniperus sp.</i>	yes
21	498	40 09 20	Granite soil with bramble of <i>Cistus sp.</i> and <i>Juniperus sp.</i>	yes
22	910	40 18 25	Repopulated pine groves of <i>P. sylvestris</i> , grain cultivation and pasture-land.	not
23	910	40 18 25	Repopulated pine groves of <i>P. sylvestris</i> , grain cultivation and pasture-land.	yes
24	910	40 18 25	Hillsides of very light oaks and pasture land. Open river bed.	not
25	800	42 42 50	Area of beech trees, evergreen oaks and ploughed land at 600 mts from population on the banks of the Ebro.	not
26	568	42 47 35	Area of beech trees, evergreen oaks and ploughed land.	not
27	345	38 47 05	Cultivated land, uncultivated land, farm-land and olive groves.	not
28	448	37 28 20	Uncultivated land, cultivated (farm) land and evergreen oaks in a state of decline.	not



Fig. 1. Nests studied in the Iberian peninsula and their locality.

The location of the nests and the biotopes close to each one of them are presented in Table 1.

Material and methods

The material used in this study was collected and analyzed by the authors, except for data relating to localities numbers 28 and 25. The pellets of the adults and fledglings, as well as the remains of nests used in this work, were collected during the years 1973 and 1974 in the nests and roosting sites close to them. Visits to the localities were made throughout the year, but the number of visits varied from one to another, so that eleven of them were visited once, four of them three times and two of them five times.

In the analyses which were realized, we determined the number of individuals of one species which were preyed on, according to the maximum number of characteristic remains existing. Thus, in the case of *O. cuniculus*, we found pelvis and jaws (in both cases left and right separately) subsequently using the highest number in the results. For larger preys, such as foxes, bovidae, etc..., we considered each appearance of remain in a pellet as a prey specimen.

The weights used for calculating the biomass were obtained from the bibliography (König, 1968; Van den Brink, 1971) for birds and mammals. For reptiles, amphibians and fishes, the weight was determined bearing in mind the size of the prey specimen and using the weight of a similar sized specimen conserved in the Biological Station of Doñana. For insects, the biomass was estimated by means of specimens weighed by the authors. When any type of prey exceeded 450 g (usual quantity consumed daily by Eagle Owls, according to Heinroth, 1967) the predator could act in several ways (see Marti, 1974; Geroudet, 1965). On the basis of the abundance of the fundamental prey (*O. cuniculus*) and on the relative frequency with which remains of rabbits appear in the study zone, we conclude that the predator (actually the pair of predators) after eating, takes the rest of the prey to the nest or leaves it in the country, not returning to it afterwards. Thus, when calculating the biomass of these species (rabbits, hares, cats, etc.) we gave each a weight of 450 g, calculated as if the adult had eaten from it only once.

Table 2

Species preyed in the different nests, and the number of times this occurred. The Colubridae marked with an asterisks were approximately 1'30 metres in length. The Canidae marked with two asterisks were young.

Nest	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	TOTAL PREY
MAMMALIA	6	7	23	80	120	108	61	101	73	66	186	153	40	151	74	170	39	144	3	198	23	45	53	138	9	53	83	64	2271
ERINACEIDAE: <i>Erinaceus europaeus</i>	—	—	1	3	—	—	—	3	—	—	—	—	—	—	—	7	4	1	—	2	—	—	—	24	—	—	22	—	67
SORICIDAE: <i>Crocidura russula</i>	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	12	—	—	—	—	—	—	—	—	—	—	—	1	14
LEPORIDAE	4	7	21	55	102	105	53	95	71	63	183	150	37	142	72	109	31	98	3	184	21	40	49	100	6	19	43	34	1897
<i>Oryctolagus cuniculus</i>	3	7	20	55	93	76	36	78	52	46	167	137	32	136	69	105	23	55	1	179	21	31	43	84	6	17	32	32	1636
<i>Lepus capensis</i>	—	—	—	2	6	5	4	3	8	6	2	2	1	1	2	1	24	—	1	—	1	—	—	—	—	1	4	2	76
<i>Oryctolagus/Lepus</i>	1	—	1	—	7	23	12	13	16	9	10	11	3	5	2	2	7	19	2	4	—	8	6	16	—	1	7	—	185
GLIRIDAE: <i>Eliomys quercinus</i>	—	—	—	9	—	—	—	—	—	—	—	—	—	—	—	5	1	5	—	9	—	—	—	6	1	—	6	9	51
MICROTIDAE	—	—	1	1	1	2	7	1	—	3	—	2	—	7	1	13	—	16	—	1	1	—	3	4	2	18	7	1	92
<i>Arvicola sapidus</i>	—	—	1	—	1	2	7	1	—	3	—	2	—	7	1	11	—	15	—	1	1	—	3	4	1	18	7	—	86
<i>Pitymys duodecimcostatus</i>	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	2	—	1	—	—	—	—	—	—	1	—	—	—	6
MURIDAE	2	—	—	10	16	1	1	1	1	—	3	—	2	1	1	23	3	22	—	2	1	5	1	2	—	16	4	19	137
<i>Apodemus sylvaticus</i>	—	—	—	10	1	—	—	1	—	—	3	—	—	—	—	12	1	7	—	—	—	4	1	2	—	5	—	—	47
<i>Rattus rattus</i>	—	—	—	—	—	—	1	—	1	—	—	—	2	1	1	2	2	15	—	—	—	—	—	—	—	—	—	4	29
<i>Rattus novergicus</i>	2	—	—	—	15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	1	—	—	—	—	9	3	14	46
<i>Mus musculus</i>	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	1	3
<i>Mus/Apodemus</i>	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	9	—	—	—	—	—	1	—	—	—	—	1	—	12
CANIDAE: <i>Vulpes vulpes</i>	—	—	—	1**	—	—	—	1**	1**	—	—	—	—	—	—	—	—	—	1**	—	—	—	—	2**	—	—	—	—	6
MUSTELIDAE: <i>Mustela nivalis</i>	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	2
FELIDAE: <i>Felis sp.</i>	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
BOVIDAE	—	—	—	1	—	—	—	—	—	—	—	—	1	—	—	1	—	1	—	—	—	—	—	—	—	—	—	—	4
AVES	1	—	—	5	7	63	21	33	6	20	16	30	17	35	5	46	3	60	2	37	6	299	9	114	2	16	28	6	887
ANATIDAE: <i>Anas platyrhynchos</i>	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
ACCIPITRIDAE	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	1	—	—	1	—	2	—	—	—	—	6
<i>Buteo buteo</i>	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	2	—	—	—	—	4
<i>Circus pygargus</i>	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	2
FALCONIDAE: <i>Falco tinnunculus</i>	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	2	—	2	—	—	6
PHASIANIDAE	—	—	—	3	7	6	11	4	6	10	22	8	19	1	12	2	12	—	24	6	16	3	14	2	2	12	2	—	204
<i>Alectoris rufa</i>	—	—	—	3	7	6	11	4	6	9	22	8	19	1	12	2	12	—	24	6	3	3	14	2	2	12	2	—	190
<i>Alectoris graeca</i>	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
<i>Coturnix coturnix</i>	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13	—	—	—	—	—	—	13
RALLIDAE: <i>Gallinula chloropus</i>	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
CHARADRIIDAE: <i>Vanellus vanellus</i>	—	—	—	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8	—	—	—	—	—	—	11
OTIDIDAE: <i>Otis tetrax</i>	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15	—	—	—	—	—	—	15
SCOLOPACIDAE	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	—	—	—	—	—	—	3

NEST	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	TOTAL PREY	
<i>Tringa sp.</i>	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	2	---	---	---	---	---	---	2	
<i>Scolopax rusticola</i>	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	---	---	---	---	---	---	1	
BURHINIDAE: <i>Burhinus oedicnemus</i>	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	3	---	1	---	---	4	
COLUMBIDAE	1	---	---	2	---	52	11	5	1	11	1	4	4	9	---	11	---	25	1	1	---	21	---	8	---	2	1	---	171	
<i>Columba palumbus</i>	---	---	---	1	---	51	11	5	1	11	1	4	4	9	---	11	---	25	1	1	---	7	---	7	---	2	---	---	152	
<i>Columba livia</i>	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	4	---	---	---	---	---	---	5	
<i>Streptopelia turtur</i>	---	---	---	1	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	10	---	1	---	1	---	---	14	
CUCULIDAE: <i>Cuculus canorus</i>	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	2	---	---	---	---	---	---	3	
TYTONIDAE: <i>Tyto alba</i>	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	---	2	1	---	4	
STRIGIDAE	---	---	---	---	---	---	---	3	---	---	---	---	---	---	---	1	---	1	---	2	---	---	---	---	---	1	1	1	10	
<i>Athene noctua</i>	---	---	---	---	---	---	---	2	---	---	---	---	---	---	---	1	---	1	---	2	---	---	---	---	---	---	1	1	8	
<i>Strix aluco</i>	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	---	2	
CAPRIMULGIDAE: <i>Caprimulgus sp.</i>	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	---	1	---	---	---	---	2	
APODIDAE: <i>Apus sp.</i>	---	---	---	---	---	---	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	1	---	---	---	---	---	---	2	
CORACIIDAE: <i>Coracias garrulus</i>	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	---	---	---	18	---	---	---	---	---	---	19
UPIDAE: <i>Upupa epops</i>	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	---	---	---	---	1	---	3	
ALAUDIDAE	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	10	---	---	---	---	---	---	11	
<i>Galerida sp.</i>	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	6	---	---	---	---	---	---	6	
<i>Lullula arborea</i>	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	
Other species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	4	---	---	---	---	---	---	4	
MUSCICAPIDAE	---	---	---	---	---	---	---	4	---	2	2	---	---	2	---	3	---	1	---	---	---	51	---	3	---	---	---	---	68	
<i>Monticola solitarius</i>	---	---	---	---	---	---	---	---	---	---	1	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	2	
<i>Erithacus rubecula</i>	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	
<i>Turdus merula</i>	---	---	---	---	---	---	3	---	---	1	---	---	---	---	---	3	---	---	---	---	---	---	5	---	---	---	---	---	12	
<i>Turdus philomelos</i>	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	37	---	---	---	---	---	---	37	
<i>Turdus sp.</i>	---	---	---	---	---	---	---	2	---	---	---	---	---	1	---	---	---	1	---	---	---	9	---	3	---	---	---	---	16	
EMBERICIDAE: <i>Emberiza calandra</i>	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	7	---	---	---	---	---	---	7	
FRINGILIDAE:	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	3	---	---	---	---	1	5	
<i>Carduelis chloris</i>	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	---	1	
<i>Fringila coelebs</i>	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	3	---	---	---	---	---	3	
<i>Coccothraustes coccothraustes</i>	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	
STURNIDAE	---	---	---	---	---	---	---	2	---	---	---	---	---	---	1	---	1	---	---	---	---	90	---	29	---	---	---	---	123	
<i>Sturnus unicolor</i>	---	---	---	---	---	---	---	2	---	---	---	---	---	---	---	1	---	1	---	---	---	5	---	29	---	---	---	---	38	
<i>Sturnus sp.</i>	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	85	---	---	---	---	---	---	85	
ORIOOLIDAE: <i>Oriolus oriolus</i>	---	---	---	---	---	---	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	1	---	---	---	---	---	---	2	
CORVIDAE	---	---	---	1	---	---	1	---	---	1	1	2	1	1	5	---	---	5	---	2	---	---	---	19	---	2	---	---	41	
<i>Garrulus glandarius</i>	---	---	---	---	---	---	1	---	---	---	1	1	---	---	---	---	---	2	---	---	---	---	---	11	---	---	---	---	16	
<i>Cyanopica cyanus</i>	---	---	---	---	---	---	---	---	---	---	1	---	1	---	---	---	---	3	---	2	---	---	---	3	---	---	---	---	10	
<i>Pica pica</i>	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	4	---	1	---	---	5	
<i>Pyrrhocorax pyrrhocorax</i>	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	
<i>Corvus monedula</i>	---	---	---	---	---	---	---	---	1	---	---	---	1	---	5	---	---	---	---	---	---	---	---	1	---	---	---	---	8	
<i>Corvus corone</i>	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	---	---	1	

NEST																													TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	PREY	
Unidentified Birds (1)	—	—	—	1	2	2	—	—	1	1	3	3	2	1	9	1	11	1	8	—	28	6	19	—	4	5	1	109		
» » (2)	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	8	—	1	—	—	10		
» » (3)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	1		
» PASSERIFORME	—	—	—	2	1	1	3	—	—	—	—	—	1	—	2	—	2	—	—	—	22	—	4	—	—	6	1	45		
REPTILIA	—	—	2	3	2	—	2	—	—	—	—	—	—	1	8	—	—	—	—	1	1	1	2	—	—	2	3	28		
EMYDIDAE: <i>Clemmys caspica</i>	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	2		
LACERTIDAE	—	—	2	—	1	—	2	—	—	—	—	—	—	7	—	—	—	—	—	1	1	—	2	—	—	1	3	20		
<i>Lacerta hispanica</i>	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1		
<i>Lacerta lepida</i>	—	—	1	—	—	—	—	—	—	—	—	—	—	7	—	—	—	—	—	1	1	—	2	—	—	1	3	16		
<i>Psammodromus algirus</i>	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1		
Unidentified LACERTIDAE	—	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2		
COLUBRIDAE	—	—	—	3*	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1*	—	—	—	1	—	6		
AMPHIBIA	—	—	—	—	—	1	1	—	—	—	1	—	—	—	—	2	—	—	—	—	—	—	—	7	—	—	—	12		
PELOBATIDAE: <i>Pelobates cultripes</i>	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2		
BUFONIDAE: <i>Bufo bufo</i>	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1		
RANIDAE: <i>Rana ridibunda</i>	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	7	—	—	—	9		
PISCES	—	—	—	—	18	—	—	—	—	—	—	—	—	—	63	—	11	—	—	—	—	—	—	—	—	—	—	92		
CIPRINIDAE	—	—	—	—	16	—	—	—	—	—	—	—	—	—	49	—	8	—	—	—	—	—	—	—	—	—	—	73		
<i>Barbus barbuis</i>	—	—	—	—	15	—	—	—	—	—	—	—	—	—	46	—	8	—	—	—	—	—	—	—	—	—	—	69		
<i>Chondrostoma polilepis</i>	—	—	—	—	1	—	—	—	—	—	—	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—	—	4		
Unidentified PISCES	—	—	—	—	2	—	—	—	—	—	—	—	—	—	14	—	3	—	—	—	—	—	—	—	—	—	—	19		
INVERTEBRATA	—	4	3	10	11	3	—	—	10	—	—	—	3	8	12	12	30	—	1	—	5	—	58	—	—	5	34	289		
ORTOPTHERA	—	4	—	—	—	2	—	—	—	—	—	—	—	—	—	—	10	—	—	—	—	1	—	—	—	2	2	21		
CARABIDAE	—	—	1	—	—	—	—	—	—	1	—	—	—	—	—	1	—	2	—	—	—	—	—	2	—	—	—	7		
<i>Carabus sp.</i>	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	2		
Unidentified CARABIDAE	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	2	—	—	—	—	—	2	—	—	—	5		
TENEBRIONIDAE: <i>Akis sp.</i>	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	4	—	—	—	—	—	—	—	2	—	—	2	9		
LUCANIDAE: <i>Lucanus cervus</i>	—	—	—	—	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10	—	—	—	—	14		
SCARABAEIDAE	—	—	1	3	7	—	—	—	—	—	—	—	—	1	6	5	1	27	—	1	—	—	—	42	—	—	1	27	122	
<i>Scarabeus sacer</i>	—	—	1	—	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21	—	—	1	2	30		
<i>Copris hispanus</i>	—	—	—	—	—	—	—	—	—	—	—	—	—	6	—	—	21	—	—	—	—	—	11	—	—	—	21	59		
<i>Geotrupes sp.</i>	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	2	4		
<i>Oryctes nasicornis</i>	—	—	—	1	—	—	—	—	—	—	—	—	—	1	—	1	—	—	—	—	—	—	—	—	—	—	1	4		
Unidentified SCARABAEIDAE	—	—	—	1	2	—	—	—	—	—	—	—	—	—	3	1	6	—	—	—	—	—	10	—	—	—	1	25		
CERAMBYCIDAE: <i>Cerambyx cerdo</i>	—	—	—	—	—	1	—	—	—	7	—	—	—	2	—	—	—	—	—	—	—	—	—	1	—	—	—	11		
Unidentified COLEOPTERA	—	—	—	—	4	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	1	—	—	—	4	10		
ARACHNIDA: <i>Butlus occitanus</i>	—	—	—	3	—	—	—	—	—	2	—	—	—	—	—	2	—	1	—	—	—	—	3	—	—	—	1	13		
MIRIAPODA: <i>Scolopendra sp.</i>	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	2		
TOTAL PREY	7	11	28	98	158	175	85	134	79	96	203	183	57	189	88	301	54	245	5	236	30	350	63	319	11	69	118	107	3499	

- (1) Size of *Alectoris rufa*.
(2) Size of *Corvus corax*.
(3) Size greater than *Corvus corax*.

In the finalization of the results we only included those localities with a number higher than 50 preys in Table I, this not being considered in the rest of the cases.

Results

Composition of the diet

Bubo bubo has a wide range of preys in the area studied. Both invertebrates and vertebrates appear among the preys captured, and of the latter, the five existing classes are present. In Table 2, we give a detailed list of the species preyed on and the number of times this occurred. As can be seen in the list, the most frequent preys are the mammals, followed by birds. Compared with other places in their breeding area, a large variety of reptiles and invertebrates species are preyed on here. Among the former, the first capture known by us of a species of turtle (*Clemys caspica*) is noteworthy. Among the latter (invertebrates two poisonous species have been preyed (*Butus occitanus* and *Scolopendra* sp.).

Importance of the different prey

The frequency with which a certain species is preyed on and its contribution to biomass in the predator's diet, provides part of the information needed in order to know the importance of the prey in the diet.

According to the results obtained (see Table 3 and Fig. 2) on studying the frequency of predation and the biomass, mammals are the most important group of preys for *Bubo bubo*. The species which is most preyed on, and the basic food in the diet of the predator is *Oryctolagus cuniculus*. In the 81.8 per cent of the samples this species exceeds of the nest studied (n=22), 50 per cent of the total biomass consumed by the predator was this species. Mammals are followed by birds importance. Among these, only two species (*C. palumbus* and *A. rufa*) contribute with a biomass of any real importance. The remaining groups (reptiles amphibians, fishes and invertebrates), although frequently reaching appreciable percentages, contribute an insignificant biomass, only rarely above 3 per cent of the total biomass in only 9.1 per cent of the nests studied (Fishes: 10.32 nest number 16; fishes: 4.40 per cent nest number 5).

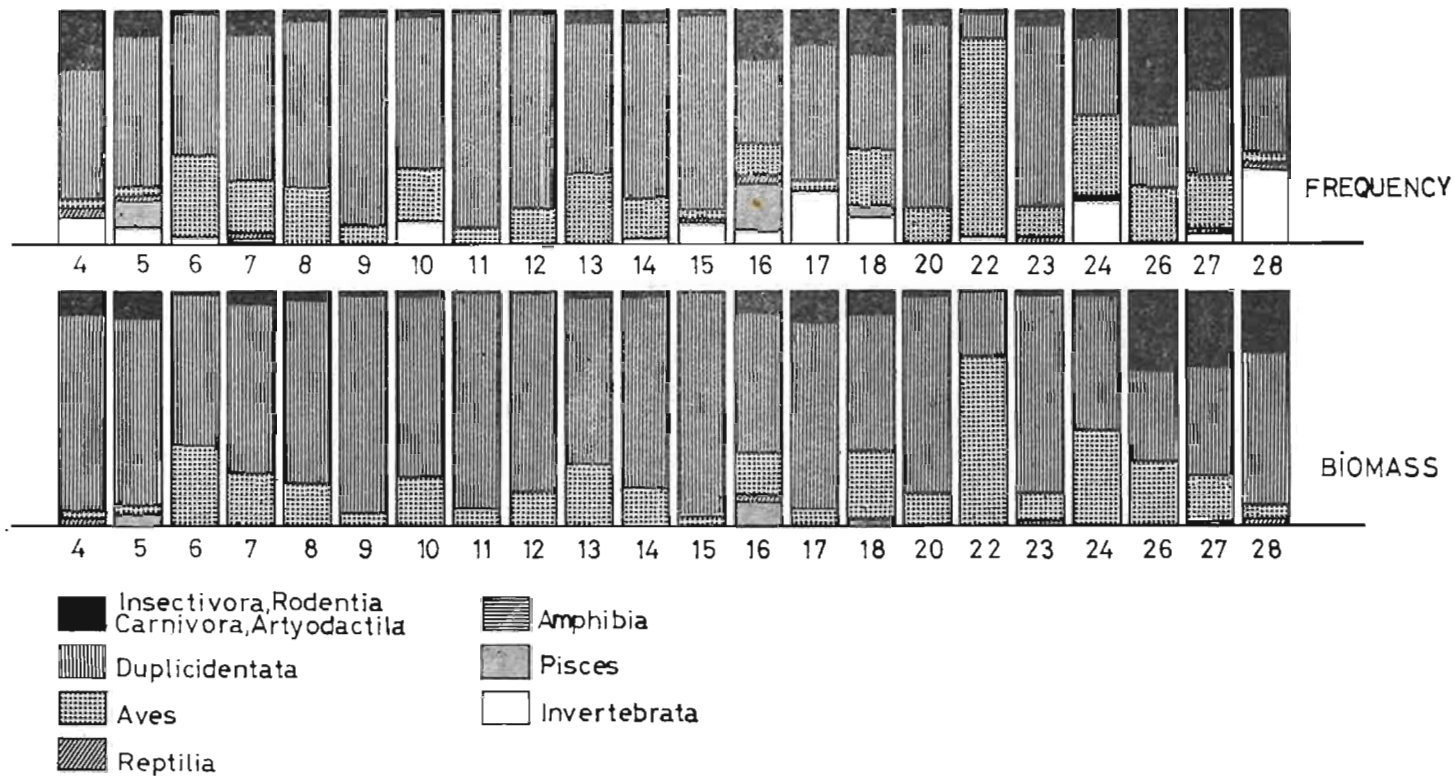


Fig. 3.—Graphic representation of the frequency of appearance and biomass in % of captures preys in nests in Spain.

Table 3

Percentage of frequency of appearance occasioned by the different groups of prey in each nest. The percentages are also given for the most important species.

NEST	4	5	6*	7*	8*	9*	10*	11*	12*	13*	14*	15*	16*	17	18	20	22	23	24	26	27	28
MAMMALIA	81,62	75,93	61,71	72,76	75,38	92,39	68,74	91,63	83,60	70,17	79,89	84,10	56,45	72,21	58,77	83,89	12,85	84,12	43,25	76,82	70,33	59,82
INSECTIVORA	4,08	—	—	—	2,24	—	—	—	—	—	—	—	6,31	7,41	0,41	0,85	—	—	7,52	—	18,64	0,93
DUPLICIDENTATA	56,12	64,55	60,00	62,35	70,89	89,87	65,62	90,15	81,96	64,91	75,13	81,82	36,20	57,40	39,99	77,96	11,43	77,77	31,34	27,54	36,44	31,78
<i>Oryctolagus cuniculus</i>	56,12	58,86	43,43	42,35	58,21	65,82	47,92	82,27	74,86	56,14	71,96	78,41	34,88	42,59	22,45	75,85	8,86	68,25	26,33	24,64	27,12	29,91
<i>Lepus capensis</i>	—	1,26	3,43	5,88	2,98	3,80	8,34	2,95	1,09	3,51	0,53	1,14	0,66	1,85	9,79	0,42	0,28	—	—	1,45	3,39	1,87
<i>Oryctoiaagus/Lepus</i>	—	4,43	13,14	14,12	9,70	20,25	9,34	4,93	6,01	5,26	2,64	2,27	0,66	12,96	7,75	1,69	2,29	9,52	5,01	1,45	5,93	—
RODENTIA	20,40	10,75	1,71	9,41	1,50	1,26	3,12	1,48	1,09	3,51	4,23	2,28	13,61	7,40	17,55	5,08	1,42	6,35	3,76	49,28	14,40	27,10
<i>Arvicola sapidus</i>	—	0,63	1,14	8,23	0,75	—	3,12	—	1,09	—	3,70	1,14	3,65	—	6,12	0,42	—	—	4,76	1,25	26,09	5,93
<i>Apodemus sylvaticus</i>	10,20	0,63	—	—	0,75	—	—	1,48	—	—	—	—	3,99	1,85	2,86	—	1,14	1,59	0,63	7,25	—	—
<i>Rattus sp.</i>	—	9,49	—	1,18	—	1,26	—	—	—	3,51	0,53	1,14	0,66	3,70	6,12	—	—	—	—	—	13,04	2,54
Other species	10,20	—	0,57	—	—	—	—	—	—	—	—	—	5,31	1,85	2,45	4,66	0,28	—	1,88	2,90	5,93	10,28
CARNIVORA	1,02	—	—	—	0,75	1,26	—	—	0,55	—	0,53	—	—	—	0,41	—	—	—	—	0,63	—	0,85
ARTYODACTILA	—	0,63	—	—	—	—	—	—	—	1,75	—	—	0,33	—	0,41	—	—	—	—	—	—	—
AVES	5,10	4,42	35,99	24,71	24,64	7,58	20,83	7,87	16,39	29,82	18,52	5,68	15,27	5,55	24,49	15,68	85,40	14,28	35,72	23,20	23,73	5,60
ANSERIFORMES	—	—	—	—	—	—	—	—	—	—	0,53	—	—	—	—	—	—	—	—	—	—	—
FALCONIFORMES	—	—	—	—	1,50	—	—	—	—	—	—	—	0,66	—	0,41	—	0,28	—	1,25	2,90	—	—
GALLIFORMES	—	1,90	4,00	7,06	8,21	5,06	6,25	4,92	12,02	14,03	10,05	1,14	3,99	3,70	4,90	10,17	4,57	4,76	4,39	2,90	10,17	1,87
<i>Alectoris rufa</i>	—	1,90	4,00	7,06	8,21	5,06	6,25	4,43	12,02	14,03	10,05	1,14	3,99	3,70	4,90	10,17	0,86	4,76	4,39	2,90	10,17	1,87
Other species	—	—	—	—	—	—	—	0,49	—	—	—	—	—	—	—	—	—	—	—	—	—	—
GRUIFORMES	—	—	0,57	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4,28	—	—
CHARADRIIFORMES	—	—	—	—	2,24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3,14	—	0,85
COLUMBIFORMES	2,04	—	29,71	12,94	3,73	1,26	11,46	0,49	2,18	7,02	4,76	—	3,65	—	10,20	0,42	6,00	—	2,50	2,90	0,85	—
<i>Columba palumbus</i>	1,02	—	29,14	12,94	3,73	1,26	11,46	0,49	2,18	7,02	4,76	—	3,65	—	10,20	0,42	2,00	—	2,19	2,90	—	—
Other species	1,02	—	0,57	—	—	—	—	—	—	—	—	—	—	—	—	—	4,00	—	0,31	—	0,85	—
CUCULIFORMES	—	—	—	1,18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
STRIGIFORMES	—	—	—	—	2,24	—	—	—	—	—	—	—	0,33	—	0,41	0,85	—	—	—	0,31	4,35	1,69
CAPRIMULGIFORMES	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0,28	—	—
APODIFORMES	—	—	—	—	—	—	—	—	—	—	—	—	1,14	—	—	—	—	—	—	0,28	—	—
CORACIIFORMES	—	—	—	1,18	—	—	—	—	—	—	—	—	—	—	0,41	—	5,43	—	—	—	—	0,85
PASSERIFORMES	2,04	1,26	0,57	2,35	6,72	1,26	2,08	1,48	0,55	3,51	2,12	2,27	3,65	—	3,67	0,85	52,57	—	17,25	2,90	5,08	1,87
Unidentified birds	1,02	1,26	1,14	—	—	—	1,04	0,98	1,64	5,26	1,06	1,14	2,99	1,85	4,49	3,39	8,00	9,52	8,78	7,25	4,24	0,93
REPTILIA	3,06	1,26	—	2,35	—	—	—	—	—	—	—	—	1,14	2,66	—	—	0,28	1,59	0,63	—	1,69	2,80
AMPHIBIA	—	—	0,57	1,18	—	—	—	0,49	—	—	—	—	0,66	—	—	—	—	—	—	2,19	—	—
PISCES	—	11,39	—	—	—	—	—	—	20,93	—	—	—	4,49	—	—	—	—	—	—	—	—	—
INVERTEBRATA	10,20	6,96	1,71	—	—	—	10,42	—	—	—	1,59	9,09	3,99	22,22	12,24	0,42	1,43	—	18,18	—	4,24	31,77

Table 3 (bis)

Percentages of biomass occasioned by the different groups of groups of prey in each nest. The percentages are also given for the most important species.

Nest	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20	22	23	24	26	27	28
MAMMALIA	92,68	91,32	63,80	76,19	82,53	93,93	78,48	93,44	85,04	73,03	83,07	96,18	68,72	92,91	68,60	85-78	28,55	85,50	59,99	73,32	78,79	91,22
INSECTIVORA	4,57	—	—	—	2,49	—	—	—	—	—	—	—	3,98	10,31	0,59	0,93	—	—	—	—	24,19	0,04
DUPLICIDENTATA	83,16	79,83	62,60	71,16	78,77	92,11	76,73	93,36	84,38	69,65	80,36	95,02	59,69	79,93	58,20	83,05	28,37	82,98	57,67	38,95	47,04	64,95
<i>Oryctolagus cuniculus</i>	83,16	72,72	45,18	48,34	64,68	67,46	56,03	85,20	77,06	60,24	76,94	91,06	57,51	59,30	32,67	80,73	21,98	72,82	48,42	34,85	34,94	61,13
<i>Lepus capensis</i>	—	1,58	3,60	6,71	3,31	3,89	9,74	3,06	1,12	3,76	0,57	1,32	1,09	2,58	14,25	0,46	0,71	—	—	2,05	4,40	3,82
<i>Oryctolagus/Lepus</i>	—	5,52	13,82	16,11	10,78	20,76	10,96	5,10	6,20	5,65	2,85	2,64	1,09	18,05	11,28	1,86	5,67	10,16	9,25	2,05	7,70	—
RODENTIA	3,44	10,70	0,60	5,03	0,44	1,82	1,75	0,08	0,54	1,50	2,14	1,16	3,68	2,67	8,63	1,80	0,19	2,52	1,16	34,37	7,56	26,23
<i>Arvicola sapidus</i>	—	0,39	0,57	4,49	0,39	—	1,75	—	0,54	—	1,91	0,63	2,88	—	4,26	0,22	—	2,43	1,10	17,63	3,43	—
<i>Apodemus sylvaticus</i>	0,84	0,05	—	0,05	—	—	0,08	—	—	—	—	—	—	0,14	0,23	—	0,16	0,09	0,06	0,57	—	—
<i>Rattus sp.</i>	—	10,26	—	0,54	—	0,52	—	—	1,50	0,23	0,53	0,36	2,06	3,56	0,81	—	—	—	—	15,99	2,86	26,23
Other species	2,59	—	0,03	—	—	—	—	—	—	—	—	—	0,44	0,47	0,58	0,77	0,03	—	—	0,18	1,27	—
CARNIVORA	1,51	—	—	—	0,83	1,30	—	—	0,12	—	0,57	—	0,82	—	0,59	—	—	—	—	1,16	—	—
ARTYODACTILA	—	0,80	—	—	—	—	—	—	—	1,88	—	—	0,55	—	0,59	—	—	—	—	—	—	—
AVES	4,66	3,76	36,07	23,12	17,45	6,07	21,46	6,45	14,96	26,96	16,91	2,89	18,97	6,87	29,28	14,19	71,09	13,55	38,96	26,68	20,30	6,24
ANSERIFORMES	—	—	—	—	1,38	—	—	—	—	—	—	—	0,57	—	—	—	—	—	—	—	—	—
FALCONIFORMES	—	—	—	—	—	—	—	—	—	—	—	—	—	0,49	—	0,59	—	0,47	—	1,67	1,82	—
GALLIFORMES	—	2,10	3,74	7,16	8,11	4,61	6,50	4,53	11,00	13,39	9,63	1,17	5,84	4,58	6,33	9,92	3,73	4,52	7,19	3,64	11,73	3,40
<i>Alectoris rufa</i>	—	2,10	3,74	7,16	8,11	4,61	6,50	4,08	11,00	13,39	9,63	1,17	5,84	4,58	6,33	9,92	1,89	4,52	7,19	3,64	11,73	3,40
Other species	—	—	—	—	—	—	—	0,45	—	—	—	—	—	—	—	—	1,84	—	—	—	—	—
GRUIFORMES	—	—	0,33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10,63	—	—	—
CHARADRIIFORMES	—	—	—	—	1,10	—	—	—	—	—	—	—	—	—	—	—	—	—	3,47	—	1,54	0,98
COLUMBIFORMES	2,05	—	30,84	14,77	4,15	1,30	13,40	0,51	2,25	7,53	5,13	—	6,02	—	14,85	0,46	9,37	—	4,25	4,10	0,39	—
<i>Columba palumbus</i>	1,51	—	30,62	14,77	4,15	1,30	13,40	0,51	2,25	7,53	5,13	—	6,02	—	14,85	0,46	4,96	—	4,05	4,10	—	—
Other species	0,54	—	0,21	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4,41	—	0,20	0,39
CUCULIFORMES	—	—	—	0,30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0,31	—	—	—
STRIGIFORMES	—	—	—	—	1,45	—	—	—	—	—	—	—	—	0,21	—	0,39	0,35	—	—	0,38	4,78	1,15
CAPRIMULGIFORMES	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0,12	—	0,09	—
APODIFORMES	—	—	—	—	—	—	—	—	—	—	—	0,12	—	—	—	—	—	—	0,06	—	—	—
CORACIFORMES	—	—	—	0,18	—	—	—	—	—	—	—	—	—	—	0,18	—	—	—	4,07	—	—	0,15
PASSERIFORMES	1,26	0,25	0,09	0,71	1,26	0,16	0,46	0,45	0,21	1,02	0,57	0,43	2,03	—	1,14	0,15	21,22	—	8,88	3,00	1,01	0,42
Unidentified birds	1,34	1,41	1,07	—	—	—	1,10	0,96	1,50	5,02	1,01	1,17	4,38	2,29	5,80	3,31	17,64	9,03	14,96	9,34	4,89	1,70
REPTILIA	2,52	0,46	—	0,07	—	—	—	—	—	—	—	0,88	1,86	—	—	—	0,39	0,94	0,45	—	0,89	2,23
AMPHIBIA	—	—	0,11	0,60	—	—	—	0,09	—	—	—	—	0,10	—	—	—	—	—	—	0,36	—	—
PISCES	—	4,40	—	—	—	—	—	—	—	—	—	—	10,32	—	1,97	—	—	—	—	—	—	—
INVERTEBRATA	0,12	0,05	0,01	—	—	—	0,08	—	—	—	0,01	0,05	0,03	0,19	0,08	—	—	—	0,20	—	0,02	0,31

Variations in the diet

We have studied this, keeping in mind the variables time and space. With respect to the first, we have tried to determine the possible variations in the diet from one season of the year to another. When considering the space, we have separated the effect caused by the geographical situation of the locality (Sierra Morena, Range of mountain —Extremadura) and the one owing to the nest location there.

Time variation

Time variation was studied in five different localities. The results obtained are shown in Table 4 and as can be seen in this, a general pattern is not evident; although there are clear differences between some periods, there is not a general tendency in the form of variation. The results obtained by us are not sufficiently to affirm the existence of a general temporal variation and the way in which it occurs.

Spatial variation

The results obtained on trying to detect a global geographic variation were negative. Only the Duplicitata groups seems to show slightly higher percentages in Sierra Morena mountain range (these nests are marked with an asterik in Table 3).

The variations in the diet caused by the position of the nest in the locality are mainly due to human use of the zones near the nest. Thus, nests situated in the vicinity of small game reserves where this (Duplicitata) is

Table 4

Percentages of frequency of appearance of the different large groups of preys. The results obtained are grouped together in each nest, according to different seasons of the year studied.

NETS	24		5		10		6		11	
	Spring	Summer	Summer	Autumn	Spring	Winter	Spring	Summer	Spring	Summer
Duplicidentata	30,90	33,97	47,91	74,47	73,17	60,00	44,89	60,95	87,69	91,30
Small mammals	4,54	3,35	14,58	7,44	7,31	—	4,08	0,95	4,61	—
Mammalia	41,82	44,02	64,58	81,91	80,48	60,00	48,97	61,90	90,90	91,30
Aves	30,91	38,27	4,16	3,19	17,07	23,63	48,98	35,23	9,09	7,97
Reptilia	0,91	0,48	2,08	1,06	—	—	—	—	—	—
Amphibia	1,82	2,39	—	—	—	—	—	0,95	—	0,72
Pisces	—	—	18,75	7,45	—	—	—	—	—	—
Invertebrata	24,54	14,83	10,41	6,38	2,43	16,36	2,04	1,90	—	—
Nº Prey	130	209	48	94	41	55	49	126	65	137

plentiful, Eagles Owls consume the highest percentages of Duplicentata and the lowest of Rodentia, the contrary occurring in open land. These results are shown in Table 5.

On the other hand, the highest percentage for Insectivora corresponds to the more transformed lands, so that the five nests with a percentage higher than 3 per cent correspond to open land. Except for nest number 16, *Erinaceus europaeus* is the species mainly contributing to the partial percentage.

In the other groups there does not appear to exist a generalized variation caused by the nest site.

Table 5

Percentages of nests where Duplicentata and Rodentia are consumed differentiating those consumed in small game preserves and those in open land.

	DUPLICENTATA		RODENTIA	
	(Localities with % of:)		(Localities with % of:)	
	0 to 60 %	60 to 100 %	0 to 5 %	5 to 50 %
Hunting grounds	8,33 %	91,67 %	75 %	25 %
Open land	90,00 %	10,00 %	20 %	80 %

Comparison with temperate Europe

The main differences between the two areas studied is in the role played by the Duplicentata and Rodentia Groups. In the Mediterranean zone, the former is the basis of the diet and the latter is of little importance. In temperate Europe, the contrary occurs. This, together with a slight increase in the percentages of other mammals consumed (Carnivora, Bovidae) in temperate Europe, allows us to differentiate the predator's diet from one area to another.

Table 6

Percentages of nests where it preys on reptiles, amphibians, fishes and invertebrates. Nests of the Iberian peninsula and the those of the wet regions of Europe are grouped together.

	Aves	Small passer	Reptilia	Amphibia	Pisces	Invertebrata	Nº Nests
Spain	100%	50%	50%	18,18%	13,63%	63,64%	28
Wet Europe	100%	60,46%	9,30%	79,06%	58,14%	27,90%	41

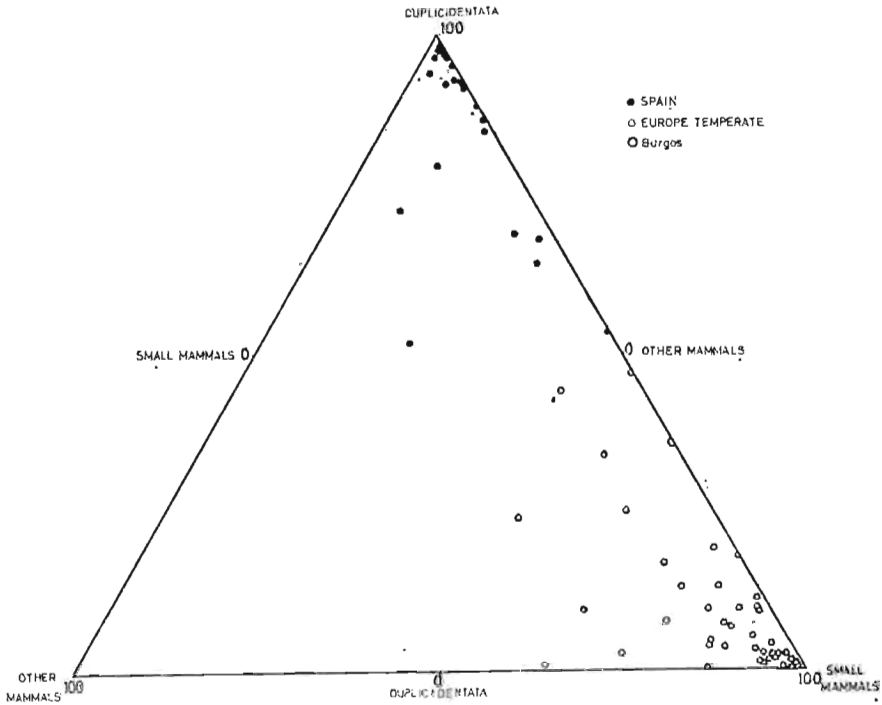


Fig. 2.—Graphic representation of the nests of the Iberian peninsula and the wet regions of Europe, according to the frequency of predation expressed in percentages, on the duplicitentata, small mammal and other mammal groups.

These results are represented graphically in Figure 2. From this it is seen that only one locality in Spain (marked with a double circle in the Figure) coincides with those of temperate Europe. This Spanish locality presents a characteristic Mesomediterranean mild climate.

The birds have a similar role in the diet in both regions. The use by the predator of other groups of prey is different in the two areas, for while in the Mediterranean region there exists a greater tendency to consume reptiles and invertebrates, in the wet regions of Europe, fishes and amphibians are preyed on more frequently. These results are shown in Table 6 where the percentages of localities where they prey on one or another species is shown.

Discussion

The Eagle Owl has a wide range of prey items in the area studied by us. It hunts as previously reported (Desforges, 1949; Bacheusky, 1960; Thiollay, 1969, among others) over preys of quite different behaviour and habitat in various points of its breeding area. However, Eagle Owl in the Iberian Peninsula, as in most of the wet regions of Europe concentrate over species living in open land and spending most of their time on the ground (*O. cuniculus* in Spain and Microtinae, *Rattus sp.* and *Lepus sp.* in temperate Europe).

Bubo bubo depends energetically on the rabbit in the Mediterranean area of the Iberian Peninsula. Species of a certain size such as *A. ruja*, *C. palumbus* and *Rattus sp.*, important in most of the localities, could perhaps substitute *O. cuniculus* locally, when the latter is scarce and the former plentiful.

The systematic exploitation of flocks of birds (Thiollay, 1969) does not seem to be frequent in our area, this having been found in only one of the localities studied by us (4.54 per cent of the total).

According to recent data (Valverde, 1967; Hiraldo, 1975; Delibes, 1975; Amores, 1975; Delibes et al., 1975) *Bubo bubo*, with its 0.74 per cent of avian predator captured, would be the most important super-predator of this animals in the Iberian peninsula.

The only important variation in the diet seems to be the larger or smaller consumption of *O. cuniculus* from one locality to another, according to the specific position of these. This seems to be logical, the rabbit being an important gynegetic species, with strong changes in its density within the area studied. Different types of vegetation and human predation on rabbits are probably the main causes for these variations in our area.

We do not think that the assertion made by Ruiz and Camacho (1973) on the variation of the size of the prey according to breeding season, period of sexual repose, is feasible. This conclusion was deduced from an insufficient sample (only one locality, with 19 preys from January and 18 from June), and would not be what is expected in this kind of predator (Schoener, 1971).

The results shown when comparing the Iberian peninsula with wet regions of Europe are a reflection of existing conditions in both ecosystems. The rabbit is widely and densely distributed in the Iberian peninsula, from where it originates (Van den Brink, 1971) whereas in Europe, where it spread in relatively recent times, it only occupies favourable sites, often not concurrent with the predator population. On the other hand, the characteristics of the Mediterranean-type ecosystems limit the small-mammal popula-

tions, especially Microtinae (Herrera, 1974), a prey which is consumed more in temperate Europe. The increase in the percentages of insects and reptiles preyed on in Mediterranean localities of the Peninsula, is a tendency displayed here in most of the diurnal and nocturnal predators (Valverde, 1969; Herrera, 1974; Hiraldo et al in press; Amores, in press; Herrera & Hiraldo, in press). For a nocturnal bird, such as the Eagle Owl, and in the case of reptiles, it is undoubtedly important a great many of the prey species are active during the night (Mellado et al., 1975; Mellado, unpublished data). Seasonal drought (causing absence of meadow frogs) and the scarcity of shallow, open ditches in the area studied, seems to be an important factor in the reduction of amphibians and fishes consumed. Eagle Owls preyed on fishes in three of the four localities where ditches with the above mentioned characteristics exist.

Thiollay (1968) differentiate the actual diet of the Mediterranean owls in relation to those of central Europe, by the larger consumption of passeriformes, small mammals, reptiles and insects by the former. These results are not in agreement with ours, with regard to small mammals and passeriformes. It is evident that the conclusions reached by the above author belong to a non-typical Mediterranean region (Emberger et al., 1963; Aschmann, 1973), and with data from only one nest, though this can not be stated with precision as the author does not specify the source of his conclusions*.

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Summary

Bubo bubo is a wide range predator in the Mediterranean zone of Spain. Its diet, which is mainly based on rabbit, does not seem to have clear time variations. There exist variations between different localities studied, these being principally due to man's utilization of land near to the nest.

The main difference between the diet of the owls studied by us and those of the wet regions of Europe, is the larger consumption of Duplicidentata, reptiles and insects in the Mediterranean regions as against small mammals, amphibians and fishes in the wet regions of Europe.

* In the list of prey items mentioned in this study, small mammals, rather than reptiles, are in the majority; in the text, no other specific reference to bibliography is made. This author published in the same year and in the review "Nos Oiseaux" (Thiollay, 1968) a list of prey items in which the majority of these species were birds mainly passeriformes.

Resumen

El Buzo real (*Bubo bubo*) es un predador que ocupa diversos habitats en la zona de clima mediterráneo de España: Su dieta, cuya base la constituyen principalmente los conejos (*Oryctolagus cuniculus*) no parece mostrar variaciones estacionales claras. Existen variaciones entre las diferentes localidades estudiadas, aunque éstas son debidas principalmente a la utilización humana de los terrenos inmediatos al nido.

La diferencia principal entre la dieta de los buhos estudiados por nosotros y los que habitan las regiones más húmedas de Europa es el mayor consumo de Duplicidentata, reptiles e insectos en las regiones mediterráneas en contraste con micromamíferos, anfibios y peces en las regiones de la Europa templada.

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