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Capítulo 6

The Magdalenian avifauna at Erralla cave

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In its situation at the head of the Gorge of the Alzolaras stream, the immediate environs of the Cave of Erralla (Cestona) command a varied habitat for bird life. In the Gorge itself vegetation is dense, mixed forest of deciduous species, presently dominated by hazel and with some evergreens. The stream bed is fast flowing and stony with little wed in the upper reachds near the cave. Above the valley the land rises sharply into steep pastures of lush grass, with a wide variety of limestone flora. Higher still, on the west bank to the immediate south of the cave is an area of forest plantation, mainly Dine with some beech and. an undergrowth of heathers, blackberry and bracken. The highest land lies to the south of the cave, where the Monte Gazume massif rises to 1000 metres, with a light afforestation, heathers and myrtle.

From the bird fauna found in the excavation of the cave it would appear that, despite intervening climate changes, the general pattern of the bird ecology has remained very much the same. Out of 38 different species present in the Magdalenian levels, most could just as easily live in the locality today; although it seems likely that some shoreline and waterbirds may have been imported from the lower reaches of the river Urola or the coast between 15 and twenty kilometers-6 hours walk away in Magdalenian times.

The list of species includes:

Anas platyrrhyncos	Mallard
Aquila	Eagle
Accipiter gentilis	Goshawk
Falco subbuteo	Hobby
Falco naurnannii	Lesser Kestrel
Falco tinnunculus	Kestrel
Lagopus mutus	Ptarmigan
Alectoris rufa	Redlegged partridge
Perdix perdix	Partridge
Coturnix coturnix	Quail
Pluvialis apricaria	Golden plover
Tringa totanus	Redshank
Chlidonias niger	Blacktern
Columba livia	Rock dove
Nyctea Scandiaca	Snowy owl
Asio otus	Long eared owl
Strix aluco	Tawny owl
Jynx torquila	Wryneck
Lullula arborea	Woodlark
Alauda arvensis	Skylark
Hirundo rustica	Swallow
Montacilla alba	Pied wagtail
Lanius minor/ex cubitor	Greati/lesser grey shrike
Acrocephalus scirpaceous	Reed warbler
Oenanthe oenanthe	Wheatear
Turdus merula	Blackbird
Turdus iliacus	Redwing
Turdus philomelos	Song thrush
Turdus viviscivorus	Mistle thrush
Emberiza calandra	Corn bunting
Emberiza citrinella	Yellow hammer
Emberiza cirlus	Cirl bunting
Chloris chloris	Greenfinch
Cardinelis cardinelis	Goldfinch
Passer domesticus	House sparrow
Sturnus vulgaris	Starling
Garrulus glandarius	Jay
Pyrrhocorax gracuius	Alpine chough

Table 1, 2 and 3

The distribution of species of birds through the occupation levels is interesting. The remains from the later Magdalenian are very few in comparison with the early phase and the majority of the bones are those of greenfinch, and though with one kestrel, a thrush, corn bunting, yellow hammer and starling.

In the sterile layer between the middle and late Magdalenian, layers 11 and 12, the few bird species recovered are more closely comparable with those of the lower Magdalenian than the upper and, may possibly have become resdistributed as a trampling effect. There are no Avian predators in these sterile layers, yet although rock doves could have been nesting in the cave, neither larks ptarmigan, shrike nor yellow hammer would have entered independently. These species are all found in the

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TABLE 1

Great Level	I-III	IV	V	VI
	Magdalenien Final	Sterile	Lower Magdalenien	Sterile
	Alleröd	Pre-Bölling	Dryas I	
Level (Spit)	1 2 3 4 5 6 7 8	11 12	13 14 15 16 17 18 19 20 21 22 23 24	26 28 29
Anas platyrrhyncos			1 1	
Aquila/buteo			1 1	
Accipter gentilis			2	
Faico subbuteo			1	1
Falco naumannii			1	
Falco tinnunculus	1		2 1	1
Lagopusmutus		1 1	2 1 1 6 4 1 2 1	
Alectoris rufa			4 4 2	
Perdix perdix			1	
Coturnix coturnix			2	
Fluvialis apricaria				1 2
Tringa totanus			2	
Chlidonias niger			1 1	
Columba livia		5	2 1 2 6 2 1 3 1 1 3	1
Nyctea scandiaca			1 1	
Asio otus			1	
Strix aluco			1 1	
Jynx torcuilla			1	
Lullula arborea		1	1 5	
Alauda arvensis		1	1 3 2 3 2 2 4 2 1	
Hirundo rustica			2 1 2 2 2	
Motacilla alba				1
Lanis minor/excubitor		1	2	
Acrocephalus scirpaceus			2	
Oenanthe oenanthe			1 3	
Turdus merula			1 2 2 1 5	
Turdus iliacus			1 1 1	
Turdus philomelos	1		1	
Turdus viviscivorus			1 3 3 1	
Emberiza calandra	2		1 1 2 1	
Emberiza citrinella	1	1	1 1 1 3 2 1	
Emberiza cirlus			2	1
Chloris chloris	1 1 1 2		1 1 1	
Carduelis carduelis			1	
Passer domecticus			1 1 2 1	
Sturnus vulgaris	2		1	
Garrulus glandarius			2	
Pyrrhocorax graculus	2 4 5 5 3 4 4	5 15	30 27 40 57 46 48 2 45 36 39 36 22 4	2
TOTAL	3 7 5 6 6 6 2 4	8 23	47 32 51 79 77 66 2 58 44 55 48 27 11	1 5 3

earlier occupation levels and, apart from yellow hammer, are absent from the later period.

Table 2

Level 1	Turdus philomelos	Pyrrhocorax graculus	Level 2	Emberiza calandra	Sturnus vulgaris	Pyrrhocorax graculus	Level 3	Pyrrhocorax graculus	Level 4	Chloris chloris	Pyrrhocorax graculus	Level 5	Emberiza calandra	Chloris chloris	Pyrrhocorax graculus
	L R	L R		L R	L R	L R		L R		L R	L R		L R	L R	L R
Skull			Skull				Skull		Skull			Skull			
Mandible – upper			Mandible – upper			1	Mandible – upper		Mandible – upper			Mandible – upper			
– lower			– lower				– lower		– lower			– lower			
Coracoid			Coracoid				Coracoid		Coracoid			Coracoid			1
Sternum			Sternum				Sternum		Sternum			Sternum			
Furcula			Furcula				Furcula		Furcula			Furcula			
Scapula		1	Scapula				Scapula		Scapula		1	Scapula			
Vertebrae			Vertebrae				Vertebrae		Vertebrae			Vertebrae			
Ribs			Ribs				Ribs		Ribs			Ribs			
Pelvis		1	Pelvis			1	Pelvis		Pelvis			Pelvis			
Humerus P	1		Humerus P	1	1		Humerus P		Humerus P		1	Humerus P		1	
Humerus D			Humerus D				Humerus D		Humerus D			Humerus D			
Radius P			Radius P				Radius P		Radius P			Radius P			
Radius D			Radius D				Radius D		Radius D		1	Radius D			
Ulna P			Ulna P			1	Ulna P		Ulna P	1		Ulna P	1		
Ulna D			Ulna D				Ulna D		Ulna D			Ulna D			
Carpo-Metacarpus P			Carpo-Metacarpus P				Carpo-Metacarpus P		Carpo-Metacarpus P			Carpo-Metacarpus P			
Carpo-Metacarpus D			Carpo-Metacarpus D				Carpo-Metacarpus D		Carpo-Metacarpus D			Carpo-Metacarpus D			
Digits			Digits				Digits		Digits			Digits			
Femur P			Femur P				Femur P		1 3 Femur P			Femur P	1		
Femur D			Femur D				Femur D		Femur D		1	Femur D			
Tibio-Tarsus P			Tibio-Tarsus P		1		Tibio-Tarsus P		Tibio-Tarsus P			Tibio-Tarsus P			1 1
Tibio-Tarsus D			Tibio-Tarsus D			1	Tibio-Tarsus D		Tibio-Tarsus D			Tibio-Tarsus D			
Fibula			Fibula				Fibula		Fibula			Fibula			
Tarsus-Metatarsus P			Tarsus-Metatarsus P				Tarsus-Metatarsus P		Tarsus-Metatarsus P			Tarsus-Metatarsus P			
Tarsus-Metatarsus D			Tarsus-Metatarsus D				Tarsus-Metatarsus D		Tarsus-Metatarsus D			Tarsus-Metatarsus D			
Phalanges			Phalanges				Phalanges		Phalanges			Phalanges			
Total	1	2	Total	1	2	4	Total		5 Total	1	5	Total	2	1	3
MNI	1	1		1	1	1			3	1	1		1	1	1

Table 3

Level 6	Turdus philomelos	Chloris chloris	Pyrrhocorax graculus	Level 7	Chloris chloris	Level 8	Pyrrhocorax graculus	Level 11	Lagopus mutus / Columba livia	Emberiza calandra	Pyrrhocorax graculus	Level 12	Lagopus mutus	Columba livia	Lullula arborea	Pyrrhocorax graculus
	L R	L R	L R		L R		L R		L R	L R	L R		L R	L R	L R	L R
Skull				Skull		Skull		Skull				Skull				
Mandible – upper				Mandible – upper		Mandible – upper		Mandible – upper				Mandible – upper				
– lower				– lower		– lower		– lower				– lower				
Coracoid			1	Coracoid		Coracoid		Coracoid			2	Coracoid				1
Sternum				Sternum		Sternum		Sternum				Sternum				
Furcula				Furcula		Furcula		Furcula				Furcula				
Scapula			1	Scapula		Scapula		Scapula				Scapula				
Vertebrae				Vertebrae		Vertebrae		Vertebrae				Vertebrae				
Ribs				Ribs		Ribs		Ribs				Ribs				
Pelvis				Pelvis		Pelvis		Pelvis				Pelvis				
Humerus P		1		Humerus P	2	Humerus P		1 Humerus P	1	1		Humerus P				1
Humerus D				Humerus D		Humerus D		Humerus D				Humerus D				
Radius P				Radius P		Radius P		Radius P				Radius P				2
Radius D				Radius D		Radius D		Radius D				Radius D				
Ulna P			2	Ulna P		Ulna P		1 Ulna P				Ulna P	1	3	1	1 1
Ulna D				Ulna D		Ulna D		Ulna D				Ulna D				
Carpo-Metacarpus P				Carpo-Metacarpus P		Carpo-Metacarpus P		Carpo-Metacarpus P				Carpo-Metacarpus P				2 1
Carpo-Metacarpus D				Carpo-Metacarpus D		Carpo-Metacarpus D		Carpo-Metacarpus D				Carpo-Metacarpus D				
Digits				Digits		Digits		1 Digits			1	Digits				1
Femur P				Femur P		Femur P		Femur P			1	Femur P				2
Femur D				Femur D		Femur D		Femur D				Femur D				1
Tibio-Tarsus P				Tibio-Tarsus P		Tibio-Tarsus P		Tibio-Tarsus P				Tibio-Tarsus P				
Tibio-Tarsus D				Tibio-Tarsus D		Tibio-Tarsus D	1	Tibio-Tarsus D				Tibio-Tarsus D				1
Fibula				Fibula		Fibula		Fibula				Fibula				
Tarsus-Metatarsus P				Tarsus-Metatarsus P		Tarsus-Metatarsus P		Tarsus-Metatarsus P				Tarsus-Metatarsus P				
Tarsus-Metatarsus D				Tarsus-Metatarsus D		Tarsus-Metatarsus D		Tarsus-Metatarsus D				Tarsus-Metatarsus D		2		1
Phalanges	1			Phalanges		Phalanges		Phalanges				Phalanges				
Total	1	1	4	Total	2	Total	4	Total	1	1	5	Total	1	5	1	1 5
MNI	1	1	2		2		1		1	1	2		1	3	1	2-4

Tables 4-12

In the lower Magdalenian levels the variety of bird species may be grouped ecologically in a way which reflects the different habitats to be found within a short distance of the cave. Waterfowl are rare; there are only two bones both belonging to Mallard from levels 17 and 22 (Fig. 1). Other birds which would frequent water or shoreline are also scarce: there is a redshank in level 16, which could have fed either on the grassland areas, the edge of the stream or, especially in winter, along the seashore and estuary. Its presence and that of the reed warbler, level 20, both suggest a less active, more overgrown stream than runs through the gorge at present, one with more silting and plant life giving more opportunity for insect and molluscan sprats to flourish. The bones of black tern, found in level 15 and 21 are an oddity. These could only have been imported from the seashore or river estuary. It is the only bird brought into the cave during this period, which could not have been captured quite close to it, and must have been transported some distance.

(Fig. 2) Among the game birds, partridge and quail would be available in the grassland and scrubland slopes above the cave and on the other side of the stream. The Ptarmigan may have been taken at a higher level, though evidence from other caves nearby; Ekain, Urtiaga and Aitzbitarte and along the coast La Riera supports a view that they descended to quite low levels in the later phases of Wurm.

(Fig. 3, Fig. 7) Besides the ubiqutous, ant-eating chough; there are a number of insectivorous species. Some are mainly dependent on inscts and usually migrant, while others will take quantities of insects at certain times of year but include a variety in their diet. The insect dependent species include the wryneck, woodlark, wagtail, shrike, wheatear, swallow and reed warbler and the vicinity of the cave provides suitable habitat for all of them. The wryneck, shrike and woodlark will feed among the trees, whereas wagtail, wheatear and reed warbler will exploit the insect populations in the grass and reedbeds. Amongst this group of birds only the larks are resident, the others are migratory. The variety of summer migrants in some levels of the cave deposit suggest that it was occupied by man during at least some of the summer months.

The pattern of migrant distribution within the levels is not very consistent: Level 11, which is sterile in terms of human occupation, contained a shrike bone; level 13, swallow, level 16, wheatear and wryneck, level 17, swallow; level 18 wheatear and swallow; level 20 reed warbler and swallow; level 21, swallow, level 22, shrike; and in level 28 a wagtail.

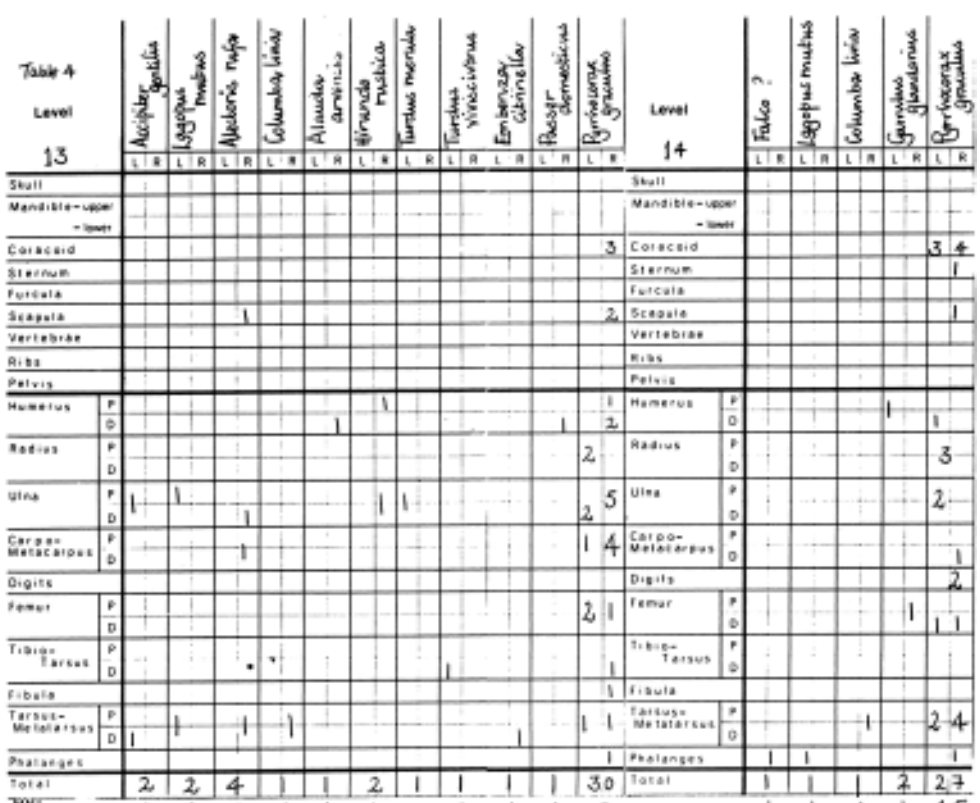

Table 5

Level 15

		Chloridonias niger	Columba livia	Nyctea scandiaca	Strix aluco	Alauda arvensis	Emberiza citrinella	Emberiza sp.? cirlus?	Pyrrhocorax graculus
		L R	L R	L R	L R	L R	L R	L R	L R
Skull									
Mandible – upper									2
Mandible – lower									
Coracoid									3 2
Sternum									
Furcula									1
Scapula									2
Vertebrae									
Ribs									
Pelvis									1
Humerus	P						1	1	3 1
	D								
Radius	P								4
	D								
Ulna	P		1			1			4 3
	D								
Carpo-Metacarpus	P	1	1						1
	D								
Digits				1					1 3
Femur	P				1				1 4
	D								
Tibio-Tarsus	P								2
	D								
Fibula									
Tarsus-Metatarsus	P					2		1	1 1
	D								
Phalanges									1
Total		1	2	1	1	3	1	2	40
MNI		1	1	1	1	2	1	1	4-5

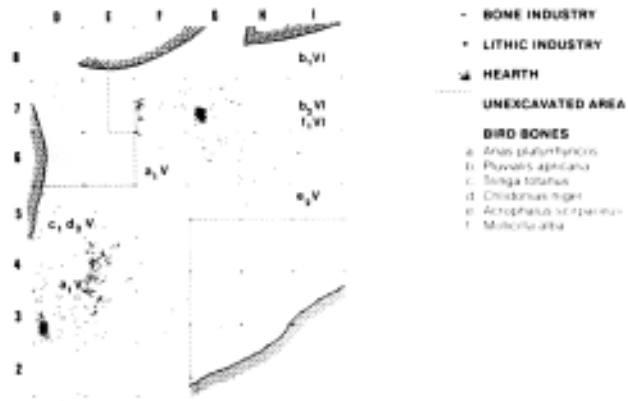

Fig. 1. Birds associated with river, shoreline and open ground

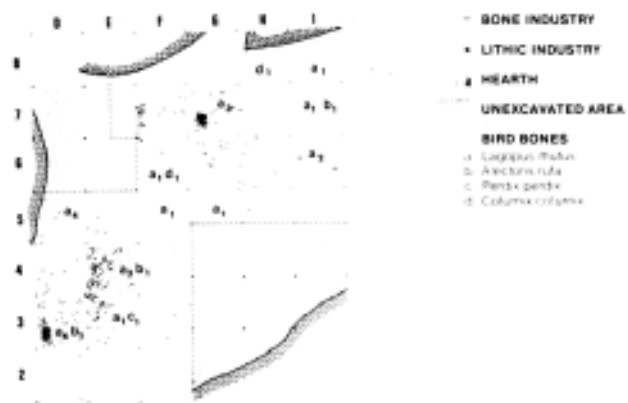

Fig. 2. Game birds from Level V, Lower Magdalenian

Table 6

Level 16

		Falco tinnunculus	Lagopus mutus	Alectoris/Perdix	Tringa totanus	Asio otus	Strix aluco	Lyrurus tetrix/Lagopus?	Alauda arvensis	Oenanthe oenanthe	Turdus viscivorus	Turdus iliacus	Emberiza citrinella	Columba oenas	Buteo buteo	Pyrrhocorax graculus
		L R	L R	L R	L R	L R	L R	L R	L R	L R	L R	L R	L R	L R	L R	L R
Skull																
Mandible – upper														1		1
Mandible – lower																
Coracoid												1	1			3 2
Sternum																
Furcula																
Scapula																
Vertebrae																2
Ribs																
Pelvis																
Humerus	P															4 3
	D															
Radius	P						1									3
	D															
Ulna	P			1	1					1	1				1	5 4
	D															
Carpo-Metacarpus	P			1							1					1 2
	D			1	1											
Digits																
Femur	P								1							6 4
	D															
Tibio-Tarsus	P							1	1							3 2
	D															
Fibula																
Tarsus-Metatarsus	P		1	1		1						1				3 5
	D															
Phalanges		2														4
Total		2	1	4	2	1	1	1	2	1	3	1	1	1	1	57
MNI		1	1	1-2	1	1	1	1	1	1	1-2	1	1	1	1	6-8

Table 7
Level 17 a and b

		Anas Platyrhynchos L	Anas Platyrhynchos R	Aquila/Buteo L	Aquila/Buteo R	Tinnunculus L	Tinnunculus R	Lagopus mutus L	Lagopus mutus R	Perdix perdix L	Perdix perdix R	Columba Livia L	Columba Livia R	Columba Livia/oenas L	Columba Livia/oenas R	Nyctea scandiaca L	Nyctea scandiaca R	Alauda arvensis L	Alauda arvensis R	Hirundo rustica L	Hirundo rustica R	Turdus viscivorus L	Turdus viscivorus R	Emberiza Calandra L	Emberiza Calandra R	Emberiza Gallinula L	Emberiza Gallinula R	Chloris chloris L	Chloris chloris R	Pyrrhocorax graculus L	Pyrrhocorax graculus R
Skull																															
Mandible – upper																															1
– lower																															
Coracoid								1	1			1		1																	4
Sternum																															
Furcula																															
Scapula			1																											1	2
Vertebrae																															
Ribs																															
Pelvis																															1
Humerus	P																									2		1		4	2
	D																														
Radius	P																														3
	D									1																					
Ulna	P																													2	4
	D					1																									
Carpo-Metacarpus	P								1					1			1			1				1		1				1	
	D																														
Digits								1																							2
Femur	P																				1									3	1
	D																1														
Tibio-Tarsus	P																													3	6
	D																1				1	1									
Fibula																															
Tarso-Metatarsus	P										2		2																	3	
	D																														
Phalanges				1				2				1																		1	
Total		1		1		1		6		1	2	6		1		3		1		1		3		1		3		1		46	
MNI		1		1		1		1-2		1	2	2-3		1		1		1		1		1		1		2		1		8	

Table 8
Level 18

		Lagopus mutus L	Lagopus mutus R	Alauda arvensis L	Alauda arvensis R	Hirundo rustica L	Hirundo rustica R	Oenanthe oenanthe L	Oenanthe oenanthe R	Turdus merula L	Turdus merula R	Emberiza Calandra L	Emberiza Calandra R	Emberiza Gallinula L	Emberiza Gallinula R	Passer domesticus L	Passer domesticus R	Pyrrhocorax graculus L	Pyrrhocorax graculus R	Level 19		Pyrrhocorax graculus L	Pyrrhocorax graculus R
Skull																			1	Skull				
Mandible – upper																			1	Mandible – upper				
– lower			1																2	– lower				
Coracoid								1								1	3		2	Coracoid				
Sternum																				Sternum				
Furcula																				Furcula				
Scapula																		1	2	Scapula				
Vertebrae																				Vertebrae				
Ribs																			1	Ribs				
Pelvis																			1	Pelvis				
Humerus	P					1				1				2				4	2	Humerus	P			
	D																				D			
Radius	P																	3		Radius	P			
	D																				D			
Ulna	P											1				1		7	2	Ulna	P			
	D																				D			
Carpo-Metacarpus	P	1		1		1		1										4	1	Carpo-Metacarpus	P			
	D		1		1		1														D			
Digits																				Digits		1	1	
Femur	P															1	1	5		Femur	P			
	D																				D			
Tibio-Tarsus	P			1		1					1							3	2	Tibio-Tarsus	P			
	D																				D			
Fibula																				Fibula				
Tarso-Metatarsus	P	1																		Tarso-Metatarsus	P			
	D																				D			
Phalanges																				Phalanges				
Total		4		2		2		3		1		1		2		2		4	8	Total		2		
MNI		1-2		1		1		1		1		1		2		1		7				1		

– BONE INDUSTRY
· LITHIC INDUSTRY
● HEARTH
UNEXCAVATED AREA

BIRD BONES
a. Lyrurus tetrix
b. Lullula arborea
c. Alauda arvensis
d. Larus ridibundus/canus
e. Oenanthe oenanthe
f. Sturnus vulgaris
g. Garrulus glandarius

Fig. 3. Insect eaters and birds of woodland and open country

Table 9

Level 20

Element		Lagopus mutus L	R	Columba livia L	R	Lullula arborea L	R	Alauda arvensis L	R	Hirundo rustica L	R	Acrocephalus arundinaceus L	R	Turdus merula L	R	Sturnus vulgaris L	R	Pyrrhocorax graculus L	R
Skull																			
Mandible – upper																		1	
– lower																		1	
Coracoid								1	1			1						1	1
Sternum																			
Furcula																			
Scapula																			1
Vertebrae																			
Ribs																		1	
Pelvis																			
Humerus	P						1			1	1		1					2	4
	D																		
Radius	P		1															4	
	D																		
Ulna	P																	4	3
	D				1														
Carpo-Metacarpus	P																	4	
	D				1														
Digits																		1	
Femur	P														1			4	1
	D																		
Tibio-Tarsus	P																	6	2
	D													1					
Fibula																			
Tarsus-Metatarsus	P																	3	1
	D																1		
Phalanges																		1	
Total		1		2		1		2		2		2		2		1		4	5
MNI		1		1		1		1		1		1		1		1		4-5	

Level 21

Element		Falco naumanni L	R	Lagopus mutus L	R	Chlidonias niger L	R	Columba livia L	R	Hirundo rustica L	R	Turdus merula L	R	Pyrrhocorax graculus L	R
Skull															
Mandible – upper				1										1	
– lower															
Coracoid														2	1
Sternum															
Furcula															
Scapula														2	
Vertebrae														1	
Ribs															
Pelvis														1	
Humerus	P			1							1			3	1
	D														
Radius	P		1												3
	D														
Ulna	P													2	
	D														1
Carpo-Metacarpus	P						1			1					
	D														1
Digits														1	2
Femur	P													1	2
	D												1		
Tibio-Tarsus	P													2	
	D														
Fibula															
Tarsus-Metatarsus	P							1						3	3
	D														
Phalanges														3	
Total		1		2		1		1		2		1		3	6
MNI		1		1		1		1		1		1		3-6	

Table 10

Level 22

Element		Anas platyrhynchos L	R	Columba livia L	R	Alauda arvensis L	R	Lanius excubitor L	R	Turdus merula L	R	Turdus iliacus L	R	Emberiza calandra L	R	Chloris chloris L	R	Emberiza/passer L	R	Pyrrhocorax graculus L	R
Skull																					1
Mandible – upper																					
– lower																					
Coracoid																					3
Sternum																					
Furcula																				2	
Scapula																				3	
Vertebrae																					
Ribs																					
Pelvis				1																	
Humerus	P							1			1		1	1	1					4	1
	D																				
Radius	P																			2	
	D																				
Ulna	P					1			1							1				5	4
	D																				
Carpo-Metacarpus	P			1	1		1													2	
	D																				1
Digits																				1	1
Femur	P																			1	
	D									1											
Tibio-Tarsus	P									2	2										4
	D																		1		
Fibula																					
Tarsus-Metatarsus	P	1				1	1													2	1
	D																				
Phalanges																					1
Total		1		3		4		2		5		1		2		1		1		3	9
MNI		1		1-2		1-2		1		2		1		1-2		1		1		5-6	

Level 23

Element		Alectoris rufa L	R	Columba livia L	R	Alauda arvensis L	R	Lullula arborea L	R	Turdus merula L	R	Emberiza citrinella L	R	Carduelis carduelis L	R	Pyrrhocorax graculus L	R
Skull																	
Mandible – upper		1															
– lower																	
Coracoid										1			1			4	
Sternum																	
Furcula																	
Scapula																1	2
Vertebrae		1									1						
Ribs																	
Pelvis																1	
Humerus	P						2		1					1		3	2
	D																
Radius	P								1							2	
	D																
Ulna	P							1		1						3	2
	D																
Carpo-Metacarpus	P								2							1	3
	D																
Digits																	3
Femur	P																1
	D																
Tibio-Tarsus	P									1						2	1
	D																
Fibula																	
Tarsus-Metatarsus	P			1												2	3
	D									1							
Phalanges																	
Total		2		1		2		5		5		1		1		3	6
MNI		1		1		2		2		1		1		1		3-4	

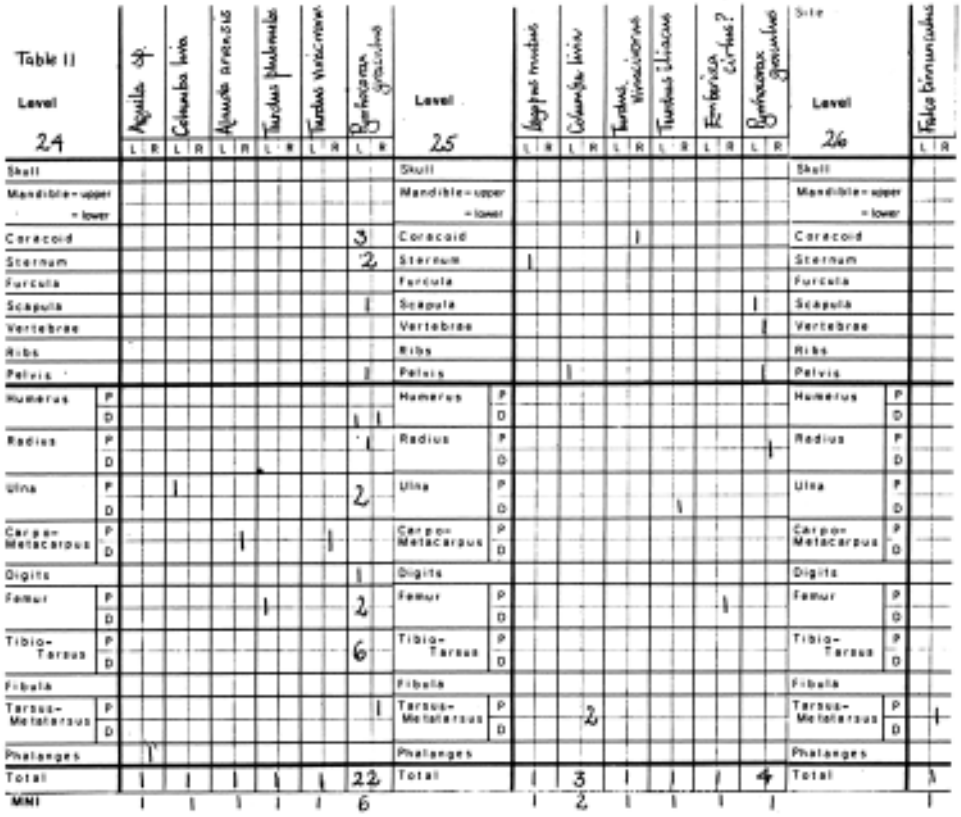

Table 11

Level 24	Aquila sp.	Columba livia	Alauda arvensis	Turdus philomelos	Turdus viscivorus	Pyrrhocorax graculus	Level 25	Anthus trivialis	Columba livia	Turdus viscivorus	Turdus iliacus	Fringilla coelebs?	Pyrrhocorax graculus	Level 26	Falco tinnunculus
	L R	L R	L R	L R	L R	L R		L R	L R	L R	L R	L R	L R		L R
Skull							Skull							Skull	
Mandible – upper							Mandible – upper							Mandible – upper	
– lower							– lower							– lower	
Coracoid						3	Coracoid			1				Coracoid	
Sternum						2	Sternum	1						Sternum	
Furcula							Furcula							Furcula	
Scapula						1	Scapula						1	Scapula	
Vertebrae							Vertebrae						1	Vertebrae	
Ribs							Ribs							Ribs	
Pelvis						1	Pelvis		1				1	Pelvis	
Humerus P							Humerus P							Humerus P	
Humerus D						1 1	Humerus D							Humerus D	
Radius P						1	Radius P						1	Radius P	
Radius D							Radius D							Radius D	
Ulna P		1				2	Ulna P				1			Ulna P	
Ulna D							Ulna D							Ulna D	
Carpo-Metacarpus P			1		1		Carpo-Metacarpus P							Carpo-Metacarpus P	
Carpo-Metacarpus D							Carpo-Metacarpus D							Carpo-Metacarpus D	
Digits						1	Digits							Digits	
Femur P				1		2	Femur P					1		Femur P	
Femur D							Femur D							Femur D	
Tibio-Tarsus P						6	Tibio-Tarsus P							Tibio-Tarsus P	
Tibio-Tarsus D							Tibio-Tarsus D							Tibio-Tarsus D	
Fibula							Fibula							Fibula	
Tarsus-Metatarsus P						1	Tarsus-Metatarsus P		2					Tarsus-Metatarsus P	1
Tarsus-Metatarsus D							Tarsus-Metatarsus D							Tarsus-Metatarsus D	
Phalanges		1					Phalanges							Phalanges	
Total	1	1	1	1	1	22	Total	1	3	1	1	1	4	Total	1
MNI	1	1	1	1	1	6		1	2	1	1	1	1		1

Table 12

Level 28	Falco subbuteo?	Pluvialis apricaria	Motacilla alba	Pyrrhocorax graculus	Level 29	Pluvialis apricaria	Columba livia
	L R	L R	L R	L R		L R	L R
Skull				1	Skull		
Mandible – upper				1	Mandible – upper		
– lower					– lower		
Coracoid					Coracoid		
Sternum					Sternum		
Furcula					Furcula		
Scapula					Scapula		
Vertebrae					Vertebrae		
Ribs					Ribs		
Pelvis	1		1		Pelvis		
Humerus P					Humerus* P		
Humerus D					Humerus* D		
Radius P					Radius P	1	
Radius D					Radius D		
Ulna P					Ulna P		
Ulna D					Ulna D		
Carpo-Metacarpus P		1			Carpo-Metacarpus P	1	
Carpo-Metacarpus D					Carpo-Metacarpus D		
Digits					Digits		
Femur P					Femur P		
Femur D					Femur D		
Tibio-Tarsus P					Tibio-Tarsus P		
Tibio-Tarsus D					Tibio-Tarsus D		
Fibula					Fibula		
Tarsus-Metatarsus P					Tarsus-Metatarsus P		1
Tarsus-Metatarsus D					Tarsus-Metatarsus D		
Phalanges					Phalanges		
Total	1	1	1	2	Total	2	1
MNI	1	1	1	1		1	1

Table 13.

11	Lanius	minor/excubitor
13	Hirundo	rustica
16	Oenanthe oenanthe,	Jynx torquilla
17	Hirundo	rustica
18	Hirundo	rustica oenanthe
20	Hirundo	rustica, Acrocephalus scirpaceous
21	Hirundo	rustica
22	Lanius	minor/excubitor
28	Motacilla	alba

It seems possible, therefore, that, whatever agency was responsible for bringing these birds into the cave, the occupation of these levels must be associated with the spring and summer months, from late March to September or October.

(Fig. 4, Fig. 5, Fig. 6) The seed and vegetable eating group include the larks, finches, sparrows, doves, jay and thrusches. The variety of flowering plant and trees in the area would provide an ample diet for both the small seed eaters, fruit for thrushes and larger seeds for the doves and the jay with its predeliction for acorns, beech mast and other nuts. The thrushes would also have found ample supplies of animal food in the form of earthworms and molluscs, food which is also taken by the doves, wheatears and jays.

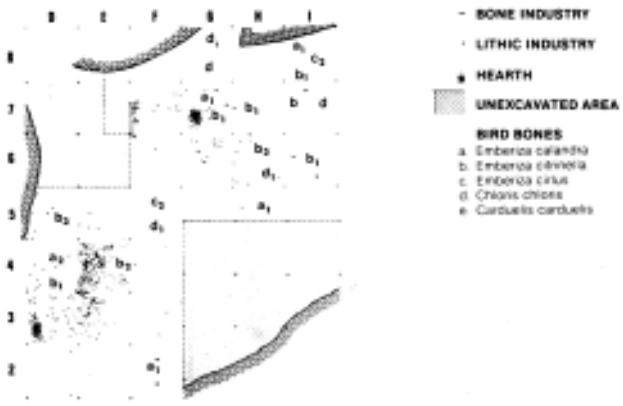

Fig. 4. Seed eating birds, Buntings and Finches

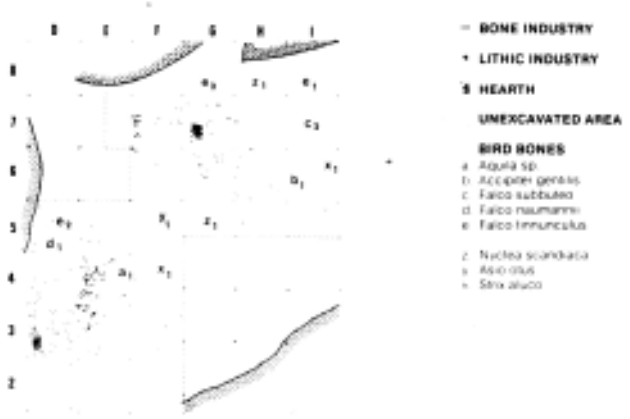

Fig. 7. Predators

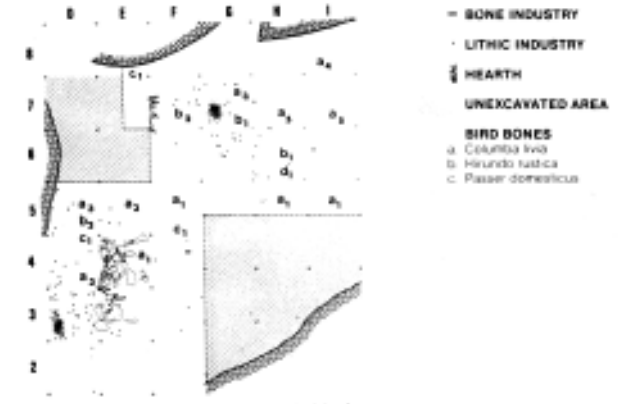

Fig. 5. Birds associated with human habitation

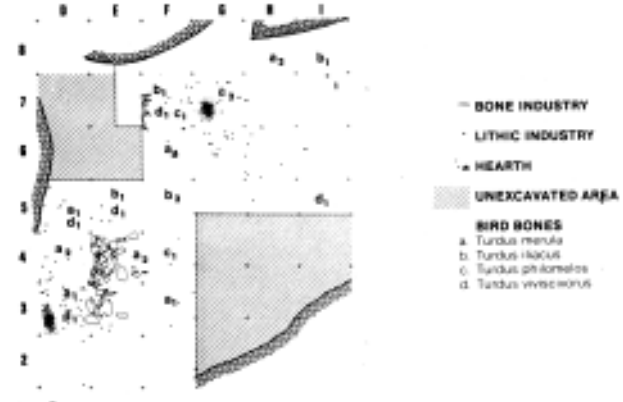

Fig. 6. Thrushes

(Fig. 7) Besides this, the jay, along with the other predators in the cave, will take many small birds, as well as eggs. The lower Magdalenian levels contained bones of hawks, accipiters and owls. Most bones of predators were recovered from levels 15, 16 and 17 with a hobby from level 13 and a lesser kestrel from levels 14 and 28. Two clawbones, both of eagle came from levels 17 and 24 but the specific determination is not certain. The distribution of the predator bones around the cave is slightly curious; they, to an even greater extent than bones of other species, tend to be scattered around the periphery of the occupied area, except in the case of one eagle claw bone recovered from the first «depot rituel» with a phalange, probably of a falcon, which additionally shows signs of having been pierced. The owl bones were similarly scattered even though the concentration of small mammal bones in areas 3E, 3D, 4E and 4D suggests that if a tawny owl had roosted in the cave, it was in the rocks overhanging these areas, if the concentration of small mammals were in fact disgorged owl pellets. The microfauna is unlikely to have been brought into the cave by either of the other two species of owl, neither of whom would have been likely to have roosted in its rocky niches. The snowy owl of which there are only two bones from levels 15 and 17, was more common throughout Western Europe at this period, with remains recovered from a large number of cave sites in France and the Pyreenees. It prefers to roost in stumps and rocks in open ground, with a clear view of its surroundings; whilst the longeared owl is essentially treehaunting, hunting its prey in the grass and scrub above the cave and roosting in trees in the open or in the valley.

As with the other predators, the bones of owls seem to have been deliberately thrown outside the main habitation areas; indeed, the majority of all bird bones were recovered from outside the areas of maximum density of artifacts, and usually away from the two hearths, towards the edges of the excavated area on the north and eastern sides of the cave.

(Fig. 8) The only species found all over the excavated area is the chough, which may be because it is present in so much larger numbers or, it could be argued, that the general scatter of its bones occurred because the deaths were natural; they were not brought into the cave and disposed of by man.

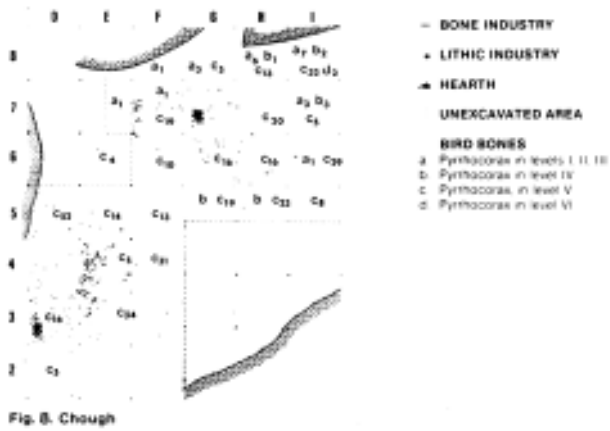

Fig. 8. Chough

Close study of the distribution of chough bones shows that the bones in levels of the final Magdalenian were found outside the areas of human debris, whereas in the lower Magdalenian they occur also within the areas of flint and worked bone deposits. Since it is in the lower Magdalenian that the bones of summer migrants appear there may be a relevant connection here with the seasonal occupation of the cave.

Appendix I. The overall numbers of bones recovered are so small that measurements of individual species on their own are meaningless and only through linking the Erralla data to other sites carrying approximately similar radio carbon dates can useful comparisons be made (see Altuna + Merino 1984).

It seems clear that even though their nutritional value was negligible the birds at Erralla were food items. The minimum number of individuals of any species in any level is small; at most there are two to three birds of any species other than chough and of them a maximum of only six to eight. The scatter of birdbones away from the concentrations of flint could be suggestive of snack eating behaviour and rubbish disposal; the way in which sweet wrappers and chip packets are thrown aside. There is no sign of any butchery or cutting marks on any birdbones and evidence of other means of utilisation is small.

Plate I. There is one phalange, as mentioned above, belonging probably to a falcon or accipiter, from level 16, with holes in the proximal end, which appear to have been bored deliberately. Microscopic examination of the holes shows no marks of cutting but the edges are extremely smooth, even polished. Since the epiphysis on the proximal end of phalanges is thick relative to the rest of the bone, a fissure at this point would not have occurred through natural wear without destroying the bone altogether. The location of the holes is interesting, with one bored vertically through the end, just below the epiphysis and two others horizontally and at right angles into the centre, below the epiphysis. Interesting too is the location of the find, in 4E amongst the material of «depot rituel» I. Supposing that these holes were bored artificially, this claw could have been a pendant or formed part of a necklace and for this reason gained a place in the «ritual» arrangement, inferring some particularity about either the individual or species of bird from which it originated.

Other uses are less readily identifiable, feathers for decoration and missiles, tamed birds for hunting or decoys or even as pets. All these are possible and becoming more likely as we begin to understand more clearly the living and subsistance practices in the late Palaeolithic.

The picture of bird life and exploitation which emerges from a study of the cave of Erralla is that, apart from certain species like ptarmigan, snowy owl and alpine chough, whose range was then at lower altitudes or more widespread, the birds to be found in levels dated to between 16,270 and 12,310 bp are not markedly dissimilar to the species resident in Guipuzcoa at the present day and that, even though Erralla would not appear to be a major occupation site in terms of human population and quantity of worked flint, yet they showed a significant interest in capturing and using a wide variety of small birds, in particular, as an additional relish to their diet.

APPENDIX I

MEASUREMENTS IN MILLIMETRES

Species	Level	Bone	Number	Side	Length	Proximal	Shaft	Distal
Anas platyrrhyncos	22	Tarsometatarsus	6F320	L	44.00	10.60		10.50
Lagopus mutus	13	Tarsomet atarsus	5D328	L	36.0	7.40	3.35	7.80
	16		5F310	R	44.45	8.65		10.45
			4E343	R	39.40	7.8		7.55
		Carpomatacarpus	3D374	R	33.95	4.45		6.4
				L	34.85	5.95		7.65
	18	Tarsometatarsus	4E355	L	31.75			
		Carpometacarpus		L	31.75	9.00		7.50
Alectoris rufa	16	Carpmetacarpus	4E350	L	25.45	7.05		5.75
Perdix perdix	18	Carpmetacarpus	1	R	27.1	5.55		6.0
Coturnix coturnix	17	Tarsometatarsus	8H	L	26.45	4.58		5.05
			6F	L		5.0		5.0
Lullula arborea	20	Humerus	4D369	R	20.60	6.0	1.45	4.50
	23	Humerus	4F		21.45	6.95	2.0	5.2
Alauda arvensis	20	Coracord	7F284	L	19.6	5.5		3.75
				R	20.90			4.00
	12	Tarsometatarsus	BI194	R	23.45	3.5	1.25	2.65
	16	Femur	5E327	L	19.9	3.3	1.55	3.6
		Tibiotarsus		R	34.65	4.5	1.45	3.1
	17	Carpometacarpus	4F432	L	17.15	4.45		5.6
			H678	L		4.3		
	17	Tibiotarsus	5I261	L	34.85	4.6		3.05
	18	Carpmetacarpus		R	16.25			3.85

MEASUREMENTS IN MILLIMETRES

Species	Level	Bone	Number	Side	Length	Proximal	Shaft	Distal
Alauda arvensis		Tibiotarsus	6F302	R		5.05	1.45	
	22	Carpometacarpus	4F153	R	17.25	4.25		3.80
		Tarsometatarsus	7F	R	24.1	3.5		2.9
				L	25.45	3.6		2.7
	23	Humerus	3D400		22.5		2.45	6.0
	24	Carpometacarpus	6G	R	17.4	4.25		3.8
Lanius Minor/excubitor	11	Humerus	8I184	L		7.75	2.35	
	16	Humerus	4D351	R	22.55	7.05	2.35	5.6
	22		7H282	L	24.75	7.70	2.65	6.0
		Ulna	7H282	R	31.5	3.85	2.0	3.65
Acrocephalus scirpaceus	20	Humerus	6I244	R	23.1	7.15	2.1	5.6
Turdus merula	13	Femur	7G282	R	30.10	4.80	2.10	5.05
	22	Tibiotarsus	7G6285	R				4.75
		"	4D	L				4.5
		"	6F320	L	7.65			
		"		R	8.05			
		Femur	6F320	L				5.7
	23	Humerus	4E383	R				8.35
		Tarsometatarsus	"	L				4.10
		Ulna	6F320	L		5.35		
		carpometacarpus	"	R	22.80	5.25		4.65
Turdus iliacus	16	Coracoid	5F310	L	23.6	7.10		5.35
	22	Humerus	7F297	R	22.65	7.65	2.35	6.45
	25	Ulna	81	R				3.75

MEASUREMENTS IN MILLIMETRES

Species	Level	Bone	Number	Side	Length	Proximal	Shaft	Distal
Turdus philomelos	1	Humerus	7F152	R		9.00	2.80	
	24	Femur	4F	L		5.45	2.35	
Turdus viscivorus	16	Ulna	5I261	R		4.8	2.25	
		"	5D347	L			3.0	4.50
	24	Carpometacarpus	3D	R	23.6	5.60		4.95
Oenanthe oenanthe	16	Ulna	5D347	L	22.65	2.90	1.40	2.75
	18	Coracoid	3D347	R	20.00	3.85	1.20	
		Carpometacarpus		L	15.65	3.6		3.00
		Tibiotarsus		L		4.50	1.75	
Hirundo rustica	13	Ulna	7G	L		3.50	1.90	
	17	Carpometacarpus	4D	L	14.65	4.10	3.35	4.60
	18	Humerus	6H361	R	16.35	6.45	2.10	5.80
		Carpometacarpus	3E	L	15.90	3.95		3.35
	21	Humerus	5D	R	16.50	6.10	2.28	4.85
		Carpometacarpus	5D	L		3.80		3.55
Moracilla alba	28	Carpometacarpus	71309	R	15.80	3.50		3.35
Embiriza calandra	5	Ulna	5H161	R	27-00	4.50	2.00	4.25
		Femur	2F170	R	20.50	4.60	1.70	3.65
	18	Ulna	8I215		27.30	3.90	2.40	3.50
	22	Humerus	79285	L			2.20	5.45
		"	4D	R	23.00	7.25	2.40	5.45
Embiriza citrinell	2	Humerus	6H140	L	21.55	7.30		5.80
	11	Humerus	8I184	R	21.o	6.70	2.25	5.50
	15	"	6I225	R	20.85	6.45	2.10	4.90
	16	Coraccid	4E350	R	21.0	3.70		4.85

MEASUREMENTS IN MILLIMETRES

Species	Level	Bone	Number	Side	Length	Proximal	Shaft	Distal
Emberiza citrinella	18	Humerus	7G271	L	20.60	6.40	2.05	5.00
		"	4D395	L	20.75	7.05	2.30	5.25
	23	Coracoid	5D373	R	19.80	3.25		4.75
		Ulna		L	20.95	3.60	2.15	3.25
		Tibiotarsus		L	30.25	4.25	1.35	2.65
	23	Femur	8I	R	17.9	2.85		3.1
Emberiza cirlus	15	Humerus	5F312	L			1.75	4.3
Cjloris chloris	4	Ulna	8G146	L	20.75	4.00' 3.88'	1.90	2.90
	5	Humberus	8G160	R	22.0	6.15	2.50	5.50
	6	Humberus	9G170	L	6.4	6.45		
	7	"	96173	L	21.70	7.25	2.25	4.65
		"	8G125	L	20.0	6.50	2.15	5.35
	17	"	7I225	R		6.35	1.85	
	22	Ulna	6H273	L	22.4	3.8	1.70	2.75
Carduelis carduelis	23	Humerus	5H306	L	15.65	5.40	1.60	4.15
Passer domesticus	18	Ulna	9F357	L		3.1		
		Femur	5F333	R		3.4	1.55	
Sturnus vulgaris	2	Humerus	8G149	L		8.80		
Garrulus glandarius	14	Humerus 1mm	8I199	L	43.45	12.0	4.0	
		Femur epiphysis diseased	5I	R	38.35	7.00	4.00	7.15
Pyrrhocorax graculus	4	Humerus	8H149	R	44.25	14.05	5.30	15.80
	11	"	7I184	L			4.80	
1 - IV	12		8I194	L			5.40	13.65

MEASUREMENTS IN MILLIMETRES

Species	Level	Bone	Number	Side	Lenght	Proximal	Shaft	Distal
Pyrrhocorax graculus V	13	Humerus	6I220	R				11.05
			5G290	R				11.75
	14		8I215	L				11.45
			5H260	L		14.50		
			5D345	L				11.25
			7F261	R				11.75
	15		5F303	R	45.00		5.00	11.45
			6I225					12.15
			8H251	R				11.00
	16		6I234			12.85	4.2	11.00
			7I215	R				11.50
			2D390	L	44.24	14.2	4.9	11.20
			7I219	L			5.30	13.95
	17	immature	7F270	L			4.90	11.25
			6H263	L				11.25
			6G269	R		14.30		
	18		6I227	L		13.60	4.50	
			4E358	L			4.95	11.30
			8G271	R				13.15
	21		5H	R		12.60	3.75	7.00
			4F346	L	45.65	14.10	5.3	12.55
			8H277	R		14.25		13.35
			6F314	L				
	22		5D369	L	49.90	13.75	4.80	12.00
			4E378	L		15.75		
	23		4H343	L		12.70		
			5H	R	48.85	14.60	4.65	10.50
	24		6G296	R	41.40	12.25	4.15	19.95

MEASUREMENTS IN MILLIMETRES

Species	Level	Bone	Number	Side	Length	Proximal	Shaft	Distal
Pyrrhocorax graculus			6I263	L		14.50		
			6G296	R		13.25		
		immature	4E387	R		13.50		
		"	6G296	R		13.75	4.25	
			4F357	L			4.45	
		"	7G280	L	45.85	13.79	4.64	11.50
t - IV	2	Ulna	8H138	L		8.25		
	6		9G	R		8.35		
			8G	R	61.0	8.45	3.75	7.75
	8		8I168	R	56.4	7.75	3.95	7.05
	11		8I184	L		8.90	5.00	
V	13		7G278	R				7.40
			7F	R		8.60	4.75	
			5F296	R	53.80	7.20	3.85	6.80
			"	R		7.80		7.85
			5D328	R	57.60	7.90	4.25	7.50
			"	L				7.85
	14		8I215	L		7.15		
			5E321	L		8.25	4.55	
	15		7G256	L	57.95	8.00	4.50	6.90
	16		71215	R		7.50		
			4D351	L				7.25
			"	R				7.45
			5F310	R				7.35
			5D347	L		8.60		
			3D371	L				7.35
			8I	L		8.15		
			7I219	L				8.10

MEASUREMENTS IN MILLIMETRES

Species	Level	Bone	Number	Side	Length	Proximal	Shaft	Distal
V	17	Ulna	7I223	R		8.05		
			"	L				5.50
			BI224	L				6.15
			5D348	R				7.40
	18		5H282	L	59.05	7.25	5.15	7.25
			8H270	L		7.00	4.60	
			7H261	R				7.65
	20		4F341	L		8.25	4.50	
		immature	4E365	L		7.25	4.20	
		"	6I244	R		7.85	4.10	
			7G278	R				7.40
	21		5D364	L	60.75	8.75	4.80	5.0
			5H302	L				7.65
			5E350	R				7.80
	22		4E378	L				7.05
			2D407	R				7.85
	23		4D	L				7.70
			"	L		7.65		7.50
			3E296	R			4.2	
		immature	5H306		61.20	7.45	3.90	7.75
	24		7G290	L				7.60
	14	Carpometacarpus	5F307	L	36.0	8.90		8.35
			8H240	L		8.75		
			"	L	36.0	8.45		
	16		5G300	L		8.25		8.10
V	18		4D3395	L		8.70		8.10
			6F302	L	36.0			8.65
			6H255	R				8.10

MEASUREMENTS IN MILLIMETRES

Species	Level	Bone	Number	Side	Length	Proximal	Shaft	Distal
		Carpometacarpus	6F302	L	36.0			8.65
			6H255	L				8.10
	20		5D357	L		9.25		
	22	immature	5D369	L	37.30	8.30		8.35
			4F351	R	36.0	8.85		8.10
			5D	L	36.05			8.90
	23		4F357	L	34.00	8.25		8.10
			4D385	R	37.20	9.15		8.85
I - IV	8	Carpel	7H158	R	18.55			
	11		7I184	L	18.6			
	12		8I194	L	17.35			
	14		43334	R	17.50			
			BI	L	18.30			
			6I	R	15.60			
V	16		5F310	R	17.10			
			53327	R	18.35			
			6F	L	17.50			
	17		7I225	L	17.90			
			"	L	16.60			
	19		4D360	L	18.25			
			7H271	R	17.60			
	20		7G282	L	17.40			
	22		7F	L	17.80			
	3	Femur	8H145	L	40.80	7.70	3.60	7.75
			8G155	R		8.25		
			8G150	R		8.65		
			7I148	R				8.00

MEASUREMENTS IN MILLIMETRES

Species	Level	Bone	Number	Side	Length	Proximal	Shaft	Distal
	4	Femur	9G145	R			3.75	8.80
	13	Abraided	6H			6.80	3.0	
			5G365	L				7.65
	14		6F317	L				7.75
			6I	R				7.80
	15		6F285	R	41.15	8.25		8.40
			5E324.	R				7.80
			SE321	R				9.00
	16		6H251	L	41.15	7.90	3.30	8.35
			6I215	L	38.60	7.65	3.05	7.75
			5D342	L		7.55		
			8G215	L		7.30		
			"	L				7.80
			"	R	35.50	7.75	3.20	7.70
			4D351	R	39.15	7.50	3.15	7.65
			5D347	R		7.50		
			7I219	L		7.80		
	17		5E	L		7.60		
			5D348	L		10.65	2 frags	8.0
			6G269	R		7.75		
	18		6H255	L	39.30	7.90	3.50	7.65
			6H261	L		8.00		
	20		7G278	L				8.25
			6G283	R		7.75		
	21		5D364	R				8.65
	23		5H306	R	88.10	8.10	3.30	8.85
	24		6G300	L			3.70	7.90
I - IV	5	Tibiotarsus immature	7F173	R		9.55	4.0	

MEASUREMENTS IN MILLIMETRES

Species.	Level	Bone	Number	Side	Length	Proximal	Shaft	Distal
		Tibiotarsus	8I160			8.65	4.25	5.8
	8		8I318				3.20	6.00
	12		8I194	L	42.60	7.00	3.00	5.60
	13		6H	R				7.00
	15		5E330	L			3.50	6.40
	16		5D347	R				6.20
	17		6I231	R		10.00.1		
			6F	L		9.90		
			5D348	L				6.75
			5E335	R				6.85
			5I255	L		9.95	3.60	
			3H263	R		10.20	3.30	5.25
	18		4E358	L		10.60	4.00	
			7G271	L				6.85
			3E	R				6.00
			7I	L				7.25
	20		4E365	R			3.25	6.15
			4E341	R		9.30	3.25.	
	21		4E377	L		9.85		
			"	L	66.35	9.85	3.30	6.25
			5I251	L			3.50	6.75
	22		7F277	R				7.3
	23		7F	L		9.15		
		Single (	5H306	L	67.80	11.00	3.50	6.8
		Specimen (		R	67.75	11.00	3.45	6.7
			7G290	R		10.40		
			"	L	69.40		3.65	6.10
			8I358	L		6.50		
			"	L		6.15		

MEASUREMENTS IN MILLIMETRES

Species	Level	Bone	Number	Side	Length	Proximal	Shaft	Distal
	12	Tarsometatarsus	8I194	L	42.60	7.00	3.00	5.60
	13		5G290	L		6.80		
				R	44.90	7.35	2.90	
	14		5E321	R				5.20
			7H	R				5.30
			8I199	L				5.70
			8I215	L	45.35	7.05		5.25
			"	R		7.00		5.25
	15		5E335	L		7.0		5.35
	16		5F310	R				4.90
				L				5.40
	17		3H263	L				5.25
	20		5E348	L				5.35
	21		4E377	L	42.75	7.25		5.20
			6I246	R		7.00		
			8H1277		6.70			
			"	R	45.90	7.25		5.50
	23		4F355	L	46.95	7.45		5.65
			4D385	R		7.75		
			"	R	46.70	8.25		5.75
	24		8I251	R		7.65		

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