

## BIRD RINGING IN ANTIKYTHIRA ISLAND (S GREECE)

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### ABSTRACT

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For the period of 1998-2004 we carried out bird ringing on Antikythira island (Greece). During this period, with the help of 39 volunteers, we caught a total of 9455 birds belonging to 73 different species. On our best day we ringed 441 birds in the spring of 2002.

In the spring of 2004 we obtained the maximum number of bird species, which was 52 species, and the maximum number of birds, which was 2886 in the period of 25 days. During this study we had four controls and two recoveries. Most of them were found or ringed during the spring of 2004.

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**Key words:** ringing, south Greece

In this paper we present ringing data for the period of 1998-2004 (altogether 118 days) on Antikythira island (S Greece). This is the first report on the Ringing Scheme of Antikythira. We also present the controls and recoveries we had during these field trips.

The island is a very important stopover site for bird migration. Most autumn migrants move across Greece from early or mid-August to late October or early November, whereas return movements start mainly from mid-March and last up to mid-May (Handrinos and Akriotis 1997).

Additional information about bird migration in western Greece can be found in a paper based on ringing on the Strophades Islands (Schogolev and Dimaki 1996) and we try to compare this information with ours. Data on bird migration in Greece can also be found in the book of Handrinos and Akriotis (1997).

Antikythira (35°51'N, 23°18'E) is a small island located south of the Peloponnese, between the islands of Kythira and Crete. The distance from Kasteli (Kissa-

mos), Crete, is 26 miles and the maximum altitude of the island is 378 m. The area is about 20 km<sup>2</sup> and the coastline is 24 km long. Antikythira and the following islets belong to the county of Kythira: Thymontes, Pseira, Plakoulithra, Lagouvardos and Prasonissi (or Pori).

The dominant vegetation on Antikythira is low maquis and phrygana, while part of the island is cultivated by cereals (see Plate I and II). Antikythira is one of the drier locations in Greece, receiving annually less than 200 mm of rainfall (Dafis *et al.* 1996).

Antikythira is a “Natura 2000” site and under EU legislation. It is a “Special Protection Area”. It is also an “Important Bird Area” of Greece (Bourdakis and Varelzidou 2000).

In 1997 the Municipality of Antikythira donated the old secondary school building to the Hellenic Ornithological Society in order to be used as the Scientific Ornithological Station. The basic aims of the Ornithological Station of Antikythira are the following (Papaconstantinou 2004): (1) study of the bird migration by ringing; (2) study of the migration of raptors; (3) monitoring and protection of some important bird species, with emphasis on the Eleonora’s Falcon (*Falco eleonora*); (4) training in bird ringing.

Since 1998 the Hellenic Ornithological Society and the Hellenic Bird Ringing Centre have been organizing bird ringing on Antikythira island. The birds were caught using mist-nets during nine netting and ringing sessions between April 1998 and September/October 2004.

The nets were set in the following habitats: a) olive groves, b) maquis vegetation, c) tall trees (figs and almond trees) with some reeds and d) cultivated land.

Netting sessions took place in a total of 118 days. Most nettings were carried out from 5.30 *a.m.* (range: 5.15-6.00 *a.m.*, depending on weather conditions) in spring or 6.30 *a.m.* in the autumn, until 4.00-9.00 *p.m.*, depending on the weather conditions and the number of birds that were caught on the day. On days with very low bird counts we often closed the nets during the afternoon. Our mist-nets were 2.5 m high and 10-14 m long. We used 8 to 25 nets, depending on the weather conditions (such as wind).

All trapped birds were identified, ringed, aged, sexed, and measured according to Svensson (1992). The measurements collected were: wing length – maximum chord, tarsus length, weight, fat – according to Kaiser (1993), and muscle score – according to Bairlein (1995). The species identification, age and sex determination of non-passerines was based on Baker (1993). The general methodology was according to the Ringers’ Manual (Akriotis 2000).

A total of 9455 birds belonging to 73 species were caught and ringed during the 9 ringing sessions. Table 1 gives the dates of ringing sessions as well as the total number of birds ringed during each season, the number of species and the maximum birds per day in each ringing session. Figure 1 illustrates distribution of the ringing activity over the years and seasons. Table 2 summarizes the number of birds from particular species ringed on Antikythira island.

Table 1  
Dates of ringing sessions, totals of birds ringed, number of species, and the maximum of a day at each ringing session

Time	Number of days	Number of species	Total number	Maximum catch in a day	Date of maximum catch
16-29 Apr. 1998	14	49	1446	343	25 Apr. 1998
13-21 Sep. 1998	9	29	226	77	18 Sep. 1998
21-26 Apr. 1999	6	30	266	60	20 Apr. 1999
1-13 Sep. 1999	13	29	487	102	9 Sep. 1999
1-11 May 2002	11	47	2246	441	5 May 2002
7-18 May 2003	12	33	873	222	16 May 2003
10-19 Sep. 2003	10	27	308	65	13 Sep. 2003
8 Apr.-1 May 2004	25	52	2886	406	20 Apr. 2004
16 Sep.-3 Oct. 2004	18	35	717	88	29 Sep. 2004

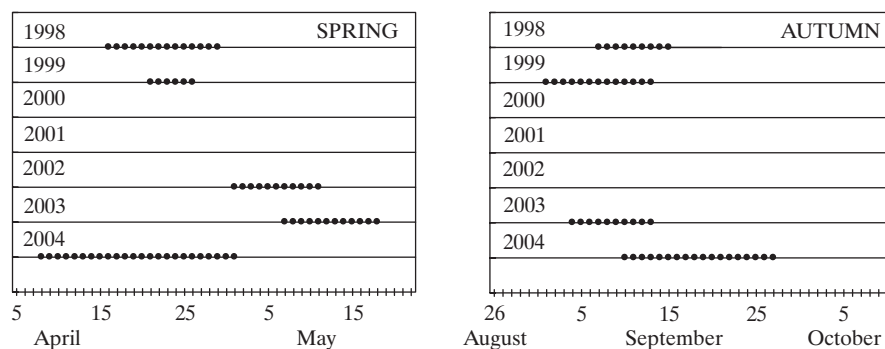


Fig. 1. Distribution of ringing activity (dots) over the years and seasons

During the work we had six ringing recoveries that are presented below:

*Oriolus oriolus*

GRA 4001021 F *ad.*      26 April 2002      Gavdos, GR (34°50'N, 24°05'E)  
    12 May 2003      Antikythira, GR (35°51'N, 23°18'E)

*Hirundo rustica*

FIH 610895J M *ad.*      4 Sep. 2002      Turku, FI (60°24'N, 22°15'E)  
    28 Apr. 2003      Antikythira, GR (35°51'N, 23°18'E)

*Sylvia borin*

ITB L821731      (no data)      Italy  
                                  *ad.*      30 Apr. 2004      Antikythira, GR (35°51'N, 23°18'E)

*Riparia riparia*

GRA A130311 *ad.*      15 Apr. 2004      Antikythira, GR (35°51'N, 23°18'E)  
    25 Jun. 2004      Tiszatelek, HU (48°11'N, 21°49'E)

*Streptopelia turtur*

GRA N201026 M <i>ad.</i>	25 Apr. 2004	Antikythira, GR (35°51'N, 23°18'E)
	7 Aug. 2004	Negotin, CS (44°13'N, 22°32'E) – dead
GRA N200974 F <i>ad.</i>	11 Apr. 2004	Antikythira, GR (35°51'N, 23°18'E)
	4 Sep. 2004	Crete, GR (35°11'N, 25°17'E) – dead

Table 2

Species list of birds ringed in Antikthira in 1998-2004.  
Individuals of a few species caught were not ringed (Total = 0).

	1998		1999		2002	2003		2004		Total
	Spring	Au-tumn	Spring	Au-tumn	Spring	Spring	Au-tumn	Spring	Au-tumn	
<i>Ixobrychus minutus</i>										<b>0</b>
<i>Circus aeruginosus</i>	1									<b>1</b>
<i>Circus macrourus</i>					1					<b>1</b>
<i>Accipiter brevipes</i>										<b>0</b>
<i>Accipiter nisus</i>		1						1		<b>2</b>
<i>Falco vespertinus</i>										<b>0</b>
<i>Falco tinnunculus</i>	4		3			1		1		<b>9</b>
<i>Coturnix coturnix</i>								1		<b>1</b>
<i>Gallinago media</i>	1									<b>1</b>
<i>Tringa glareola</i>	1							1		<b>2</b>
<i>Actitis hypoleucos</i>	1									<b>1</b>
<i>Philomachus pugnax</i>								1		<b>1</b>
<i>Streptopelia decaocto</i>										<b>0</b>
<i>Streptopelia turtur</i>	37	1	9	14	27	19	10	91	5	<b>213</b>
<i>Cuculus canorus</i>	4			1	2	1	3	11		<b>22</b>
<i>Tyto alba</i>										<b>0</b>
<i>Otus scops</i>	1	1	5	1	1	1		9	9	<b>28</b>
<i>Caprimulgus europaeus</i>	2	1			1	5		49		<b>58</b>
<i>Merops apiaster</i>			1		20	4		16		<b>41</b>
<i>Merops persicus</i>								1		<b>1</b>
<i>Upupa epops</i>	7	1	1	1			2	10	1	<b>23</b>
<i>Jynx torquilla</i>	9	1		2	2		2	14	5	<b>35</b>
<i>Delichon urbica</i>	38		13			1		29		<b>81</b>
<i>Riparia riparia</i>	127		5		4	13		26	1	<b>176</b>
<i>Hirundo rustica</i>	66	11	12		1	1		101	44	<b>236</b>
<i>Hirundo daurica</i>					1					<b>1</b>
<i>Anthus trivialis</i>	53	3	22	1	22	1	4	172	6	<b>284</b>
<i>Anthus cervinus</i>								1		<b>1</b>
<i>Anthus campestris</i>					1					<b>1</b>
<i>Motacilla alba</i>										<b>0</b>
<i>Motacilla flava</i>	79	1	1	8	28	6	1	7	1	<b>132</b>
<i>Erithacus rubecula</i>					1			4	61	<b>66</b>
<i>Luscinia luscinia</i>			1						1	<b>2</b>
<i>Luscinia megarhynchos</i>	38	5	10	18	12	4	3	76	17	<b>183</b>
<i>Luscinia svecica</i>	1									<b>1</b>
<i>Phoenicurus phoenicurus</i>	14	3	8	12	42	7	15	49	46	<b>196</b>
<i>Saxicola rubetra</i>	23			16	31	6	7	67	8	<b>158</b>
<i>Oenanthe oenanthe</i>				4	1		2	4	2	<b>13</b>

	1998		1999		2002	2003		2004		Total
	Spring	Au-tumn	Spring	Au-tumn	Spring	Spring	Au-tumn	Spring	Au-tumn	
<i>Oenanthe hispanica</i>	2	1					1	2	1	7
<i>Oenanthe isabellina</i>										0
<i>Turdus philomelos</i>										0
<i>Cettia cetti</i>		1								1
<i>Acrocephalus schoenobaenus</i>	34		12	2	397	72	1	69	5	592
<i>Locustela luscinioides</i>								1		1
<i>Acrocephalus scirpaceus</i>	5	2	3	5	9	11	5	5	1	46
<i>Acrocephalus palustris</i>					1				2	3
<i>Acrocephalus arundinaceus</i>	18	2	5	1	36	12	2	31	2	109
<i>Hippolais pallida</i>	3			1	22	20		1		47
<i>Hippolais icterina</i>	28	35		60	174	59	6	11	15	388
<i>Sylvia cantillans</i>	9	5	1	12	7		7	6		47
<i>Sylvia melanocephala</i>	1				1			1	1	4
<i>Sylvia nisoria</i>				1						1
<i>Sylvia hortensis</i>	2									2
<i>Sylvia curruca</i>		1			1			1	5	8
<i>Sylvia communis</i>	30	14	19	19	139	25	21	53	19	339
<i>Sylvia borin</i>	133	45	10	115	801	403	105	270	153	2035
<i>Sylvia atricapilla</i>	20	7	1	6	14	5	9	34	105	201
<i>Phylloscopus orientalis</i>	8		1		1			3		13
<i>Phylloscopus sibilatrix</i>	172	9	24	20	63	14	7	389	19	717
<i>Phylloscopus collybita</i>	2		1		2	1		3		9
<i>Phylloscopus trochilus</i>	34	19	19	49	36	17	32	135	55	396
<i>Phylloscopus nitidus</i>		1								1
<i>Muscicapa striata</i>	74	12	8	44	115	62	31	153	65	564
<i>Ficedula hypoleuca</i>	203		30	6	117	10		527	3	896
<i>Ficedula albicollis</i>	56	3	13	19	32	6	6	107	4	246
<i>Ficedula semitorquata</i>					6			6		12
<i>Ficedula parva</i>	1	24		6			14		36	81
<i>Parus caeruleus</i>					1					1
<i>Lanius collurio</i>	1	12		26		2	8		6	55
<i>Lanius senator</i>	35		5		27	6	3	87		163
<i>Oriolus oriolus</i>	52	4	22	17	32	31	1	232	11	402
<i>Passer hispaniolensis</i>	9				6	40		11	1	67
<i>Passer italiae</i>	4							1		5
<i>Passer sp.</i>					2					2
<i>Serinus serinus</i>										0
<i>Fringilla coelebs</i>					1	2		2		5
<i>Carduelis chloris</i>	1				2			2		5
<i>Carpodacus erythrinus</i>									1	1
<i>Emberiza hortulana</i>	1		1		1			1		4
<i>Emberiza caesia</i>	1									1
<i>Miliaria calandra</i>						1				1
<i>Emberiza melanocephala</i>					2	4				6
<b>Total</b>	<b>1446</b>	<b>226</b>	<b>266</b>	<b>487</b>	<b>2246</b>	<b>873</b>	<b>308</b>	<b>2886</b>	<b>717</b>	<b>9455</b>

The presence of some species is noteworthy, like the Green Warbler (*Phylloscopus nitidus*) the Blue Cheeked Bee-eater (*Merops persicus*) and the Common Rosefinch (*Carpodacus erythrinus*).

The Green Warbler in the autumn of 1998 was the first record of this species in Greece. The distribution of this species includes northern Turkey, Caucasus, as far as northern Iran and Afghanistan. Its migration movements include mostly south-east to winter in southern India and Sri Lanka. The species has also been observed in the United Kingdom, in Germany, Ukraine, Israel, and Kuwait (Papazoglou 1999).

The Blue Cheeked Bee-eater was ringed in the spring of 2004. This species has been reported from Greece as a rare and irregular passage migrant. Most of the Greek records come from Crete and Dodecanese from April (Handrinos and Akriotis, 1997).

The Common Rosefinch has been reported from the Greek islands of Chios, Lesbos, and Crete and is considered as an accidental visitor in Greece (Handrinos and Akriotis 1997). It was ringed in the autumn of 2004.

As in other places of the Mediterranean like Cyprus (Flint and Stewart 1992) and Sicily (Iapichino and Massa 1989) the spring passage in Greece is generally more evident than autumn passage, with a wider variety of species and larger numbers of individuals. Our results are in accordance with this, a greater number of birds and even more species were caught during spring than in autumn (Table 1 and 2). According to Handrinos and Akriotis (1997) this may be due to a combination of the following reasons: (1) in spring migrants arrive in Greece after having made a long sea and sometimes desert crossing and are more in need of rest and refueling than in autumn; (2) the more variable weather in spring; and (3) the greater amount of food and suitable habitats in spring. We should also consider that the number of birds that were caught depends on the number of days of ringing sessions (Table 1).

The bird species we caught in Antikythira and those from Strophades (Schogolev and Dimaki 1996) are comparable. The commonest *Luscinia* species is the Nightingale (*L. megarhynchos*) in both places. This was expected, as the Thrush Nightingale (*L. luscinia*) is more common in the autumn migration than in the spring migration and in eastern parts of Greece. As far as the Bluethroat (*L. svecica*) is concerned, it is a rare and irregular winter visitor and passage migrant in Greece (Handrinos and Akriotis 1997), and only one was ringed in Antikythira.

In Strophades the only *Lanius* species that was observed, in spring, was the Woodchat Shrike (*L. senator*), in Antikythira we ringed both Woodchat Shrikes and Red-backed Shrikes (*L. collurio*) – the Woodchat Shrikes mainly in the spring ringing sessions and the Red-backed Shrikes during the autumn sessions. This was expected according to Handrinos and Akriotis (1997), the Red-backed Shrike being a very common autumn migrant while the spring passage of this species is much smaller. The opposite stands for the Woodchat Shrike.

The most common species of the genus *Sylvia* in Antikythira was the Garden Warbler (*S. borin*), followed by the Whitethroat (*S. communis*). In Strophades the

most common species of the genus *Sylvia* was the Whitethroat followed by the Sub-alpine Warbler (*S. cantillans*).

Among species of the genus *Phylloscopus* the most abundant was the Wood Warbler (*P. sibilatrix*), followed by the Willow Warbler (*P. trochilus*), a fact that is in accordance with the findings from Strophades. We ringed Chiffchaffs (*P. collybita*) only in spring. This was expected, because Chiffchaffs are more widespread and numerous in Greece from mid-October to more or less early April (Handrinos and Akriotis 1997).

As far as *Muscicapidae* family is concerned, the Pied Flycatcher (*Ficedula hypoleuca*) was the second more common bird that we ringed. The Spotted Flycatcher (*Muscicapa striata*) was also a quite common species on Antikythira (Table 2). Very important was the presence of the Red-breasted Flycatcher (*F. parva*) during autumn migration. The species is considered as a rare and local summer visitor, and a scarce passage migrant in Greece (Handrinos and Akriotis 1997).

The great numbers of Turtle Doves (*Streptopelia turtur*) and Golden Orioles (*Oriolus oriolus*) ringed on the island are noteworthy. As it was expected, we had more birds of both species during spring, as these species are much more common in the spring passage, particularly in western Greece for Turtle Doves (Handrinos and Akriotis 1997). So far there have been 38 ringing recoveries of Turtle Doves in Greece concerning birds ringed mainly in the Czech Republic and Hungary and some from Italy, Poland, Slovakia, Austria, Slovenia, Ukraine, Cyprus and the Republic of Chad (Handrinos and Akriotis 1997). There have been 31 ringing recoveries of Golden Orioles in Greece concerning birds ringed mainly in Hungary, Poland, the Czech Republic, Italy, S. France and Corsica, Germany, Yugoslavia, Latvia, Slovakia, and Romania (Handrinos and Akriotis 1997).

Greece favours the migratory movements of birds along the north-south axis, because of the geographical location, the shape and relief of the country (Handrinos and Akriotis 1997). The most important migration routes in Greece are: (1) the eastern route that covers the west coastline of Asia Minor and the Greek islands of eastern Aegean; (2) the route that goes through central Greece; (3) the route that covers the western coastline of Greece (Casement 1966, Kominos 2004). The two latest routes converge at Antikythira. The island is an ideal place for bird ringing and it is therefore very important to continue this project.

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Plate I-1. A net site near an olive grove and a meadow



Plate I-2. A net site in an olive grove



Plate II-1. A net site near cultivated land



Plate II-2. A view of the island. The ringing place is the area with vegetation. The building at the top of the photo is the Ornithological Station

Photos by M. Dimaki