DISTRIBUTION AND POPULATION OF THE RED-FOOTED FALCON *Falco vespertinus* ON THE AKROTIRI PENINSULA

Version 1.1, March 2009

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Report prepared by the Environment Department of the Sovereign Base Areas Administration

Contents

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1 Introduction

1.1 BACKGROUND

1.1.1 The Akrotiri Peninsula is considered to be one of the best bird migration areas in Cyprus (Iezekiel *et al.* 2004). The Peninsula is known to support a wide range of migratory species, including water birds and raptors and in 2004 the Akrotiri Peninsula and Episkopi cliffs areas were declared an Important Bird Area (IBA) by Birdlife Cyprus, a non-statutory designation promoting bird conservation (Iezekiel *et al.* 2004).

1.1.2 The Akrotiri Peninsula lies within UK Sovereign territory known as the Sovereign Base Areas. Under the 1960 Treaty of Establishment, the UK retained sovereignty over the SBAs, which cover 3% of the land area of Cyprus, a total of 98 square miles. The purpose of the SBAs is to support the military use of these areas, however as 60% of land is in private ownership and home to many Cypriot nationals, a civilian 'administration' was formed to govern the SBAs. Because the SBAs are primarily required as military bases and not ordinary dependent territories, the Administration uniquely reports to the Ministry of Defence in London, and all staff within the SBAA are MOD Civil Servants. Also under this arrangement the Administrator of the SBAs is also the Commander of British Forces Cyprus.

1.1.3 The Administration is in effect the civil government of the SBAs. Its range of interest is that of any civil government but, many of its functions, particularly in respect of the Cypriot inhabitants of the SBAs, are carried out by Republican officials on behalf of the Administration under delegated powers. The SBAA itself carries out those minimum functions directly related to the exercise of sovereignty – the enactment of legislation, maintenance of law and order and the control of immigration and development. The SBAA Environment Department is responsible meeting the SBAs obligations to sustainability and the environment, especially those that relate to nature conservation.

1.1.4 The SBAs are signatory to a number of legally binding international conventions concerned with the protection and management of natural resources and biodiversity including the Convention on the Conservation of European Wildlife and Natural Habitats, otherwise known as the Bern Convention, and the Convention on Migratory Species, otherwise known as the Bonn Convention.

1.1.5 Both the Bern and Bonn Conventions require participating Governments to strive towards strictly protecting animals, conserving or restoring the places where they live, mitigating obstacles to migration and controlling other factors that might endanger them. As part of this undertaking these conventions require Governments to give special attention to the protection of areas that are of importance for the migratory species which are appropriately situated in relation to migration routes, as wintering, staging, feeding, breeding or moulting areas.

1.1.6 To meet it's obligations towards migratory birds under these conventions the SBAA gazetted the Protection and Management of Game and Wild Birds Ordinance 2004 (PMGWB), which enables the SBAA to designate special protection areas (SPAs) in order to support the conservation of important European bird populations. In line with the requirements of Appendix O of the Treaty of Establishment between the UK and the Republic of Cyprus (1960), the PMGWB Ordinance closely mirrors that of the RoC Protection and Management of Game and Wild Birds Law 2003. Therefore although outside the jurisdiction of the European Union, the SBAs are following the principles and procedures established under EU legislation, and thus

contribute informally to the European network of protected wildlife sites known as Natura 2000.

1.2 SPECIAL PROTECTION AREA DESIGNATIONS IN THE SBAS

1.2.1 The SBAA consulted various stakeholders and interested parties on its proposals for SPAs in and around the Akrotiri Peninsula and Episkopi Cliffs in March 2008 (see Appendix A). The SPA designation proposals included areas of fruit plantations north of the Akrotiri (Phasouri plantations) on the basis they supported large numbers of migratory red footed falcons during the autumn migration period.

1.2.2 The red footed falcon is considered Near Threatened because it is experiencing a moderately rapid population decline, owing to habitat loss and degradation. It has a large global population estimated to be 300,000-800,000 individuals, but recent evidence suggests that it is undergoing large declines in parts of its range. The European population of 26,000-39,000 pairs (forming 25-49% of the global population) suffered a large decline during 1970-1990, and has continued to decline during 1990-2000, particularly in the key populations in Russia and Ukraine, with overall declines exceeding 30% in ten years (Birdlife International 2008). This species is listed on Annex 1 of the EU Birds Directive which requires the designation of SPAs to support the conservation of the species.

1.2.3 In Cyprus the red footed falcon has only been recorded as a migratory species in various areas, mainly Akrotiri, Paphos and Cape Greco.

1.2.4 A number of objections were received to the proposed designations from the local communities and landowners, mainly in relation to the inclusion of the fruit plantation land in the proposed SPAs. One of the objections raised questioned the data relating to the red footed falcons using the plantations. As a result of detailed discussions between the SBAA and local communities it was agreed that a further survey would be undertaken, specifically to consider the importance of the Phasouri plantations for red footed falcons.

1.2.5 A joint working group with representatives of the plantation owners, SBAA, Republic of Cyprus authorities and Birdlife Cyprus was established to manage the study.

1.3 OBJECTIVES OF THE STUDY

1.3.1 Determine the relative number of red footed falcons utilising the fruit plantations area north of Akrotiri salt lake during the autumn migratory season.

1.3.2 Determine the relative importance of the Phasouri plantations area to red footed falcons in context with the rest of the Akrotiri Peninsula.

1.3.3 To provide information on habitat use of red footed falcons in the plantations and elsewhere to support appropriate management.

2 Methods

2.1 SURVEY METHODS

2.1.1 The survey methods agreed between the participating parties were chosen to provide the study with objectiveness, scientific rigour, consistency, audit trail and repeatability.

2.1.2 The survey included two transects of approximately 25 Km in length each, covering the whole of the peninsula as shown in Appendix B. The broad habitats associated with Transect 1 are predominantly fruit plantations (50%) and other agricultural land (30%). Transect 1 also covered the Eucalypt plantation north of the salt lake (20%) and the former Kourris riverbed. Transect two was dominated by the Akrotiri salt lake, surrounding salt marsh (40%) and areas of pine forest, juniper mattoral and thyme phrygana within RAF Akrotiri. Transect two also included some fruit plantation and other agricultural land (10%).

2.1.3 Each transect was covered by a separate survey team consisting of at least one experienced surveyor and an assistant; surveyors are listed in Appendix C. Each team used a vehicle driven at low speed (average approx. 20 Km/h), with appropriate stops at vantage observation points. The observers used mostly binoculars to observe birds; fieldscopes were used on rare occasions.

2.1.4 Observations were recorded on standard data sheets prepared for the purposes of the survey as shown in Appendix C. The two teams communicated with each other by mobile telephones during the survey in order to be able to communicate useful information to the other team.

2.1.5 The survey was carried out every Monday, Tuesday, Thursday and Friday between 11th September and 21st October 2008. Each survey lasted between three to three and half hours. Surveys were carried out on an alternating basis: Monday afternoon, Tuesday morning, Thursday afternoon and Friday morning. Morning hours were approximately 07.00-10.00 and afternoon 16.00-19.00, with slight adaptations to changes of daylight hours. At the end of each survey the two teams had a short meeting to discuss, confirm, sign and copy the data sheets. As from 9th September, three survey teams were formed in order to reduce the workload, but the transects were not modified. After 7th October 2008, additional observations were made in an area east of Trakhoni Village, where RFF activity was detected.

2.2 DATA ANALYSES

2.2.1 Only bird count data relating to red footed falcons were included in subsequent analyses. Initial comparisons were made between the two transects which were designed to collect data on the presence of red footed falcons between two broad areas (plantation and non-plantation) on the peninsula.

2.2.2 Non-parametric tests were used to compare average daily counts of red footed falcons on each transect. Basic statistics were used to illustrate peak periods of activity across the entire peninsula during the red footed falcon migration, and to describe the observed activities of these birds.

2.2.3 All statistical tests were carried out on Minitab V.13.

2.3 CONSTRAINTS

2.3.1 The surveys were unable to cover the whole area simultaneously and therefore bird numbers given are indicative, particularly as many red footed falcons would move to different parts of the peninsula on the same day.

2.3.2 Surveys did not have the same observers every time which may have influenced the number of birds seen during any particular survey.

2.3.3 Access requirements/procedures altered timings slightly, although it is not considered that this had any significant effect on the overall results.

2.3.4 The study did not fully cover all the migration period as the Republic's Game Fund continued to observe migrating red footed falcons in and around the peninsula for the rest of the period.

2.3.5 It was difficult to determine sex and age of individual birds when they were observed flying in large groups.

3 Results

3.1 BIRD COUNT DATA

3.1.1 All red footed falcon observations made on both transects during the survey period are tabulated in Appendix D showing details of numbers, date, time, location and activity.

3.1.2 The total number of observations was 5,237, with 5,048 (96%) in transect 1 and 189 (4%) in transect 2.

3.1.3 The daily totals in the two transects are plotted on aerial photos (Appendix E) and show a wide distribution and density of red footed falcons within the agricultural areas north of the salt lake in the Fassouri and Trakhoni areas (Transect 1). The largest numbers of red footed falcons observed on Transect 2 (max 30 birds) were in the agricultural plantations immediately north east of RAF Akrotiri.

3.1.4 Appendix F presents a histogram of total (transect 1 + 2) daily red footed falcon observations during the entire survey period. Significant numbers of red footed falcons were observed initially from 26 September 2008 and continued throughout the whole period of the survey, with the peak counts being on 13th and 14th of October.

3.1.5 As the bird count data were not normally distributed, the non parametric Mann-Whitney test was carried out to compare overall bird counts of the two transects. This analysis showed a significantly higher number of red footed falcons observed on Transect 1 (n= 21 median 155 per survey) compared to Transect 2 (n = 21 median 3 per survey) over the entire survey period W= 588.5 P<0.001.

3.1.6 Extra observations undertaken by the Republic of Cyprus Game Fund after the end of the agreed survey period were not included in the analyses.

3.2 RED FOOTED FALCONS WITHIN THE PROPOSED SPA BOUNDARY

3.2.1 Out of the total 5,237 observations recorded over the entire survey period, 3,292 (63%) were located within the proposed SPA boundary. The remaining 1,945 (37%) outside the proposed SPA boundary were recorded as follows:

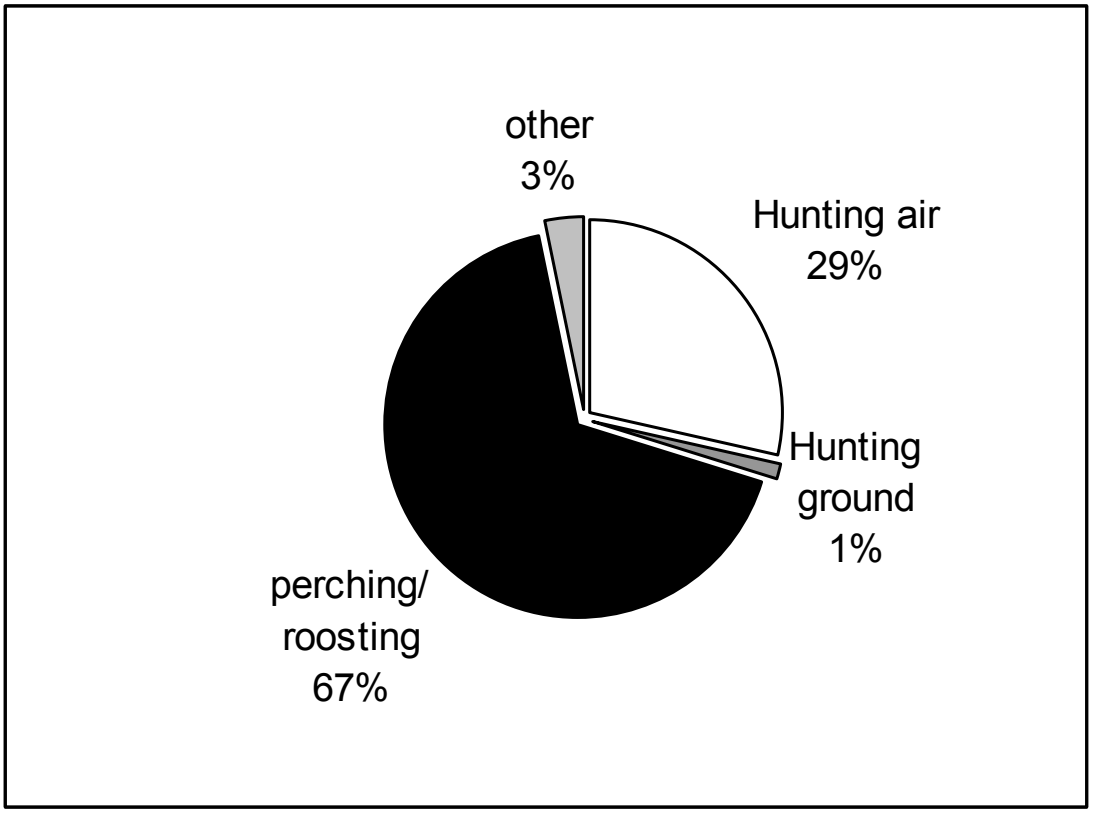
- 784 (15%) within the farms between Trakhoni Village and Akrotiri Salt Lake, within the Republic of Cyprus
- 976 (19%) within the farms east of Trakhoni Village, within the SBA
- 81 (2%) within the farms south of Akrotiri Salt Lake, within the SBA
- 96 (2%) west of Trakhoni Village and north of the proposed SPA boundary, within the SBA
- 8 (< 1%) at Akrotiri village, within the SBA

3.3 BEHAVIOUR/ACTIVITY OF BIRDS

3.3.1 Of the total number of red footed falcons counted, behaviour was recorded for 4339 (83%) of all individuals on both transects. Behaviour was recorded as either hunting in the air, hunting on the ground, perching/roosting or wires/trees or other general activity.

3.3.2 Chart 3.3.1 below shows that perching/roosting accounted for the greatest behaviour type during the survey period (67%), followed by hunting in the air (29%).

Chart 3.3.1 Proportion of behaviour types of Red Footed Falcons during the survey period



4 Discussion

4.1 POPULATION OF RED FOOTED FALCONS ON THE AKROTIRI PENINSULA

4.1.1 Given some of the limitations associated with the survey methods and the limited time frame in which the survey was undertaken, an accurate assessment of population is difficult to achieve. Any census estimation will need to take into account the possibility of double counting both within the same day and between consecutive/proximate days. Additionally the survey did not take place every day and red footed falcons are likely to have used the area without being recorded.

4.1.2 Therefore parameters that would need to be taken into account when estimating the population during this migration phase of their lifecycle would include: the average period red footed falcons stay on the peninsula before continuing their migration; the time differences between different observations in relation to the average rate of movement of the species within different areas; and any distinguishing characteristics of the birds in each observation.

4.1.3 In the absence of further detailed information on these parameters it is considered that the counts made are robust enough to provide an indicative population count of approximately 5,000 individuals.

4.2 RELATIVE IMPORTANCE OF THE FASSOURI PLANTATIONS IN CONTEXT WITH THE REST OF AKROTIRI PENINSULA

4.2.1 The comparison between the two transects provides overwhelming evidence that the fruit farm areas appear to support significantly more red footed falcons than the rest of the peninsula, suggesting that the current plantation management and general habitat is important for this species. This is further supported by the fact that the largest number of birds observed on transect 2 occurred in the isolated plantation area immediately north of RAF Akrotiri.

4.2.2 As outlined in paragraph 3.4.1, 63% of the observations were recorded inside the proposed SPA boundary. 34% of the observations outside the SPA boundary are concentrated in the fruit farms between Fassouri, Trakhoni, Limassol and Akrotiri Salt Lake, which could be considered for future extension of the SPA to the east. This area lies on both sides of the boundary between the SBA and the RoC. At this stage it would not be appropriate to designate such fragmented areas that may be important for these birds in the SBAs (i.e. plantations to east of Trakhoni) without ensuring the ecological network between the two SBA plantation areas via the plantations in the Republic (i.e. Asomatos area).

4.3 RELATIVE IMPORTANCE OF AKROTIRI PENINSULA IN CONTEXT WITH THE REST OF CYPRUS

4.3.1 Although the observations in the rest of Cyprus may not be as systematic and intensive as the ones in the survey, it is clear that Akrotiri Peninsula is by far the most important staging area for this species in Cyprus. This is evident from the comparison of the numbers recorded in the current survey with maximum numbers recorded in the past in other areas, such as 491 at Mandria, Paphos between 21 September 2004 and 18 October 2004 (Birdlife Cyprus, 2004) and 660 birds at

Cape Greco between 12 September 2005 and 21 October 2005 (Birdlife Cyprus, 2005).

4.3.2 Birdlife Cyprus observations of Red-footed falcons elsewhere in Cyprus during the period of the survey are listed in Appendix G . Although these are not part of the survey and are not systematic, they provide a rough comparison with the numbers observed at Akrotiri Peninsula. The total number of birds observed is 633, with 548 (87%) within SPA areas in the Republic of Cyprus.

4.4 HABITAT USE

4.4.1 The results of the survey confirm that the fruit farms are likely to provide an important staging habitat for this species during their migration from Europe to Africa. The relative protection from human disturbance probably accounts for the high number of roosting/perching birds observed in these areas. However it is also likely that red footed falcons take advantage of insect prey which may be supported by the current agricultural practices as over 29% of observations included birds feeding in the air.

4.4.2 Given the relatively short time period the birds use the area it is likely that adequate resting and feeding opportunities remain the most important attribute for this species. However the proximity of the large salt pan at Akrotiri at this time of year is also likely to be a factor, providing red footed falcons with thermals to assist in their migration.

5 Recommendations

5.1 SPA DESIGNATION

5.1.1 Based on the data available from the present study as well as the available historical data, it can be established that the proposed SPA boundary, which includes the Fassouri plantations, exceeds the qualifying criteria for designation as an SPA under the Protection and Management of Game and Wild Birds Ordinance 2008. It is therefore recommended that the proposed area be designated by the SBAA for its importance to migratory red footed falcons.

5.1.2 In addition, the SBAA and Republic of Cyprus will also need to consider the bird data associated with plantation land outside the current SPA boundary, both within the SBAs and the RoC that support significant numbers of migratory red footed falcons, as it is likely that these areas could also qualify for SPA designation.

5.2 MANAGEMENT

5.2.1 The results of this study suggest that the current management practices of the fruit farms support the roosting/perching and feeding requirements of red footed falcons during their migration phase.

5.2.2 Maintaining the relative isolation from human disturbance and development in these areas are likely to be important in maintaining the red footed falcon population in these areas. However, further studies for the habitat requirements of the species should be encouraged to assist in understanding how land management practices may affect these birds.

6 References

Birdlife Cyprus (2004). Cyprus Bird Report 2004

Birdlife Cyprus (2005). Cyprus Bird Report 2005

Birdlife International (2008), Species factsheet: *Falco vespertinus.* Downloaded from http://www.birdlife.org on 5/3/2009

Iezekiel S.*et al*. (2004). Proposed Important Bird Areas In Cyprus. Birdlife Cyprus. Nicosia.

APPENDICES

Appendix A Consultation on SPA consultation

From: Mr P D Draycott

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SBA/HQ/1/9/1/1

7 March 2008

CONSULTATION ON THE DESIGNATION OF SPECIAL PROTECTION AREAS WITHIN THE WESTERN SOVEREIGN BASE AREA

Dear stakeholder

Exercising my powers under Sections 6 and 7 of the Protection and Management of Game and Wild Birds Ordinance 2004 in my capacity as the Chief Officer of the Sovereign Base Areas, and having regard to written opinion from the SBAA Senior Environmental Officer, I intend to prescribe three Special Protection Areas (SPAs) within the Sovereign Base Area of Akrotiri.

The purpose of these designations is to support the conservation of internationally important bird populations and these sites will support the existing network of SPAs across Europe. As a result there will be legal obligations for those involved in the management of these areas. The legal obligations are prescribed under the Protection and Management of Game and Wild Birds Ordinance 2004.

The provisional boundaries and the extent of these areas ('Akrotiri Cliffs', 'Episkopi Cliffs' and 'Akrotiri Wetlands') are shown on the map attached at Annex A. More detailed cadastral maps of specific sections of the boundaries can be made available upon request.

The formal citation explaining what each site is and the criteria under which it qualifies for designation is attached as Annex B.
Annex C includes a short guide to the implications of the designation in the form of answers to frequently asked questions.

A list of stakeholders being consulted as part of this process is at Annex D. If you know of any other stakeholders who should be consulted, please let me know or ask them to get in touch. Also, if you are the Head of an organisation/department please inform any interested parties within your establishment. I would also ask the Chairmen of Community Councils to inform all interested land owners/users within their respective communities.

Any comments or questions, on the proposals may be directed to me c/o SO1 SHE, HQ SBAA Episkopi, BFPO 53. We will need to know your views on the proposals no later than 7th April 2008, if they are to be taken into account in the final decision making. I should like to clarify that only representations based on scientific data will be considered in this process.

I look forward to hearing from you.

ANNEXB

DESIGNATION OF SPECIAL PROTECTION AREAS
IN THE SOVEREIGN BASE AREAS

1. **Site Name**:
Akrotiri Wetlands

2. Site Administration:
Sovereign Base Areas Administration

3. Site Description and Importance
Akrotiri Wetlands site comprises the Salt Lake and other coastal lagoons and pools, halophytic wetlands, the Phassouri Marsh (reedbeds and sedgebeds) and surrounding marshes and halophilus scrubs, eucalyptus plantations and adjacent farmland.

The Salt Lake, the Phassouri Marsh and the surrounding wetlands support the largest number of water birds in Cyprus. Eighty nine species of migratory water birds use the area for wintering, roosting and foraging. Thousands of Flamingos use the Salt Lake every year for wintering (peak number over the last five years: 10,000). Hundreds of Demoiselle Cranes use the Salt Lake and the surrounding marshes in August and September for roosting (365 birds recorded in 2007). Large numbers of White storks and Common Cranes also concentrate at the wetlands (between late September and late October more than 10,000 cranes have been recorded over-flying the Akrotiri Peninsula). The wetlands are used by sandpipers of 20 species (especially Ruff and Little Stint) numbering in their thousands as a staging ground during spring migration. Akrotiri salt lake is also one of the two most important nesting sites for the Black-winged Stilt (up to 54 pairs nested there during spring 2005).

The area, and especially the eucalyptus forest and the fruit plantations, is an important site for migratory raptors. Large numbers of Red-footed Falcons (up to 830), Honey Buzzards (up to 5,000), Marsh Harriers (up to 600), Lesser Kestrels (up to 137) , and many other species of raptors pass through the area (autumn migration raptor count from 2004 - 2007 identified 25 species of raptors with a total annual population of up to 7000 birds).

The Spur-winged Plover uses the Phassouri marsh area regularly for breeding. This marsh is also the only nesting site for the globally endangered Ferruginous Duck that colonized the site since 2005, and also one of the two nesting sites for the Black-headed Yellow Wagtail on the island. Significant numbers of Shelducks overwinter at the salt lake, while large numbers of Slender-billed Gulls and Bee-eaters are passage migrants. It is one of the two nesting sites for the Kentish Plover on the island.

4. **Site holds the following birds qualifying under Directive 79/409/EEC on the Protection of Wild Birds as mirrored by the Protection and Management of Game and Wild Birds Ordinance.**

4. 1. Site holds at least 1% of a flyway or EU population of a threatened species at the EU level

Scientific name	**Common name**
Pelecanus onocrotalus	Great White Pelican
Ardea purpurea	Purple Heron
Plegadis falcinellus	Glossy Ibis
Phoenicopterus roseus	Greater Flamingo
Pernis apivorus	European Honey Buzzard
Circus aeruginosus	Western Marsh Harrier
Circus macrourus	Pallid Harrier
Falco vespertinus	Red-footed Falcon
Falco cherrug	Saker Falcon
Grus grus	Crane

Glareola pratincola	Collared Pratincole
Charandrius alexandrinus	Kentish Plover
Larus genei	Slender-billed Gull
Sterna(Gelochelidon) nilotica	Gull-billed Tern
Himantopus himantopus	Black-winged Stilt
Aythya nyroca	Ferruginous Duck
Ardeola ralloides	Squacco Heron

4.2 Site holds at least 1% of flyway of migratory species not considered threatened at the EU level.

Scientific name	**Common name**
Anthropoides virgo	Demoiselle Crane
Tadorna tadorna	Shelduck
Charadrius leschenaultii	Greater sand Plover
Calidris minuta	Little Stint
Philomachus pugnax	Ruff
Chlidonias leucopterus	White-winged Tern
Merops apiaster	European Bee-eater

4.3 Site is one of the five most important in Cyprus for a species or subspecies considered threatened in the EU.

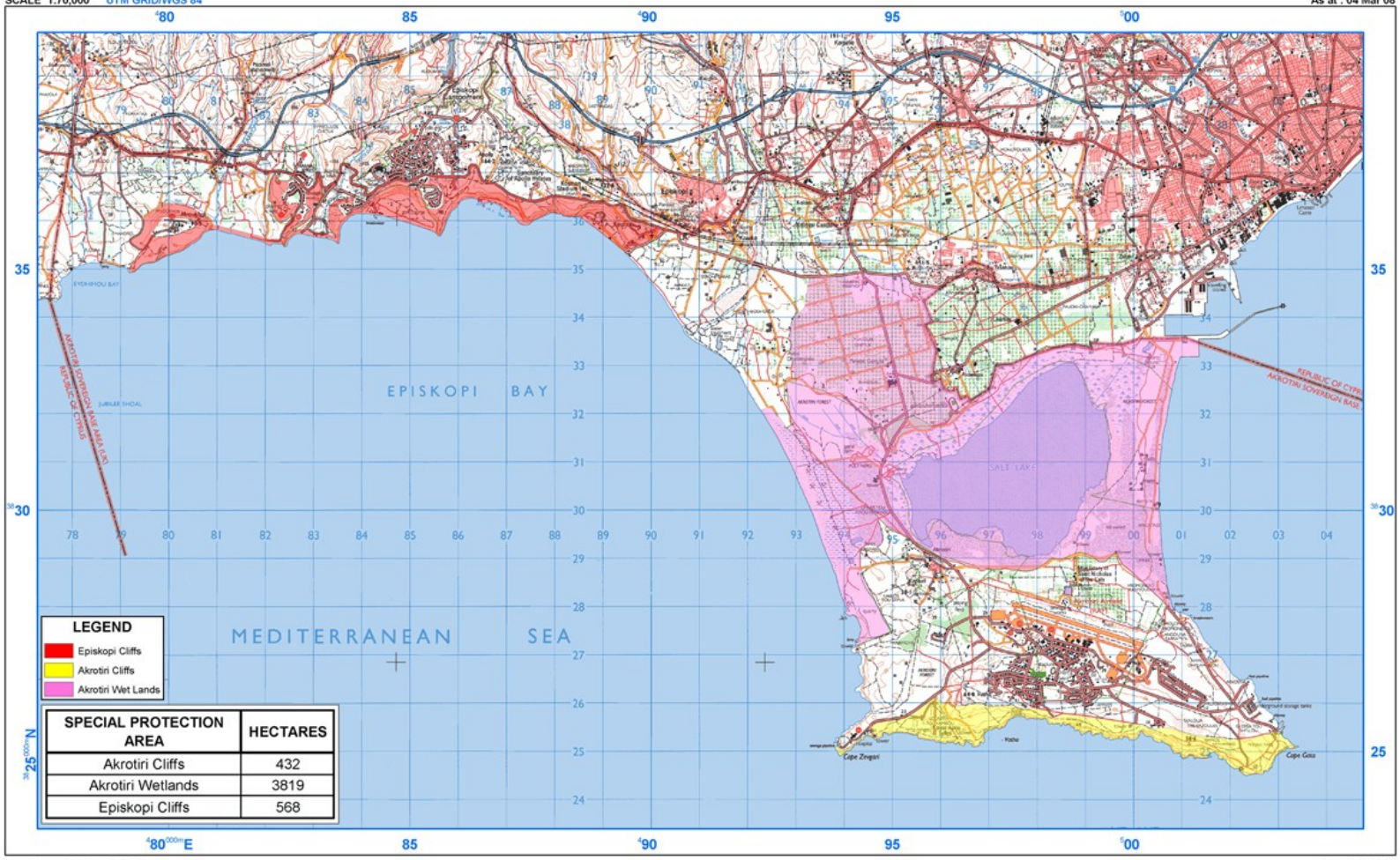
Scientific Name	**Common name**
Himantopus himantopus	Black-winged Stilt (migrant breeder)
Charadrius alexandrinus	Kentish Plover (resident breeder)
Vanellus spinosus	Spur-winged Plover (migrant breeder)
Aythya nyroca	Ferruginous Duck (migrant breeder)

4.4 Site holds 3,900- 7,300 raptors and 1,000- 6,000 cranes.

4.5 Site holds between 30,000- 40,000 waterbirds annually.

WSBA CONSULTATION MAP - SPECIAL PROTECTION AREAS

SCALE 1:70,000 UTM GRID/WGS 84 As at : 04 Mar 08



SPECIAL PROTECTION AREA	HECTARES
Akrotiri Cliffs	432
Akrotiri Wetlands	3819
Episkopi Cliffs	568

SCALE 1:70,000

0 1 2 4 6 8 10 Kilometres

Appendix B Map of the two transects

Appendix C List of surveyors

s/n	Name	Surname	Company
1	Demetrios	Papandropoulos	Consultant
2	Theodoros	Kominos	Consultant
3	Photis	Pergantis	Consultant
4	Antonia	Galanaki	Consultant
5	Zenon	Georghiou	Fassouri Plantations Co
6	Lefkios	Sergides	Environment Service
7	Marina	Xenophontos	Environment Service
8	Nicos	Kassinis	Game Fund
9	Panicos	Prastitis	Game Fund
10	Constantinos	Demetriou	Game Fund
11	Giorgos	Pitharides	Game Fund
12	Charis	Hadjistillis	Game Fund
13	Minas	Papadopoulos	Forestry Department
14	Martin	Hellicar	Birdlife Cyprus
15	Pantelis	Charilaou	SBAA
16	Martin	Colvill	SBAA
17	Thomas	Hadjikyriakou	SBAA
18	George	Maltas	SBAA
19	Varnavas	Michael	SBAA
20	Kypros	Constantinou	SBAA

				K: Kourris	**Transect**		**Activity Code**	**1- Hunting - Air**	**4 - Perching - trees**					
				A: Asomatos				**2 - Hunting - Ground**	**5 - Roosting**					
				Ak: Akrotiri	1 = Plantation			**3 - Perching - Wires**	**6 - Other**					
				B: Bishops	2 = Base									
Date	**Time**	**Inside SPA**	**Inside SBA**	**K/A/Ak/B**	**1 or 2**	**1**	**2**	**3**	**4**	**5**	**6**	**Total**	**Daily total**	**Date**
15/9/08	4:18:00 PM	n	n		1						1	1	1	15/9/08
18/9/08	6:05:00 PM	y	y		1	0.5			0.5			1	1	18/9/08
19/9/08	7:55:00 AM	n	y	K	1						1	1		
19/9/08	8:20:00 AM	y	y		1			1				1		
19/9/08	10:45:00 AM	n	y	K	1				1			1	3	19/9/08
22/9/08	5:13:00 PM	y	y		1				1			1	1	22/9/08
23/9/08	7:50:00 AM	y	y		1						1	1		
23/9/08	10:42:00 AM	y	y		1	0.5		0.5				1	2	23/9/08
25/9/08	3:26:00 PM	y	y		1						2	2		
25/9/08	5:50:00 PM	y	y		1	1						1	3	25/9/08
26/9/08	9:15:00 AM	n	y	K	1				3			3		
26/9/08	10:10:00 AM	y	y		1						5	5		
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26/9/08	10:40:00 AM	y	y		1	1						1		
26/9/08	10:50:00 AM	y	y		1			17				17	27	26/9/08
29/6/08	3:10:00 PM	y	y		1			1				1		
29/6/08	3:30:00 PM	y	y		1				8			8		
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29/9/08	4:05:00 PM	y	y		1			56	55			111		
29/9/08	4:20:00 PM	y	y		1				2			2		
29/9/08	4:30:00 PM	y	y		1			1				1	138	29/9/08
30/9/08	7:20:00 AM	y	y		1			9				9		
30/9/08	7:35:00 AM	y	y		1			48				48		
30/9/08	7:47:00 AM	y	y		1			33				33		
30/9/08	8:02:00 AM	y	y		1			19				19		

30/9/08	8:12:00 AM	y	y		1		18			18			
30/9/08	8:23:00 AM	y	y		1		42			42			
30/9/08	8:27:00 AM	y	y		1		5			5			
30/9/08	9:18:00 AM	n	n	A	1		1			1			
30/9/08	9:35:00 AM	n	y	K	1		12			12			
30/9/08	9:38:00 AM	n	y	K	1		13			13	200	30/9/08	
2/10/08	3:20:00 PM	y	y		1	20				20			
2/10/08	3:21:00 PM	y	y		1	20				20			
2/10/08	3:35:00 PM	y	y		1	2				2			
2/10/08	3:51:00 PM	y	y		1	10	10			20			
2/10/08	3:52:00 PM	y	y		1	20				20			
2/10/08	4:02:00 PM	y	y		1	3	4			7			
2/10/08	4:08:00 PM	y	y		1		1			1			
2/10/08	2:52:48 AM	y	y		1	2				2			
2/10/08	4:42:00 PM	y	y		1	50				50			
2/10/08	4:48:00 PM	y	y		1	8				8			
2/10/08	5:15:00 PM	y	y		1	2				2			
2/10/08	5:32:00 PM	y	y		1	1				1			
2/10/08	6:00:00 PM	n	n	A	1	30				30			
2/10/08	6:15:00 PM	n	n	A	1	25				25			
2/10/08	6:20:00 PM	n	n	A	1	4	3			7			
2/10/08	6:25:00 PM	n	n	A	1	20				20			
2/10/08	7:38:00 PM	y	y		1	8				8	243	2/10/08	
3/10/08	7:20:00 AM	y	y		1		1			1			
3/10/08	7:25:00 AM	y	y		1	3				3			
3/10/08	7:30:00 AM	y	y		1		119			119			
3/10/08	7:46:00 AM	y	y		1		2			2			
3/10/08	7:50:00 AM	y	y		1		5			5			
3/10/08	7:58:00 AM	y	y		1				14	14			
3/10/08	8:08:00 AM	y	y		1			4		4			
3/10/08	8:12:00 AM	y	y		1		150			150			
3/10/08	9:05:00 AM	n	n	A	1	4				4			
3/10/08	9:15:00 AM	n	n	A	1			1		1			
3/10/08	9:25:00 AM	n	n	A	1	10				10			
3/10/08	9:29:00 AM	n	n	A	1		3			3			
3/10/08	9:32:00 AM	n	n	A	1	2				2			
3/10/08	9:43:00 AM	y	y		1		3			3			
3/10/08	9:44:00 AM	n	y	K	1		1			1	322	3/10/08	
6/10/08	3:30:00 PM	y	y		1				25	25			
6/10/08	3:45:00 PM	y	y		1		3			3			
6/10/08	4:00:00 PM	y	y		1				38	38			
6/10/08	4:25:00 PM	y	y		1				14	14			
6/10/08	5:15:00 PM	y	y		1		18			18			

6/10/08	6:14:00 PM	n	n	A	1						10	10	108	6/10/08	
7/10/08	7:13:00 AM	y	y		1			7				7			
7/10/08	7:22:00 AM	y	y		1			4	4			8			
7/10/08	7:32:00 AM	y	y		1			2				2			
7/10/08	7:36:00 AM	y	y		1				4			4			
7/10/08	7:40:00 AM	y	y		1			7				7			
7/10/08	7:45:00 AM	y	y		1			13				13			
7/10/08	7:50:00 AM	y	y		1			4				4			
7/10/08	7:55:00 AM	y	y		1		6	7				13			
7/10/08	8:10:00 AM	y	y		1				16			16			
7/10/08	8:20:00 AM	y	y		1			2				2			
7/10/08	8:43:00 AM	y	y		1				3			3			
7/10/08	9:15:00 AM	n	n	A	1	21						21			
7/10/08	9:30:00 AM	n	y	A	1			12	11			23			
7/10/08	9:37:00 AM	n	y	A	1			8				8	131	7/10/08	
9/10/08	3:17:00 PM	y	y		1	1						1			
9/10/08	3:27:00 PM	n	y	K	1	1						1			
9/10/08	3:40:00 PM	y	y		1	1						1			
9/10/08	3:55:00 PM	y	y		1			20				20			
9/10/08	4:15:00 PM	y	y		1			2				2			
9/10/08	4:35:00 PM	y	y		1			13	13			26			
9/10/08	5:05:00 PM	y	y		1	34						34			
9/10/08	5:35:00 PM	n	n	A	1	12						12			
9/10/08	6:00:00 PM	n	n	A	1	24						24			
9/10/08	6:15:00 PM	n	n	A	1	25						25			
9/10/08	6:27:00 PM	n	y	A	1			5	5			10	156	9/10/08	
10/10/08	7:20:00 AM	y	y		1				50			50			
10/10/08	7:25:00 AM	y	y		1						1	1			
10/10/08	7:31:00 AM	n	y	K	1					1		1			
10/10/08	7:30:00 AM	y	y		1				3			3			
10/10/08	7:50:00 AM	y	y		1			10				10			
10/10/08	8:10:00 AM	y	y		1			108	22			130			
10/10/08	8:25:00 AM	n	y	K	1				1			1			
10/10/08	8:35:00 AM	n	n	A	1				2			2			
10/10/08	8:50:00 AM	n	n	A	1				2			2			
10/10/08	9:00:00 AM	n	n	A	1	4						4			
10/10/08	9:05:00 AM	n	n	A	1			7				7			
10/10/08	9:14:00 AM	n	y	A	1			14				14			
10/10/08	9:30:00 AM	n	y	A	1			15	14			29	254	10/10/08	
13/10/08	3:10:00 PM	y	y		1			10				10			
13/10/08	3:15:00 PM	y	y		1	50						50			
13/10/08	3:15:00 PM	y	y		1	40						40			

13/10/08	3:15:00 PM	n	y	K	1	60					60			
13/10/08	3:17:00 PM	n	n	A	1	100					100			
13/10/08	3:20:00 PM	y	y		1			2			2			
13/10/08	3:30:00 PM	y	y		1	30			15		45			
13/10/08	3:35:00 PM	y	y		1				27		27			
13/10/08	3:45:00 PM	y	y		1			30			30			
13/10/08	3:50:00 PM	y	y		1				15		15			
13/10/08	4:00:00 PM	y	y		1			9			9			
13/10/08	4:20:00 PM	y	y		1			42			42			
13/10/08	4:40:00 PM	y	y		1	100					100			
13/10/08	4:45:00 PM	y	y		1	50					50			
13/10/08	5:00:00 PM	y	y		1				15		15			
13/10/08	5:09:00 PM	y	y		1			100			100			
13/10/08	5:25:00 PM	y	y		1	200					200			
13/10/08	5:40:00 PM	n	y	A	1			15			15			
13/10/08	5:43:00 PM	n	y	A	1	45					45			
13/10/08	6:20:00 PM	n	n	A	1	20					20	975	13/10/08	
14/10/08	7:20:00 AM	y	y		1				1		1			
14/10/08	7:28:00 AM	y	y		1			65	18		83			
14/10/08	7:32:00 AM	y	y		1				8		8			
14/10/08	7:50:00 AM	y	y		1			1	4		5			
14/10/08	7:55:00 AM	y	y		1				38		38			
14/10/08	8:10:00 AM	y	y		1		20	240	40		300			
14/10/08	8:16:00 AM	y	y		1				150		150			
14/10/08	8:38:00 AM	y	y		1			170	30		200			
14/10/08	9:05:00 AM	n	y	A	1		15	87	13		115			
14/10/08	9:15:00 AM	n	y	A	1			85	10		95			
14/10/08	7:12:00 AM	n	n	A	1				150		150			
14/10/08	8:50:00 AM	n	y	A	1			130			130			
14/10/08	9:34:00 AM	y	y		1					2	2			
14/10/08	9:36:00 AM	n	n	A	1	150					150	1427	14/10/08	
16/10/08	3:30:00 PM	y	y		1	2					2			
16/10/08	3:40:00 PM	y	y		1			20	20	15	55			
16/10/08	3:55:00 PM	y	y		1			8			8			
16/10/08	4:10:00 PM	y	y		1			2			2			
16/10/08	4:30:00 PM	n	n	A	1					1	1			
16/10/08	5:08:00 PM	n	n	A	1			23			23			
16/10/08	5:25:00 PM	n	n	A	1			57			57			
16/10/08	5:40:00 PM	n	y	A	1			180			180	328	16/10/08	
17/10/08	7:15:00 AM	y	y		1			7			7			

17/10/08	7:20:00 AM	n	y	K	1				1			1		
17/10/08	1:12:00 PM	y	y		1			42	2			44		
17/10/08	8:15:00 AM	y	y		1			31				31		
17/10/08	8:25:00 AM	y	y		1			21				21		
17/10/08	8:45:00 AM	n	y	A	1			100	5			105		
17/10/08	9:00:00 AM	n	n	A	1	9		6	10			25		
17/10/08	9:05:00 AM	n	n	A	1				10			10		
17/10/08	9:05:00 AM	n	n	A	1			15				15	259	17/10/08
20/10/08	3:10:00 PM	y	y		1	5		17				22		
20/10/08	3:25:00 PM	y	y		1				7			7		
20/10/08	3:46:00 PM	y	y		1	14		9				23		
20/10/08	4:03:00 PM	y	y		1			56				56		
20/10/08	4:43:00 PM	n	n	A	1			2				2		
20/10/08	5:03:00 PM	n	y	A	1			163				163	273	20/10/08
21/10/08	7:18:00 AM	y	y		1			13				13		
21/10/08	7:23:00 AM	y	y		1				5			5		
21/10/08	7:30:00 AM	y	y		1				24			24		
21/10/08	7:34:00 AM	y	y		1				7			7		
21/10/08	8:05:00 AM	y	y		1			7				7		
21/10/08	8:13:00 AM	y	y		1				10			10		
21/10/08	8:25:00 AM	y	y		1			65				65		
21/10/08	9:05:00 AM	n	n	A	1				18			18		
21/10/08	9:15:00 AM	n	n	A	1				2			2		
21/10/08	9:27:00 AM	n	n	A	1				1			1		
21/10/08	9:40:00 AM	n	y	A	1			44				44	196	21/10/08
Total Tr. 1												5048		
19/9/08	7:33:00 AM	y	y		2				1			1	1	19/9/08
22/9/08	3:35:00 PM	n	y	B	2				2			2	2	22/9/08
23/9/08	7:25:00 AM	n	y	B	2						7	7	7	23/9/08
26/9/08	9:05:00 AM	y	y		2						1	1	1	26/9/08
29/9/08	3:33:00 PM	n	y	B	2	3						3	3	29/9/08
30/9/08	7:37:00 AM	n	y	AK	2					1		1		
30/9/08	9:18:00 AM	n	y	B	2						1	1	2	30/9/08
2/10/08	3:22:00 PM	y	y		2	1						1		
2/10/08	3:48:00 PM	n	y	B	2		2					2		
2/10/08	4:23:00 PM	n	y	B	2	1						1	4	2/10/08
3/10/08	7:35:00 AM	y	y		2			1				1		
3/10/08	7:54:00 AM	y	y		2		1					1		
3/10/08	8:02:00 AM	n	y	B	2					31		31		
3/10/08	8:28:00 AM	n	y	AK	2					1		1		

3/10/08	9:50:00 AM	n	y	B	2			3				3			
3/10/08	10:20:00 AM	n	y	B	2	1						1	38	3/10/08	
6/10/08	6:10:00 PM	n	y	B	2					8		8	8	6/10/08	
7/10/08	7:08:00 AM	y	y		2					12		12			
7/10/08	8:11:00 AM	y	y		2					1		1			
7/10/08	9:01:00 AM	y	y		2					1		1	14	7/10/08	
9/10/08	5:20:00 PM	y	y		2			2				2	2	9/10/08	
10/10/08	9:50:00 AM	n	y	B	2				4			4	4	10/10/08	
13/10/08	3:40:00 PM	y	y		2				2			2			
13/10/08	4:40:00 PM	y	y		2			3				3			
13/10/08	5:14:00 PM	n	y	B	2	5						5			
13/10/08	5:17:00 PM	n	y	B	2				5			5			
13/10/08	4:15:00 PM	y	y		2						1	1	16	13/10/08	
14/10/08	7:45:00 AM	n	y	AK	2					6		6			
14/10/08	8:07:00 AM	n	y	B	2					1		1			
14/10/08	8:17:00 AM	n	y	B	2					5		5			
14/10/08	7:15:00 AM	y	y		2			45				45			
14/10/08	7:20:00 AM	y	y		2			7				7			
14/10/08	9:36:00 AM	n	y	B	2						1	1			
14/10/08	9:49:00 AM	y	y		2						1	1	66	14/10/08	
17/10/08	7:25:00 AM	n	y	B	2					1		1	1	17/10/08	
20/10/08	3:45:00 PM	y	y		2	6						6	6	20/10/08	
21/10/08	7:43:00 AM	y	y		2			14				14	14	21/10/08	
total Tr. 2												189	189		

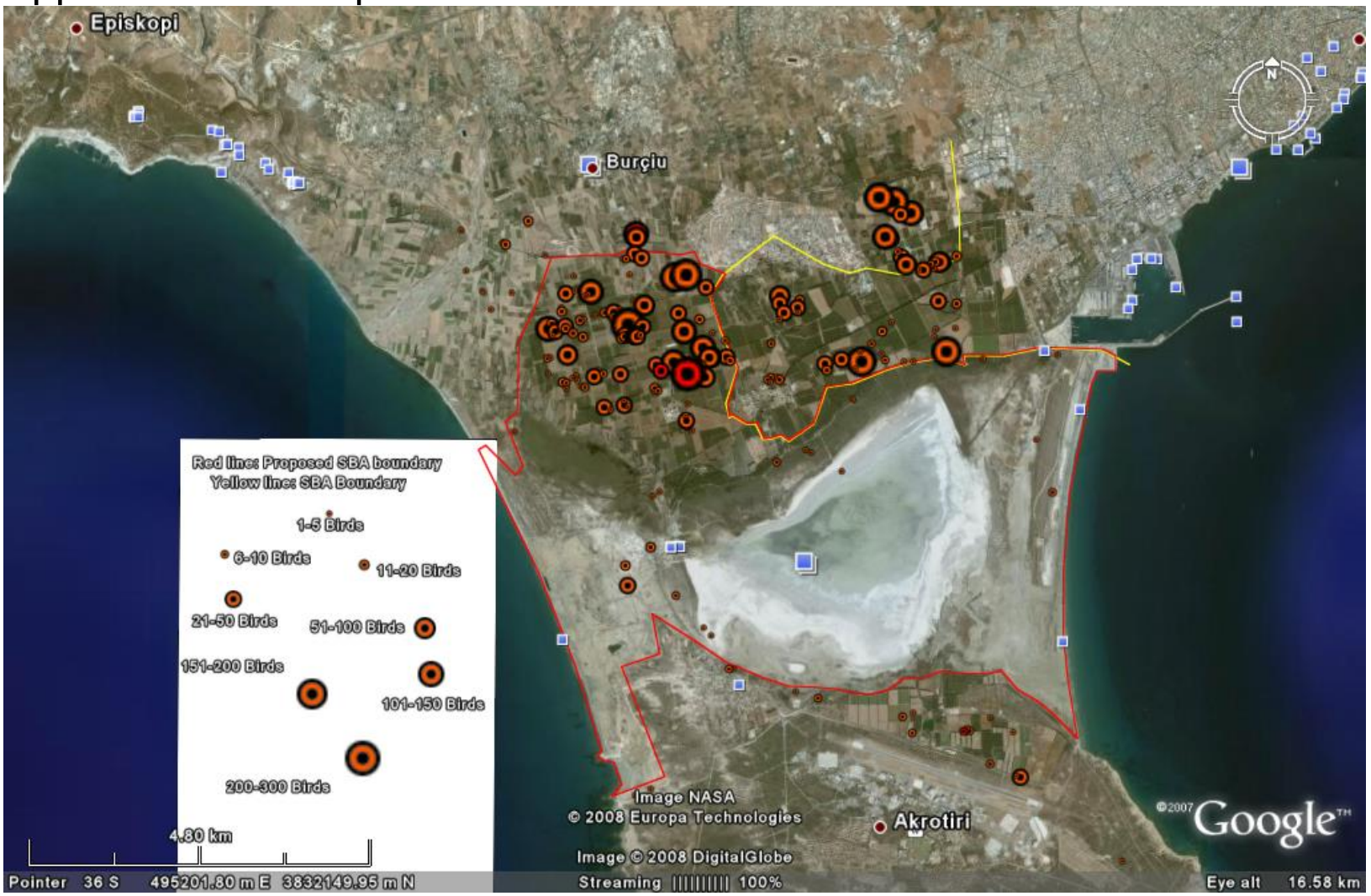
Totals by activity			1277	44	2809.5	897.5	69	140	5237		
%			24	1	54	17	1	3	100		
Date	Trans. 1 total	Trans. 2 total	Total 1+2		Air hunt	Ground hunt	Perch wires	Perch trees	Roost	Other	Total
15/09/2008	1	0	1								
18/09/2008	1	0	1								
19/09/2008	3	1	4								

22/09/2008	1	2	3
23/09/2008	2	7	9
25/09/2008	3	0	3
26/09/2008	27	1	28
29/09/2008	138	3	141
30/09/2008	200	2	202
02/10/2008	243	4	247
03/10/2008	322	38	360
06/10/2008	108	8	116
07/10/2008	131	14	145
09/10/2008	156	2	158
10/10/2008	254	4	258
13/10/2008	975	16	991
14/10/2008	1427	66	1493
16/10/2008	328	0	328
17/10/2008	259	1	260
20/10/2008	273	6	279
21/10/2008	196	14	210
Total	5048	189	5237
%	96	4	

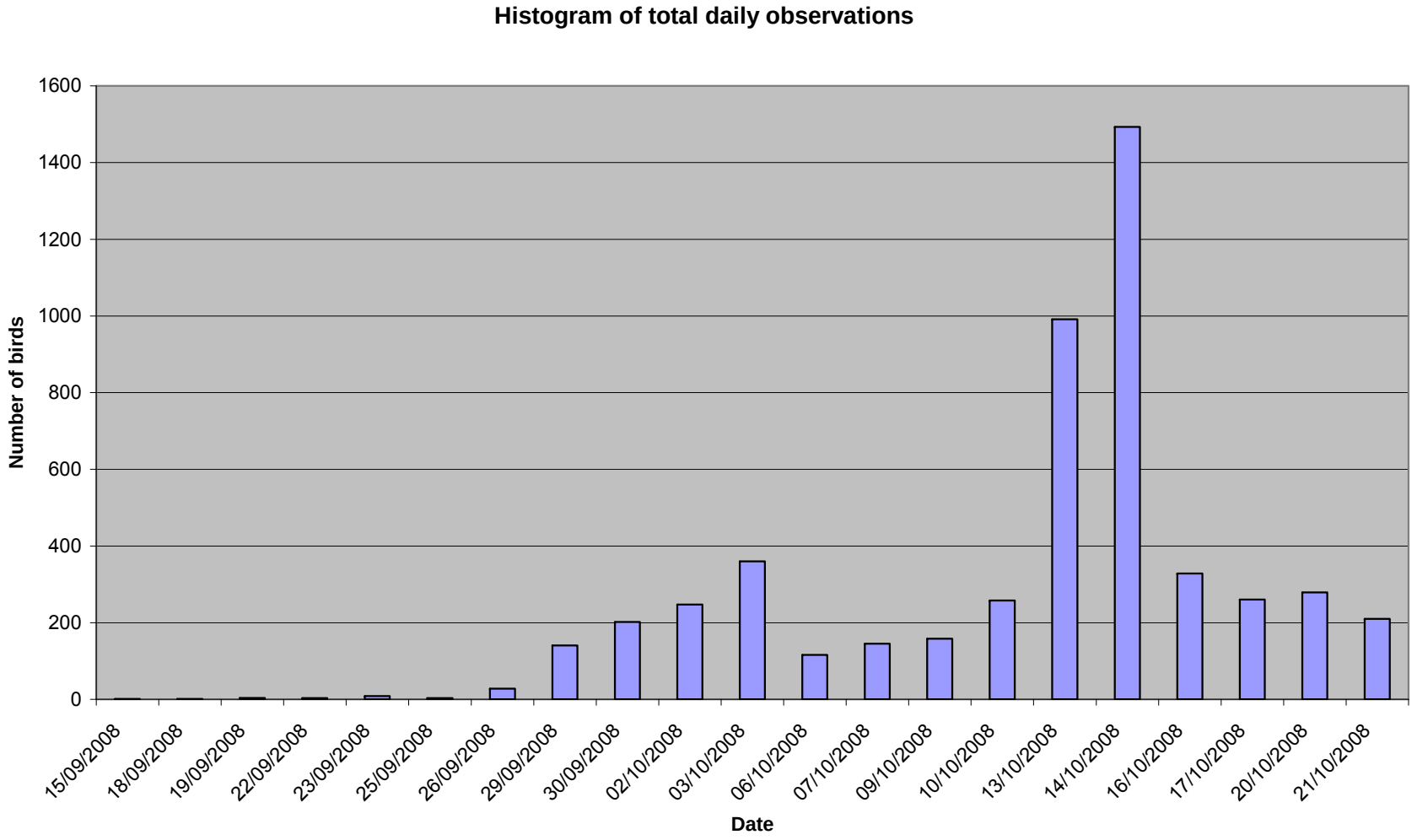
Outside SPA		%
Trakh-ASL	784	15

East Trakh	976	19
South ASL	81	2
West Trakh	96	2
Akrotiri Vil	8	0
Total	1945	37
Inside SPA	3292	63
Total	5237	100

Appendix E Spatial distribution of records



Appendix F Histogram of observations (daily totals)



Appendix G Unpublished raw data from Birdlife Cyprus

Location	Observations elswere in Cyprus by BC Date	Number	Within SPA
Tsada Hills	09/09/2008	1	1
Mandria	26/09/2008	1	1
Armou Hills	28/09/2008	5	5
Asprokremmos Dam	29/09/2008	3	3
Achelia	30/09/2008	37	37
Mandria	30/09/2008	57	57
Armenochori	01/10/2008	4	
Asprokremmos Dam	01/10/2008	8	8
Lower Xeros Valley	01/10/2008	50	50
Lower Xeros Valley, Mandria	01/10/2008	50	50
Paphos Sewage Plant	01/10/2008	26	
Finikas	02/10/2008	30	30
Tsada Hills	02/10/2008	27	27
Asprokremmos Dam	03/10/2008	4	4
Mandria	03/10/2008	13	13
Mandria	03/10/2008	125	125
Tsada Hills	03/10/2008	5	5
Tsada Hills	03/10/2008	7	7
Armou Track	04/10/2008	28	28
Neo Chorio	04/10/2008	3	3
Akhna area	05/10/2008	2	2
Phassouri Plantations	05/10/2008	3	
Larnaca Sewage Works	06/10/2008	3	3
Paphos Sewage Plant	08/10/2008	1	
Kivisili Fields	10/10/2008	7	
Meneou Pools	10/10/2008	1	1
Kiti	11/10/2008	4	
Agia Varvara Soak Away Beds	12/10/2008	30	30
Ezousas Pools, Acheleia	12/10/2008	5	
Tsada track	12/10/2008	1	1
Armou Hills	13/10/2008	2	
Asprokremmos Dam	13/10/2008	3	3
Mandria Beach	13/10/2008	12	12
Finikas	16/10/2008	5	5
Mandria	16/10/2008	4	4
Tsada Hills	16/10/2008	7	7
Ezousas Pools, Achelia	17/10/2008	3	3
Oroklini Marsh	18/10/2008	1	1
Esouza Pools	20/10/2008	18	18
Ezousas Pools, Achelia	20/10/2008	3	3
Mia Milia Water Treatment Plant	20/10/2008	2	
Paphos Sewage Fields	20/10/2008	2	
Paphos Sewage Plant	20/10/2008	18	
Ezousas Pools, Achelia	23/10/2008	1	1
Paphos Sewage Plant	23/10/2008	3	
Stavrokonnou	01/11/2008	8	
	Totals	633	548
	%		87