



ACTION PLAN FOR OROKLINI LAKE, CYPRUS

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This Action Plan has been produced as part of the project “Restoration and Management of Oroklini Lake SPA (CY6000010) in Larnaca, Cyprus” which is co-funded by the LIFE financial instrument of the European Union

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List of abbreviations

BTO: British Trust for Ornithology

FRVs: Favourable Reference Values

IBA: Important Bird Area

RSPB: Royal Society for the Protection of Birds (BirdLife United Kingdom)

SAC: Special Area of Conservation

SCI: Site of Community Importance

SPA: Special Protection Area

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1. INTRODUCTION

Oroklini Lake SPA & SCI

Oroklini Lake lies to the northeast of Larnaca city, and includes Mediterranean salt meadows, scrub, reed beds and other aquatic and marginal vegetation, with highly variable open water bodies. Oroklini Lake, together with some surrounding farmland and an area to the north of the A3 motorway, falls within an Important Bird Area (IBA: 93 ha; Fig. 1). Part of the site (57 ha) is classified as a Special Protection Area (SPA: CY6000010) under the Birds Directive (2009/147/EC; Fig. 2) for two Annex I bird species that nest here in significant numbers: the Black-winged Stilt, *Himantopus himantopus*, (for which Oroklini Lake is the most important nesting site in Cyprus) and Spur-winged Lapwing, *Vanellus spinosus*, (for which Cyprus has more than 50% of the EU breeding population). A slightly smaller area (53 ha) is also designated as a Site of Community Interest (SCI: CY6000011) under the Habitats Directive for the wetland ecosystem and especially for its halophytic marsh vegetation, the *Nerio-Tamaricetea* and *Securinegion tinctoriae* types of habitats (Fig. 2) and its importance of hosting flora and fauna species. The site will be classified as a Special Area of Conservation (SAC) under the Habitats Directive in 2015.

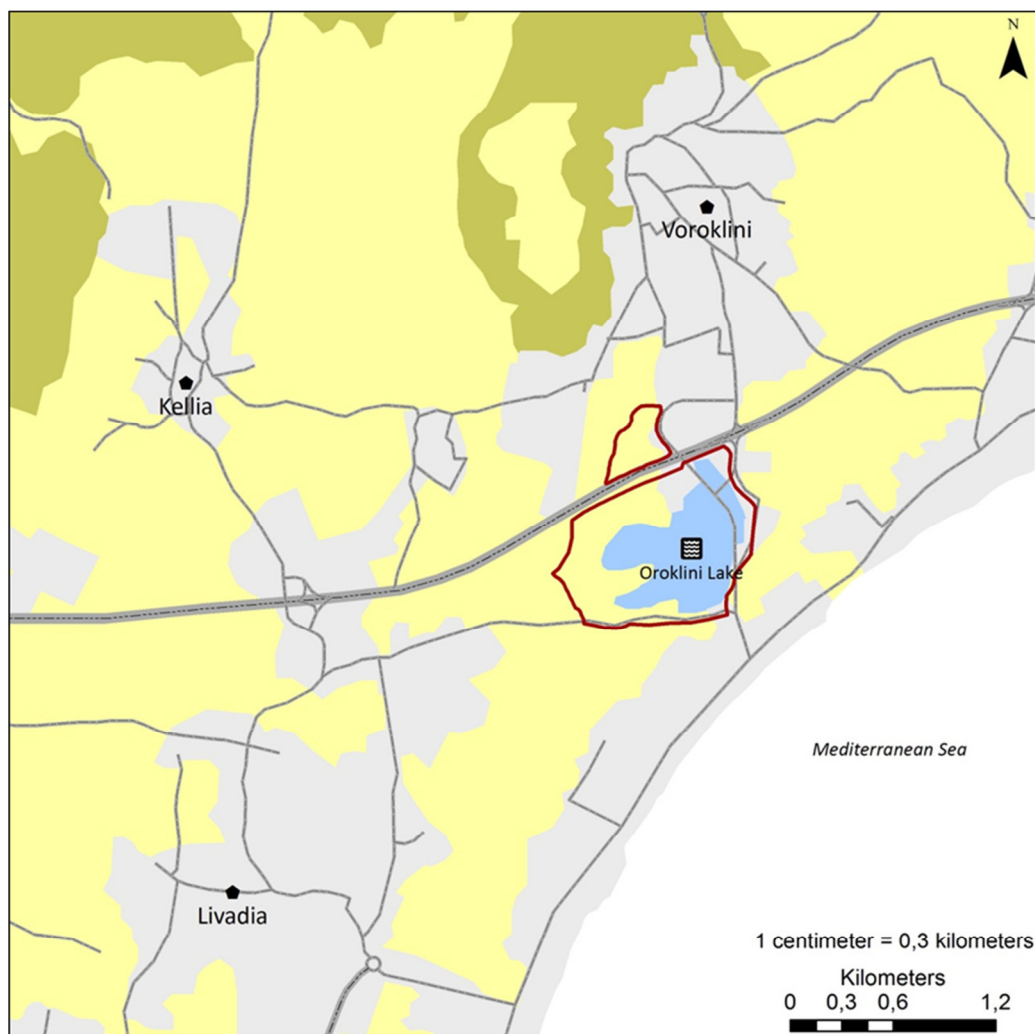


Figure 1. The Important Bird Area (red outline) at Oroklini Lake.

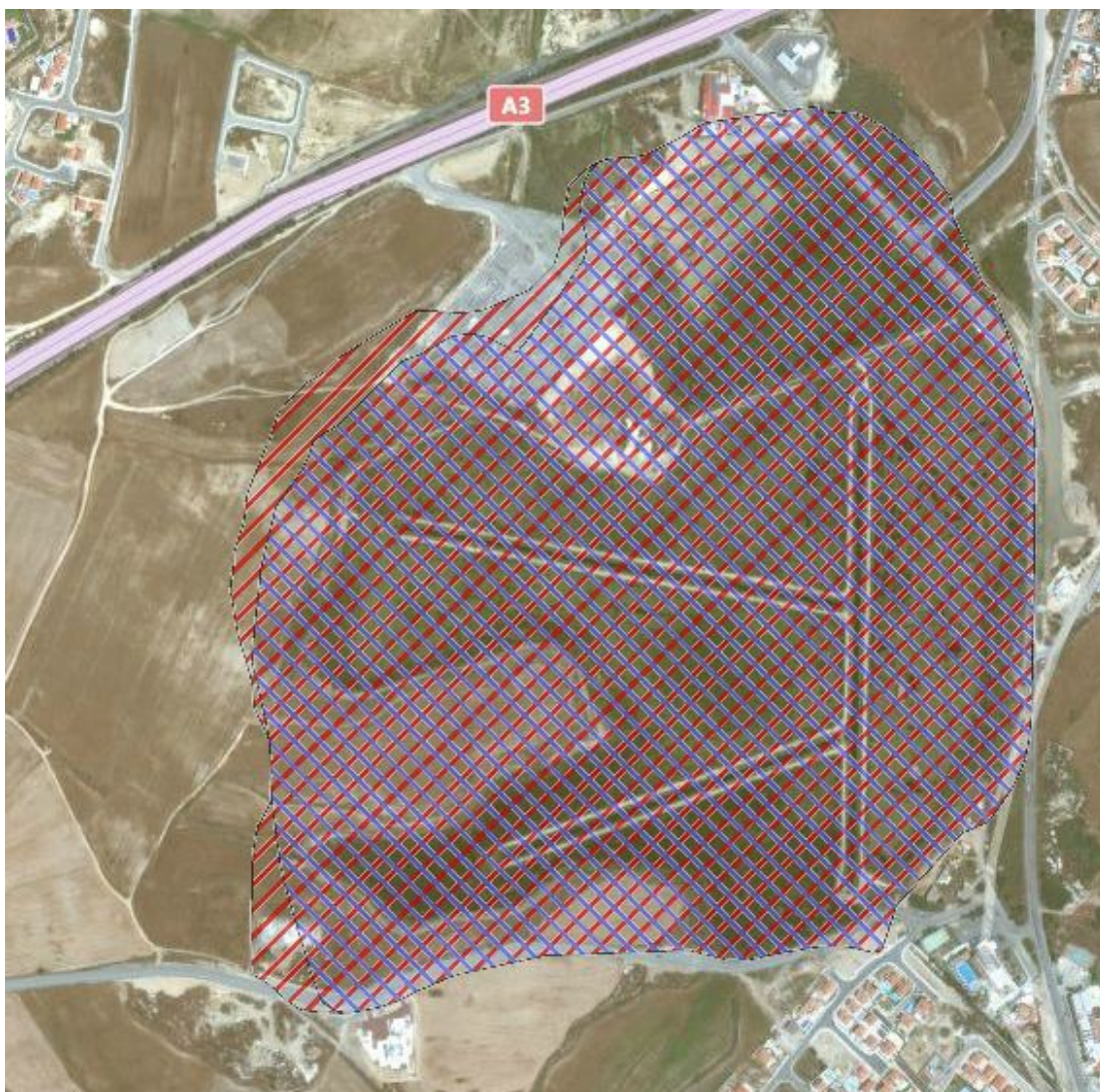


Figure 2. The areas included within the Special Protection Area (red) and Site of Community Importance (blue) at Oroklini Lake.

The Annex I species Stone curlew (*Burhinus oedicanus*), Kentish plover (*Charadrius alexandrinus*), Common tern (*Sterna hirundo*) and Little tern (*Sternula albifrons*) also breed, or have bred at the site. In addition, a further 58 Annex I species visit during migration (in spring or autumn) or overwinter at the site, and there are a further 36 regularly occurring migratory species not on Annex I, especially waterbirds. In total, about 190 species have been recorded at the site. Red-crested pochard *Netta rufina* nested successfully between 2009 and 2013; these were the first nesting records for the species on the island (BirdLife Cyprus 2010, 2011, 2012, Kassinis *et al.* 2010, and unpublished records). Cattle egret nested successfully for the first time in 2014, with a colony of around 45 nests present in spring 2014.

Outside of the Special Protection Area (SPA), there is remnant wetland habitat north of the Larnaca–Agia Napa A3 motorway, and east of the road which runs south from the motorway, on the east side of the main reserve area (within the IBA, Fig 1). This additional wetland area, along with other wetland and agricultural land within the catchment for the lake is of significance to the designated wetland as they could be important for some of the species discussed here

(particularly Spur-winged lapwing, *V. spinosus*) and potentially for others, especially if management is complementary to that outlined below.

Prior to 2012 the Oroklini wetland faced a number of threats, including water shortages and sudden fluctuations in water level (due to the naturally dry climate of Cyprus, compounded through a lack of water management), encroaching invasive non-native plants (*Acacia saligna* & *Parkinsonia aculeate*) and disturbance by people accessing the site. This disturbance was mainly by walking or driving through the site and use of an illegal flea market (bazaar) which was built on the boundary of the lake, partially within the SPA. A lack of public awareness about the importance of the site and its protection status has also led to the site being seen as a threat to the community (associated with Avian Flu, mosquitos and flooding) rather than a special area worthy of protective management. The LIFE Oroklini project (LIFE10NATCY716) was implemented (2012 – 2014) to address these pressures through a combination of research, direct conservation work and public awareness initiatives. The significant changes on the site, summarised in the 'history of recent management' section below, have led to more effective control of site conditions (especially water levels and access control), better enabling effective management of the site for key breeding species, migratory and wintering birds.

This Action Plan is therefore written as part of the LIFE Oroklini project to complement the existing Management Plan (which focuses primarily on the SCI features) and provide current management guidance incorporating recommendations from reports completed through the LIFE Oroklini project which weren't available when the Management Plan was written. Management actions described in this Action Plan took into consideration the SCI features and therefore management prescriptions were designed not to negatively impact on SCI.

This Action Plan will highlight threats which may potentially have an impact on the key breeding species and provide clear, concise, practical management objectives which can be carried out to enable the site to attain and maintain the SPA in Favourable Conservation Status whilst taking into account other important species and communities. As an objective of the LIFE Oroklini project the production of this Action Plan has been agreed by the project partners (Game and Fauna Service, Birdlife Cyprus, Environment Department, Department of Forests and Voroklini Community Council) and the details of the plan have been discussed with and approved by all project partners as well as the Water Development Department. Information has been taken from other reports (detailed in the Bibliography) compiled through the LIFE Oroklini project and key management recommendations have been incorporated into the management objectives laid out in this plan.

2. DESCRIPTION OF CURRENT SITUATION

2.1 HABITAT & HYDROLOGY

The 93 hectare site is comprised of Mediterranean salt meadow, with halophytic vegetation, tamarix, reedbed, scrub and other marginal vegetation, with highly variable areas of open water resulting from the highly seasonal rainfall inputs to the lake. The lake is approx. 2m above sea level, has largely impermeable substrates with saline groundwater and rainwater inputs to the system resulting in seasonal fluctuations in both levels and salinity, from largely freshwater in winter to saline or hypersaline in summer. More information specific to the hydrology can be found in the Water Management Plan (M. Self, April 2014), in the report 'Determination of important hydrological features for Oroklini Lake' (I.A.CO, 2012) and in Ichthyological Study for Oroklini Lake, Cyprus (S. Zogaris, 2014).

The majority of the 3.5km² catchment for the lake (figure 3) shows indications of marsh vegetation; however, it has been developed over the last 2 decades with housing, businesses and roads. This development is believed to contribute to the inputs to the lake through increased run-off into the lake, particularly of grey water which will carry nutrients and pollutants into the system (I.A.CO Ltd, 2014).

The extent of the SCI, 53ha, is shown on Figure 2 in blue. These halophytic communities, which have a restricted distribution and low coverage on Cyprus, consist of three types of Annex I Habitat types whereas in Oroklini wetland includes the rare species *Suaeda aegyptiaca* which is only found in salt marshes and margins of salt lakes within the Larnaca-Oroklini area and is therefore of importance in the context of the island.

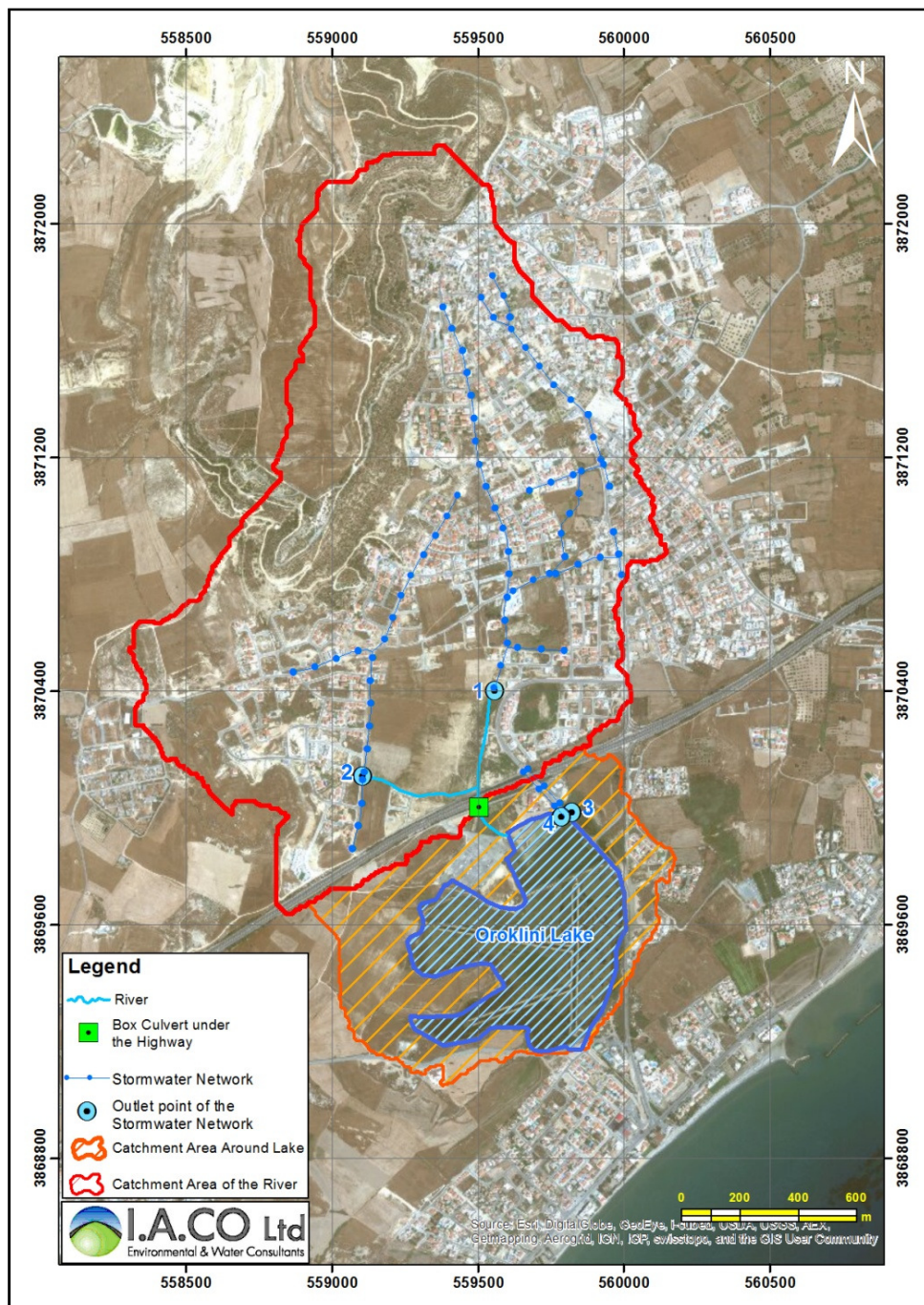


Figure 3: Outline of the catchment area for Oroklini Lake as included in the catchment water quality study by I.A.CO Ltd. Red line is 2,7km² of almost totally urbanized catchment area and orange outline is 0,5km² catchment area around the lake.

2.2 IMPORTANT SPECIES

2.2.1 CURRENT BREEDING ACTIVITY

Through the LIFE Oroklini project the Game and Fauna Service have been monitoring the important breeding birds at Oroklini Lake since 2012. The data from this monitoring (shown in Table 1) gives an indication of the current breeding activity at the site.

Table 1: Important species for Oroklini Lake SPA

Species	Population Size *	Status	Comments
Breeding birds			
Black francolin (<i>Francolinus francolinus</i>)		IBA qualifying species	<50 pairs in Oroklini IBA. According to the estimate from the IBA report.
Red-crested pochard (<i>Netta rufina</i>)	3-6 pairs		First breeding record in Cyprus at Oroklini 2009
Night heron (<i>Nycticorax nycticorax</i>)		Annex I	Probable breeder
Cattle egret (<i>Bubulcus ibis</i>)	45 nests		First bred 2014
Stone curlew (<i>Burhinus oedicephalus</i>)	1 pair	Annex I	
Black-winged stilt (<i>Himantopus himantopus</i>)	14 pairs	SPA qualifying species. Annex I	Most important breeding site in Cyprus
Spur-winged lapwing (<i>Vanellus spinosus</i>)	8 pairs	SPA qualifying species. Annex I	Most important breeding site in Cyprus in 2014
Little-ringed plover (<i>Charadrius dubius</i>)	1-2 pairs		One of few breeding sites in Cyprus
Kentish plover (<i>Charadrius alexandrinus</i>)	1 pair	Annex I	
Common tern (<i>Sterna hirundo</i>)		Annex I	Sporadic breeding
Little tern (<i>Sternula albifrons</i>)		Annex I	Sporadic breeding
Yellow wagtail (<i>Motacilla flava feldegg</i>)			One of the best sites in Cyprus
Cyprus wheatear (<i>Oenanthe cyprica</i>)		Annex I	
Non-breeding birds			
Little egret (<i>Egretta garzetta</i>)		Annex I	Breeding confirmed in 2007
Squacco heron (<i>Ardeola ralloides</i>)		Annex I	
Little bittern (<i>Ixobrychus minutus</i>)		Annex I	
Great Egret (<i>Ardea alba</i>)		Annex I	
Purple heron (<i>Ardea purpurea</i>)		Annex I	

Bittern (<i>Botaurus stellaris</i>)		Annex I	
Glossy ibis (<i>Plegadis falcinellus</i>)		Annex I	
Flamingo (<i>Phoenicopterus roseus</i>)		Annex I	
Avocet (<i>Recurvirostra avosetta</i>)		Annex I	
White stork (<i>Ciconia ciconia</i>)		Annex I	
Black Stork (<i>Ciconia nigra</i>)		Annex I	
Spoonbill (<i>Platalea leucordia</i>)		Annex I	
Ruddy Shelduck (<i>Tadorna ferruginea</i>)		Annex I	
Ferruginous duck (<i>Aythya nyroca</i>)		Annex I	
Merlin (<i>Falco columbarius</i>)		Annex I	
Lesser kestrel (<i>Falco naumanni</i>)		Annex I	
Red-footed falcon (<i>Falco vespertinus</i>)		Annex I	
Peregrine falcon (<i>Falco peregrinus</i>)		Annex I	
Osprey (<i>Pandion haliaetus</i>)		Annex I	
Black kite (<i>Milvus migrans</i>)		Annex I	
Honey Buzzard (<i>Pernis apivorus</i>)		Annex I	
Pallid harrier (<i>Circus macrourus</i>)		Annex I	
Montagu's harrier (<i>Circus pygargus</i>)		Annex I	
Marsh harrier (<i>Circus aeruginosus</i>)		Annex I	
Hen harrier (<i>Circus cyaneus</i>)		Annex I	
Long-legged buzzard (<i>Buteo rufinus</i>)		Annex I	
Common crane (<i>Grus grus</i>)		Annex I	
Spotted crane (<i>Porzana porzana</i>)		Annex I	
Little crane (<i>Porzana parva</i>)		Annex I	

Baillon's crake (<i>Porzana pusilla</i>)		Annex I	
Ruff (<i>Philomachus pugnax</i>)		Annex I	
Golden plover (<i>Pluvialis apricaria</i>)		Annex I	
Great snipe (<i>Gallinago media</i>)		Annex I	
Wood sandpiper (<i>Tringa glareola</i>)		Annex I	
Mediterranean gull (<i>Larus melanocephalus</i>)		Annex I	
Slender-billed gull (<i>Larus genei</i>)		Annex I	
Great black-backed gull (<i>Larus minutus</i>)		Annex I	
Sandwich tern (<i>Sterna sandvicensis</i>)		Annex I	
Black tern (<i>Chlidonias niger</i>)		Annex I	
Whiskered tern (<i>Chlidonias hybridus</i>)		Annex I	
Nightjar (<i>Caprimulgus europaeus</i>)		Annex I	
Kingfisher (<i>Alcedo atthis</i>)		Annex I	
Roller (<i>Coracias garrulus</i>)		Annex I	
Short-toed lark (<i>Calandrella brachydactyla</i>)		Annex I	
Woodlark (<i>Lullula arborea</i>)		Annex I	
Tawny pipit (<i>Anthus campestris</i>)		Annex I	
Bluethroat (<i>Luscinia svecica</i>)		Annex I	
Moustached warbler (<i>Acrocephalus melanopogon</i>)		Annex I	
Cyprus warbler (<i>Sylvia melanothorax</i>)		Annex I	
Ruppell's warbler (<i>Sylvia rueppelli</i>)		Annex I	
Barred warbler (<i>Sylvia nisoria</i>)		Annex I	
Semi-collared flycatcher (<i>Ficedula semitorquata</i>)		Annex I	
Collared flycatcher (<i>Ficedula albicollis</i>)		Annex I	

Masked shrike (<i>Lanius nubicus</i>)		Annex I	
Lesser grey shrike (<i>Lanius minor</i>)		Annex I	
Red-backed shrike (<i>Lanius collurio</i>)		Annex I	
Cretzschmar's bunting (<i>Emberiza caesia</i>)		Annex I	
Ortolan bunting (<i>Emberiza hortulana</i>)		Annex I	
Fish			
European eel (<i>Anguilla anguilla</i>)	hundreds	Critical (Global IUCN)	One of the most important sites in Cyprus

*3 year mean 2012-14

2.2.2 NESTING SUCCESS OF SPUR-WINGED LAPWING AND BLACK-WINGED STILT

As part of the LIFE Oroklini project, the Game and Fauna Service carried out a three year study over the breeding seasons 2012 - 2014 to estimate the predation impact and nesting success of Spur-winged lapwing and Black-winged stilt.

A total of 19 nests were monitored, 12 Spur-winged lapwing and 7 Black-winged stilt. Ten or 53% of these hatched at least one chick (which is the criterion for a successful nesting). Out of the 19 nests, 47% failed (41% Spur-winged lapwing and 57% Black-winged stilt nests monitored) as a result of predation (66%), unidentified loss (22%) or 11% human disturbance. Poor breeding success in 2013 and 2014 was mainly due to decrease water during nesting period that left many nests exposed and vulnerable, but also due to increased predation in 2014. The table below gives the nesting success for the two species during years 2012 – 2014.

Full details can be found in the Predation report prepared by the Game and Fauna Service (in Greek with a summary in English).

Table 2: Nesting success for Spur-winged lapwing and Black-winged stilt for 2012 - 2014

Year	2012		2013		2014	
Species	Total nests monitored	Success %	Total nests monitored	Success %	Total nests monitored	Success %
Spur-winged lapwing	4	50%	4	50%	4	75%
Black-winged stilt	2	100%	1	100%	4	0%
9 (total of 2 species and total in 3 years) out of 19 were destroyed.						



Figure 4: Map showing current extent of reeds (*Phragmites australis*), Oroklini Lake 2014.

2.3 COMPARTMENTATION

This Action Plan is applicable to the whole SPA, as well as containing information and recommendations relevant to the wider catchment for the SPA, especially the designated IBA. Much of the area has been compartmentalised according to hydrological control, as shown in the diagram below (figure 5). These are referred to throughout the Action Plan, although it should be noted there is no compartment referring to the agricultural land adjacent to the lake or to the wider catchment.

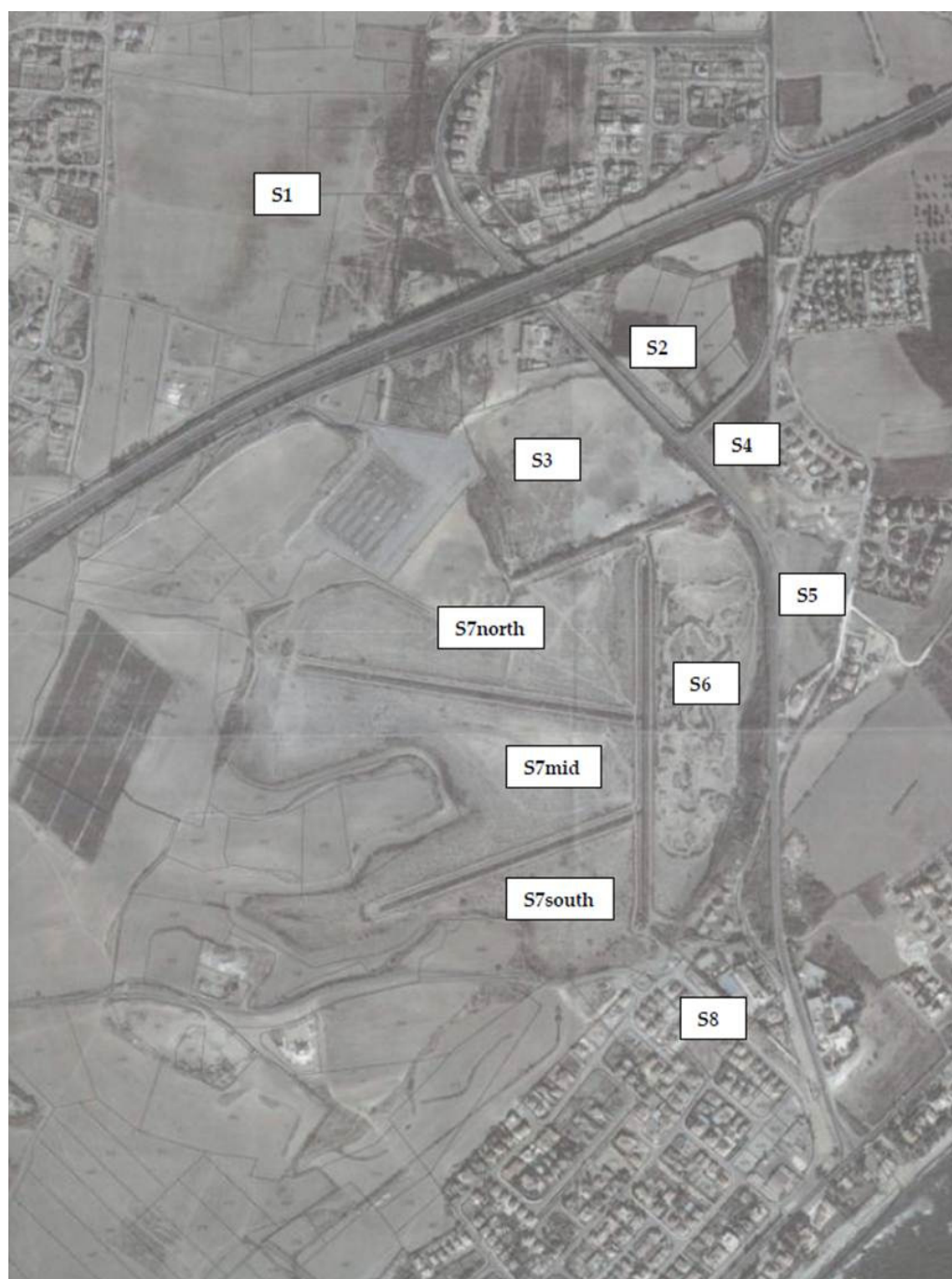


Figure 5: Map showing compartments of Oroklini SPA

2.4 HISTORY OF RECENT MANAGEMENT

The LIFE Oroklini project (2012-14) enabled significant restoration work to be completed within the lake and SPA area:

The embankment holds water in S3 (figure 5) and separates this compartment from S6 & S7. The weir, at the eastern part of the embankment was revealed by the removal of dense vegetation in October 2012 and repaired in November 2013. The east wing wall of the weir had been partially removed in 2008 by members of the local community due to fears about the threat of Avian Flu. A section of the embankment was also restored following the identification of a partial slump in one section.

In November 2012 work started to remove non-native acacia trees from the site. Initial treatment was to fell and remove the tree, then pesticide treatment was applied by stem injection or painting of the freshly cut stump depending on the size of the tree. This work was followed up in winters of 2013 and 2014 to ensure any regeneration was treated early.

Areas were planted up with native trees (mainly Tamarisk trees) and shrubs following the removal of non-native acacias in December 2012, to help provide natural screening for the lake and main breeding areas.

Land which had been used as an illegal flea market (bazaar) was restored to bare earth (removal of waste, concrete, premix and gravel) in December 2012/January 2013, extending the available breeding habitat for various species, including qualifying Spur-winged lapwing and Annex I Stone-curlew.

The extent of the government owned land was fenced (December 2013) in order to restrict public access to the site. This was considered to be vital to reduce disturbance to breeding bird species. Spur-winged lapwing, Little tern and Kentish plover are known to be particularly vulnerable to disturbance.

Around the same time scrapes and islets were created within compartment S7 to provide raised nesting areas and damp feeding areas particularly for Spur-winged lapwing and Little tern, but will also benefit other bird species including Black-winged stilt, Kentish plover, Common tern and Little ringed plover. The scrapes are connected with the main (deep) drain which separates S6 & S7 meaning that they are supplied with water when the compartment is otherwise dry, increasing the feeding opportunities for wading birds. Later in September 2014, another nesting islet was created within compartment S3 targeting mainly the Black-winged stilt.

As part of the LIFE Oroklini project two water control structures were installed; A sluice at the south-end of the main ditch to control water levels in S6 and S7, and a pipe with valve was installed into the embankment to allow water levels in S3 to be drawn down in very wet springs.

Reeds were cut in S3 in September 2014. This allowed water to spread more freely into the area. The reeds began to grow back in less than one month.

A hide and information kiosk with an observation platform over it were erected and improvements made to car parking facilities adjacent to the information kiosk over the winter of 2013-14. In March 2014 an Information Kiosk Officer was appointed by the Voroklini Community Council as part of the LIFE Oroklini project to meet visitors at the information kiosk and increase understanding locally of the importance of the SPA.

In September 2014 the Game and Fauna Service completed a predation report focusing on nest monitoring for the Spur-winged lapwing and the Black-winged stilt during 2012 – 2014. Overall, 19 nests were under surveillance (6 in 2012, 5 in 2013, 8 in 2014) from which 12 of SWL (4 each year), 7 of BWS (2 in 2012, 1 in 2013, 4 in 2014). For the Spur-winged lapwing 12 nests were monitored (2012-2014). From these 2 were predated by foxes and Hooded crows (17%). For the Black-winged stilt 7 nests were monitored (2012-2014). From these 4 were predated by foxes and Hooded crows (57%). Black-winged stilt nested in variable numbers during the 3-year monitoring, numbers varied from 21-23 pairs and 31 chicks in 2012, 36 pairs but very poor nesting success in 2013 (11 chicks), and 12-14 pairs in 2014 with only 9 chicks. Poor breeding success in 2013 and 2014 was mainly due to decrease water during nesting period that left many nests exposed and vulnerable, but also due to increased predation in 2014. SWL nesting numbers were less variable; 8 pairs producing 7 chicks in 2012, 6 pairs producing 6 chicks in 2013 and 8-12 pairs producing 10 chicks in 2014. For the full details please see the predation report (full report is in Greek with an English summary).

3. OBJECTIVES FOR OROKLINI LAKE

3.1 DEFINING FAVOURABLE CONSERVATION STATUS

Favourable Conservation Status of the site is predominantly dependent on the breeding population of the two qualifying species of the site: Black-winged stilt (*H. himantopus*) and Spur-winged lapwing (*V. spinosus*). It is also stated, however, that the populations of other Annex I species (Stone curlew, Kentish plover, Common tern & Little tern) and the SCI plant community should not be negatively impacted.

To assist with evaluating the conservation status of these, and therefore the site, Favourable Reference Values (FRV) have been agreed and adopted for the site (as part of the LIFE Oroklini project) and are shown in Table 2. Details of the process and conclusions can be found in 'Setting Favourable Reference Values for Annex I bird species at Oroklini marsh' (Tye *et al*, 2014).

The wetland ecosystem structure and function along with habitat types and flora species has to be in a Favourable Conservation Status under Habitat's Directive. Halophytic habitats, along with *Nerio-tamaracea* communities (Annex I) and the rare species *Sueda aegyptiaca* should be managed and maintained in Favourable Conservation Status.

Table 3: Favourable Reference Values (FRV) for important bird species at Oroklini Lake

Species	FRV agreed for lake Oroklini, 2014
Black-winged stilt (<i>Himantopus himantopus</i>)	60 pairs
Spur-winged lapwing (<i>Vanellus spinosus</i>)	15 pairs
Stone curlew (<i>Burhinus oedicephalus</i>)	1-2 pairs
Kentish plover (<i>Charadrius alexandrinus</i>)	4 pairs
Common tern (<i>Sterna hirundo</i>)	Not set
Little tern (<i>Sternula albifrons</i>)	Not set

3.2 CONDITION OF FEATURES INFLUENCING MANAGEMENT AND MAIN FACTORS AFFECTING THEM

Feature	Attribute	Current	Target	Main factors	Target for main factors	Comments
Black-winged stilt (<i>Himantopus himantopus</i>)	Number of breeding pairs	24 (3 year mean)	60	Extent of habitat	No development within Natura 2000 areas No encroachment of tall vegetation around main breeding areas	Reeds and tamarisk extent not to increase above 2014 coverage (figure 4). Care not to impact on the main three type of the halophytic communities as well as on the <i>Nerio-Tamaricetea</i> and <i>Securinegion tinctoriae</i> Habitat type. Using 30cm boards above outlet weir base level
	Productivity	Unknown	Not set	Quality of habitat	Attain max water level in S3, and 18.90cm above sea level in S6 & S7 by end March. No illegal dumping No disturbance / hunting	
				Fluctuations in water levels	No significant increase in water level through breeding season.	Remove boards early when there are late spring rains to avoid flooding at this time of year. Storage of max water in S3 in late winter Maintain inputs to lake through catchment No direct input of freshwater to lake except natural rainfall - this reduction in salinity has potential to damage invertebrate food sources Reduce nutrient input of grey water and agricultural run-off
				Poor feeding opportunities – drought / increased salinity	Maintain muddy edges No significant changes to salinity	
				-water quality	Must be classified 'Good' using Water Framework Directive criteria.	

				Disturbance	No illegal dumping No oil/petrochemical input to lake No disturbance	Establish emergency plan to deal with fuel spills on adjacent roads No public access to areas with breeding activity. Breeding monitoring should be carried out from vantage points. Good practise to minimise tracks to active nests during monitoring. Evidence from 7 nests monitored (2012-2014) showed 4 were predated by foxes and Hooded crows (57%).
				Predation by foxes and Hooded crow	No significant impact of predation on qualifying species	
Feature	Attribute	Current	Target	Main factors	Target for main factors	Comments
Spur-winged lapwing (<i>Vanellus spinosus</i>)	Number of breeding pairs	7 (3 yr mean)	15	Extent of habitat	No development within Natura 2000 areas No encroachment of tall vegetation around main breeding areas Maintain islands in S7 with no/little vegetation cover	Reeds and tamarisk extent not to increase above 2014 coverage (figure 4). Care not to impact on the main three type of the halophytic communities as well as the <i>Nerio-Tamaricetea</i> and <i>Securinegion tinctoriae</i> Habitat type.
				Quality of habitat	Attain max water level in S3, and 18.90cm above sea level in S6 & S7 by end March. No illegal dumping No disturbance/ hunting	Using 30cm boards above outlet weir base level
	Productivity	Unknown	Not set	Fluctuations in	No significant increase in	Remove boards early when

				water levels	water level through breeding season.	there is significant rainfall in April, May or June to avoid nests being flooded
				Poor feeding opportunities – drought / significant salinity fluctuations	At least one field adjacent to lake to have irrigated crop of clover / alfalfa annually Attain max water level in S3, S6 & S7 by end Mar Full connectivity of water throughout S6 & S7 Muddy edges to channels through S7 through to late June No significant changes to salinity	Using boards in sluice 18.90cm above sea level Do not allow channels to fill with sediments Only possible with max water storage in late winter
				- water quality	Must be classified 'Good' using Water Framework Directive criteria. No illegal dumping No oil/petrochemical input to lake	No direct input of freshwater to lake except natural rainfall - this reduction in salinity has potential to damage invertebrate food sources Reduce nutrient input of grey water and agricultural run-off
				Disturbance	No disturbance	Establish emergency plan to deal with fuel spills on adjacent roads No public access to areas with breeding activity. Breeding monitoring should be carried out from vantage points as far as possible. Good practise to minimise tracks to active nests during monitoring.
				Predation by	No significant impact of	Evidence from the 12 nests

				foxes and Hooded crow	predation on qualifying species	monitored (2012-2014) showed 2 were predated by foxes and Hooded crows (17%). Also evidence of fox predation on adult Spur-winged lapwing.
Feature	Attribute	Current	Target	Main factors	Target for main factors	Comments
Kentish plover (<i>Charadrius alexandrinus</i>)	Number of breeding pairs		Present	Extent of habitat for nesting and feeding	No development within SPA No encroachment of tall vegetation around main breeding areas Little / no vegetation cover on islands in S6 & S7	Reeds and tamarisk extent not to increase above 2014 coverage (figure 4). Care not to impact on the main three type of the halophytic communities and <i>Nerio-Tamaricetea Securinegion tinctoriae</i> Habitat type.
	Productivity	Unknown	Not set	Quality of habitat	Attain max water level in S3, and 18.90cm above sea level in S6 & S7 by end March. No encroachment of tall vegetation around main breeding areas Little / no vegetation cover on islands in S6 & S7 No disturbance	Using 30cm boards above outlet weir base level Reeds and tamarisk extent not to increase above 2014 coverage -with care not to impact on halophytic community.
				Fluctuations in water levels	No significant increase in water level through breeding season.	Remove boards early when there is significant rainfall in April, May or June to avoid nests being flooded
				Poor feeding opportunities – drought / increased salinity	Attain max water level in S3, S6 & S7 by end Mar Maintain water connectivity throughout S6 & S7	Using boards in sluice 18.90cm above sea level Do not allow channels to fill with sediments

				-water quality	Maintain muddy edges to channels through S7 through to late June Must be classified 'Good' using Water Framework Directive criteria. No illegal dumping No oil/petrochemical input to lake	Only possible with max water storage in late winter Reduce nutrient input of grey water and agricultural run-off Establish emergency plan to deal with fuel spills on adjacent roads
				Disturbance	No disturbance	No public access to areas with breeding activity. Breeding monitoring should be carried out from vantage points
				Predation	No significant predation by foxes or avian predators	Not quantified, but some camera evidence of fox activity on the site Minimise tracks to active nests
Feature	Attribute	Current	Target	Main factors	Target for main factors	Comments
Common & Little tern (<i>Sterna hirundo</i> & <i>Sternula albifrons</i>)	Number of breeding pairs		Present	Extent suitable habitat for nesting	Bare islands / shingles are present in Mar / April	
	Productivity		Not set	Fluctuation in water levels Disturbance	No fluctuations through breeding season No disturbance	Remove boards early when there is significant rainfall in April, May or June to avoid nests being flooded No public access to areas with breeding activity. Breeding monitoring should be carried out from vantage points
Feature	Attribute	Current	Target	Main factors	Target for main factors	Comments
Stone curlew	Number of		Present	Extent suitable	Maintain areas of bare,	At least one field adjacent

(Burhinus oedicnemus)	breeding pairs			habitat for nesting and feeding Collision with power lines / fences	disturbed ground / short vegetation No overland powerlines	to lake to be ploughed in February / March, or kept as short or patchy grass vegetation in spring Marking of powerlines is currently planned, replacement with underground lines is preferred
	Productivity		>0.7 fledging	Disturbance Predation	No disturbance through breeding season No significant predation by foxes or avian predators	Liaise with neighbouring farmers to influence practices especially to restrict use of machinery while adults are incubating / there are young chicks Not quantified, but some camera evidence of fox activity on the site
Feature	Attribute	Current	Target	Main factors	Target for main factors	Comments
Black francolin (Francolinus francolinus)	Number of breeding pairs	Present	Present	Extent suitable habitat for nesting and feeding	Maintain areas of bare, disturbed ground / short vegetation	Arable crops adjacent to lake not to be harvested before 1 st August
	Productivity			Disturbance	No disturbance through breeding season	Liaise with neighbouring farmers to influence practices especially restrict use of machinery while adults are incubating / there are young chicks
Feature	Attribute	Current	Target	Main factors	Target for main factors	Comments
Migratory and wintering birds	Abundance			Lack of water	Lake levels rise naturally through autumn & winter – sluice boards and other water management structures set to	Lack of information of response of lake to rainfall currently means. Required levels of sluices cannot be

				Collision with powerlines	hold water from September No overland powerlines	prescribed here - rainfall and water level data will inform future management Marking of powerlines is currently planned, replacement with underground lines is preferred
				Collision with vehicles Disturbance	Traffic calming measures installed on roads No public access Minimal disturbance from site staff No hunting on SPA	Monthly waterbird counts to be completed from vantage points
Feature	Attribute	Current	Target	Main factors	Target for main factors	Comments
European Eel (<i>Anguilla anguilla</i>)	Population	>100	Not set	Drought Poor water quality Barriers to movement	Maintain & create refugia which will retain water throughout year Must be classified 'Good' using Water Framework Directive criteria. No illegal dumping No oil / petrochemical seepage into lake Eels able to move freely through site	Reduce nutrient load of grey water and agricultural run-off Establish emergency plan to deal with fuel spills on adjacent roads Provide fish ladders / alternative access at all physical barriers Emergency protocol for movement of stranded eels in drought conditions to be followed.

3.3 CONSERVATION OBJECTIVES

1. Maintain Special Protection Area (SPA) in favourable conservation status through maintenance of suitable breeding habitat for qualifying species and other key breeding species

Species targets

- Maintain 60 (5 year mean) breeding pairs Black-winged stilt
- Increase to 15 (5 year mean) breeding pairs Spur-winged lapwing
- Kentish plover, Stone curlew, Common tern and Little tern breed annually
- Maintain populations of Black francolin, Red-crested pochard and Cattle egrets

Habitat targets

- Maintain extent of current wetland area, no increase to extent of reedbed (see fig 4) or tamarisk within wetland area
- Water level in S7 at 18.90m above sea level (30cm above sluice weir) at end March and does not significantly increase Apr – Jun. No artificial input of freshwater directly to lake Apr – Sept
- Channel network (inflow, outflow, deep channels and shallow scrapes around islets) maintained at current extent and inter-connected to maintain muddy edges throughout as site dries
- Improve water quality, especially of water flowing into the site, to ensure lake quality meets 'Good' status through Water Framework Directive criteria
- Site resilient in drought years
- No building development within SPA
- Management in place to ensure future development in catchment area does not excessively impact on water regime of site. Urbanization pressures of the catchment should not increase further.
- No disturbance. No access to site except by authorised personnel
- Bare / very short vegetation maintained in S6 & S7
- Neighbours to co-ordinate complementary management including provision of ploughed bare ground and irrigated clover / alfalfa annually

Overview of management actions

- Maintain dam, weir, sluice and outlet in good working order. No more than 5cm silt allowed to collect in sluice or outlet – clear with drainage rods and flowing water as required
- When heavy late spring rain is predicted reduce height of sluice boards or other water management structure to avoid excess flooding in S3, S6 & S7
- Control mature tamarisk on rotation from embankment (e.g. a fifth of the embankment to be cut annually)

- Clear aquatic vegetation from weir between S3 & S6 at least once in 5 years and from deep channels as necessary, by mechanical means. All material to be removed from site
- Clear vegetation from islands on rotation to ensure there are always at least 5 in S7 and 2 in S6 with no, or very low, vegetation
- Maintain fence, perimeter shrubs and signs to restrict public access to site
- Control non-native reeds (see recommended methods Appendix 2)
- Working with neighbours, restrict machinery use in agricultural fields between 1st April & 30th June.
- No use of pesticides or artificial fertilisers on any fields adjacent to Oroklini Lake or within catchment of SPA
- Conduct further study of catchment taking into account current hydrological control, focussing on if there is a need to import water in drought years and how to achieve this without affecting the SCI community

Overview of monitoring actions

- Complete annual breeding wader surveys according to standard methodology (adapted from Gilbert et al, 98 found in Appendix 1 or similar)
- Monitor productivity of Black-winged stilt & Spur-winged plover annually
- Monitor nest outcome via cameras as available
- Monitor predator populations & impact on productivity
- Monitor reedbed and scrub extent annually
- Monitor water levels and conductivity monthly. Take monthly readings of conductivity in both major hydrological units in the site. One reading at the weir in S3, the other at the outlet sluice in S6/S7
- Monitor water quality quarterly (1st October, 1st January, 1st April & 1st July) : Chloride (mg/l), pH, Total Nitrogen (mg/l), Oxidised Nitrogen (mg/l), Ammonia (mg/l), Total Phosphorus (mg/l)
- Monitor integrity of infrastructure including dam, weir, sluice, outlet, perimeter fence and hedge regularly
- Obtain temperature and rainfall data
- Inspect the sluice outlet pipe annually, in autumn.

2. Maintain presence of migratory and wintering populations of Annex I and non-Annex I species and maintain 53ha SCI halophytic marsh communities in favourable condition

Species targets

- Key non-breeding birds listed previously present through winter, or whilst on migration

Habitat targets

- Water levels allowed to naturally increase from September and maintained through winter
- No Disturbance. No access to site except by authorised personnel
- Maintain 53ha designated SCI halophytic marsh community (this includes all Annex I Habitat Types of Habitat Directive) in Favourable Conservation Status
- No invasive non-native plant species present
- No increase to extent of reed (*Phragmites australis*) as mapped in 2014 (figure 4).
- No physical hazards on flight paths

Overview of management actions

- Sluice boards inserted 1st September, water management structures between S3 & S7 closed to allow water to collect in S3
- Remove all *Acacia salinia* & *Parkinsonia aculeate* regeneration
- Annual programme to manage reed in S3, S6 & S7
- Plan for removal of powerlines on and in vicinity of IBA
- Reduce traffic speed adjacent to site

Overview of monitoring actions

- Monthly counts of water birds
- Annual survey for *Acacia salinia* & *Parkinsonia aculeate* regrowth
- Annual survey of reedbed extent
- Evaluate how system responds to rainfall

3. Maintain presence of European eel (*Anguilla anguilla*) in open water areas

Species target

- Presence of European eel

Habitat target

- Freshwater refugia available in periods of drought
- No barriers to movement
- Improve water quality, especially of water flowing into the site, to ensure lake quality meets 'Good' status through Water Framework Directive criteria
- Site resilient in drought years

Overview of management actions

- Create and maintain areas of deeper water which will remain wet in periods of drought

- Install eel passes at all physical barriers including weir and sluice
- Cut reeds in catchment at least once annually in summer and remove all material
- Work with Community Council to reduce nutrient load of water entering the site from run off
- No use of pesticides or artificial fertilisers on any fields adjacent to Oroklini Lake or within catchment of SPA
- In periods of extreme drought where refuge areas are not sufficient for eels they should be moved to deeper water (Zogaris, S., 2014): gather the eels using a simple inexpensive dip-net (placing them in buckets filled with water) and moving them to two locations: (a) if there is plenty of water transfer to the Highway canal area (b) In extreme years the best location is Oroklini west outlet canal below the coast road.

Overview of monitoring actions

- Monitor water quality quarterly: Chloride (mg/l), pH, Total Nitrogen (mg/l), Oxidised Nitrogen (mg/l), Ammonia (mg/l), Total Phosphorus (mg/l). Monitor conductivity and water levels monthly
- Record all observations of European eel

4. To build and maintain support for Oroklini Lake within the local community and with visitors

People targets

- Engage with 20 schools annually. Maintain positive connection with local schools through activities on site and in school
- Engage with 3 000 visitors to the information kiosk annually
- Engage with 100 visitors and local residents through open days, special events and volunteering, providing opportunities for all to meet site managers and specialists
- Work in partnership with Community Council to build understanding of the importance of the Natura 2000 site (SPA and SCI) and it's conservation
- Work with Cyprus Tourism Organisation to promote site to visitors

Overview of management actions

- Maintain safe visitor infrastructure and fencing
- Ensure safe access to visitor facilities, e.g. traffic calming measures
- Where appropriate replace fencing with well-maintained hedge barrier
- Set up and support a ringing station

Overview of monitoring actions

- Record number of visitors and school groups to information kiosk daily
- Complete infrastructure safety monitoring quarterly

4. FIVE YEAR WORK PROGRAMME

Priority: 1 – Essential actions, 2 - Important actions, 3 – Desirable actions.

Action	2015	2016	2017	2018	2019
Control reeds in compartments S3, S6 & S7 to current extent. See figure 4 & appendix 2.	1	1	1	1	1
Attain 18.90cm above sea level water level by end March	1	1	1	1	1
React to/ anticipate spring flooding and remove sluice boards early to avoid significant increase in water levels April – June	1	1	1	1	1
Improve and maintain existing sluice and outflow (see water management plan) no more than 5cm silt	1	1	1	1	1
Sluice boards inserted and other water management structures set to hold water 1 st Sept	1	1	1	1	1
Maintain weir structure, sluices and embankment structure. Maintain & keep clear outlet	x	x	x	1	x
Install eel passes at all physical barriers	1	x	x	X	x
Maintain embankment – manage tamarisk scrub on rotation	2	1	2	2	1
Control encroaching vegetation around weir and through ditch network to ensure free water flow through site	2	2	1	3	3
Remove vegetation from scrapes, nesting islets and deep ditches on rotation (to maintain good nesting habitat in S6 & S7)	1	1	1	1	1
Create & maintain areas of deep water throughout year – eel refugia	2	2	2	2	2
Cut reeds in catchment, remove all cut material (Appendix 2)	2	2	2	2	2
Eradicate all invasive non-native plants (e.g. <i>Acacia saligna</i> & <i>Parkinsonia aculeate</i>)	3	3	3	3	1
Increase visibility of powerlines by marking – plan to remove	1	2	2	2	2
Install traffic calming measures on main roads	1	x	x	x	x
Enhance fence with natural vegetation and maintain hedge, to improve natural screening of site	x	x	x	x	2
Remove all illegally dumped material from site as required	1	1	1	1	1
Maintain nesting islets in good condition	1	1	1	1	1
Develop adequate pollution control	1	1	x	x	x

emergency plan to remove risk of petrochemicals entering lake. All personnel connected to the site to understand protocol to follow in case of emergency situation (e.g. eels in drought conditions, petrochemical spill)					
Work with neighbours to eliminate pesticide and artificial fertiliser products entering lake	1	1	1	1	1
Pilot predator control program and predator population census in parallel with the qualifying species productivity study	1	1	3	3	3
Monitoring					
Breeding wader surveys according to standard methodology (Appendix 1 or similar)	1	1	1	1	1
Productivity of BWS, SWL, SC, KP, LT, CT	3	1	3	3	1
Monthly survey of waterbirds	1	1	1	1	1
Predator population estimate	2	2	2	2	2
Survey fish species	3	3	3	3	3
Integrity of dam, weir and condition of eel passes	x	1	x	3	1
Sluice outflow pipe for clear water flow (annual)	1	1	1	1	1
Water level & conductivity (monthly)	2	2	2	2	2
Water quality (4 times per year)	2	2	2	2	2
Rainfall and temperature	3	3	3	3	3
Map areas of reedbed & scrub	3	3	3	1	3
Regular patrols of perimeter fence and hedge (for integrity, plant health checks & rubbish)	2	2	2	2	2
Create detailed map area of SCI vegetation	x	3	x	x	3
Presence of invasive non-native species	1	1	1	1	1
Fixed Point photography quarterly (figure 6)	3	3	3	3	3
Record visitor number and type at information kiosk	1	1	1	1	1
Monitor hides and paths for safety	1	1	1	1	1
Community					
Work with neighbouring farmers to ensure complementary management	1	1	1	1	1
Engage with 20 schools annually	2	2	2	2	2
Engage with 3000 visitors to information kiosk	2	2	2	2	2
Engage with 100 visitors and local residents with activities	2	2	2	2	2
Improve visitor safety through installation of traffic calming measures	1	x	x	x	x
Research					
Investigate feasible methods to ensure water levels can be maintained in drought years including potential to import treated water to the catchment	1	1	1	1	1
Water quality improvement including impact	1	1	1	1	1

of pesticide and artificial fertiliser use on neighbouring land and illegal dumping					
Understand how the current system responds to rainfall and drought to ensure system can be resilient	1	1	1	1	1
Understand the potential impacts of increasing breeding populations of non-qualifying species on qualifying species (e.g. Kentish plover & Cattle egret)	2	2	2	2	2
Understand impact of mosquito spraying on invertebrates, fish and birds	2	2	2	2	2
Develop suitable Emergency Action Plan to avoid pollution incident	1	x	x	x	x
Assess actual impact of predators on key breeding species and productivity study of qualifying species	1	1	x	x	1
Research the feasibility of introduction of the native mosquito fish (Aphanius sp.) by transplanting native fishes from Akrotiri Wetland. Stop the spread of alien Mosquitofish.	3	3	3	3	3
Investigation of Eel ecology and survival in the catchment scale. A critical aspect of this study must include the movement and obstacles encountered by this migratory species.	3	3	3	3	3



Figure 6: Locations used for fixed point photography

5. REGULATIONS AND GUIDELINES

5.1 Sectoral Guidelines

Recommended farming practices

Water development

5.2 Regulation of Uses

No hunting or fishing at anytime.

No deliberate release of non-native species on SPA or within catchment.

No access to restricted areas at anytime except by authorised personnel. Members of the public are encouraged to access the site at the information kiosk and the hide where car parking is available.

No dumping (deliberate or accidental) of waste (industrial or residential) on SPA or within catchment area.

No use of pesticides (including killing mosquitoes) or artificial fertilisers within SPA or catchment area.

No building development within the Natura 2000 sites which may negatively impact on the site.

No abstraction of water from the lake for reasons other than conservation management of this site.

5.3 Appropriate Assessment

Any project, activity or development that may have an impact on the SPA, including within the catchment area, must undergo an Appropriate Assessment. Projects, activities or developments likely to impact include, but not restricted to, building development, business development, road improvements, changes to water supply system or sewerage system.

All management actions related to the conservation of the site should be monitored for conservation effectiveness and impact.

5.4 Contractual Agreements

Essential obligations to be captured in Ministerial Decree

5.5 Review period

This plan should be revised after five (5) years taking into account progress against targets set out in the conservation objectives above. To aid this process a report should be prepared annually summarising all habitat management work carried out including maps of areas where work has been completed, summary of all monitoring including highlighting whether or not conservation objectives have been achieved, and a summary of all events / walks / education activities on the site.

5.6 Competent authority

The Game and Fauna Service and the Environment Department are the competent authorities at the time this plan was prepared. Responsibility for implementation, reporting and review lies with these authorities. When the formulation of the management body is defined, it is strongly recommended that, also the Water Development Department, the Department of Forests as well as BirdLife Cyprus are fully involved. Additionally, the Voroklini Community Council should be part of the management body, as it had an active role through the LIFE Oroklini project in engaging the public for the conservation of the wetland.

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7. APPENDICES

APPENDIX 1: Recommended methods for breeding bird surveys at Oroklini Lake (adapted from Gilbert et al, 98)

The methodologies below have been adapted from the standard methodology used by the RSPB and are recommended for use at Oroklini Lake because many of the species to be monitored are particularly sensitive to human disturbance.

These methodologies have been developed following experience of other methods directly resulting in nest failures through desertion of adults immediately after surveys, or predation of nests by crows during or immediately after surveys.

Tern counts from vantage points

Terns should ideally be monitored by carrying out counts of **Apparently Incubating Adult terns** from vantage points (figure 7), providing that at least 80% of nests or incubating terns are thought to be visible. Other methods can be used, but all can cause considerable disturbance therefore specialist advice should be sought before attempting these.

Breeding population

Carry out three visits, one week apart, between mid-May and mid-June, avoiding cold, wet or windy days.

Record the number and location of Apparently Incubating Adults (terns) on each visit. Incubating birds can be distinguished from off-duty resting birds by their posture: a bird incubating will be sitting in a hollow or scrape and thus be partly hidden with its tail pointing up at a sharp angle. Resting birds which are not incubating are more visible and their tail is held at a shallower angle, although this might not be so where birds are sitting in slightly undulating terrain. Attempt to estimate the number of nests in any parts of the colony which cannot be seen from vantage points, from the density of nests in the visible part of the colony.

Report the maximum number of Apparently Incubating Adults recorded on any of the visits.

Productivity

Record the number of 'large' (10 day-old in the case of little terns, 14 day-old in the case of other species) chicks weekly from about the date of first fledging. Keep a separate note of numbers of smaller chicks. Report the number of large plus fledged chicks.

Scan surveys of waterbirds

This method requires a greater number of visits and therefore will enable a more accurate representation of breeding activity at the site, as well as allowing the estimate of productivity if it is continued to late June. This method should be used at least once in the period of this plan, but in as many years as resources allow. Information for all groups has been included, but it would be possible to restrict the use of this method to only key breeding species.

Carry out one survey per week from the first week of April until the end of June, or later if monitoring tern productivity and they are still present with young. Visits should be between 0600 and 1000. On each visit, scan the area from the vantage points (Information kiosk, hide, abandoned houses and former flea market: see figure 7) and record the numbers, and where relevant the locations and activity of birds, as described below. Map the locations and activity of birds using standard codes. Calculate numbers of breeding pairs as described below.

Ducks (from Gilbert *et al.* 1998. Bird Monitoring Methods)

Breeding population

Record the sex of individuals and of ducks in groups on three of the visits, one each about a month apart, during early to mid-April, early to mid-May and early to mid-June. Record the number of breeding pairs on each visit as follows:

- (a) A single pair = one pair.
- (b) A lone male = one pair.
- (c) Males in groups of 2-4 (2 males = 2 pairs, 3 males = 3 pairs etc).
- (d) Small male groups chasing a female (2males and one female = 2 pairs, 3 males and one female = 3 pairs etc).
- (e) Lone females (= one pair each), if their total number is larger than that of males.

Report the maximum number of pairs recorded on any of the visits.

Productivity

Record on a map the number, age class and location of any young seen on each visit. Record the age class as a fraction (e.g. $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ etc) of the adult size. For example, female teal + 8 ($\frac{1}{4}$) refers to a female teal with a brood of eight quarter-grown young.

Report the maximum number of young of at least $\frac{3}{4}$ adult size seen on any one visit.

Lapwing, ringed plover, little-ringed plover

Record the location of and count incubating birds on each visit. Report the maximum number of incubating birds recorded on any of the visits.

Avocet (Black-winged stilt) (interpretation of field data from Gilbert *et al.* 1998. Bird Monitoring Methods)

Breeding population

Carry out three counts in May, with a week between each. These should be made in the early morning (0600-0900) and/or late afternoon or early evening (1600-1900). Count the number of adult birds, from one or more suitable vantage points (see figure 7).

Estimate the number of pairs in a discrete colony by taking the maximum count of adults on any one of the three visits and dividing it by two. If the colony is spread over several 'sites', sum the counts for each visit and again use the maximum from any one visit i.e. do not add counts from

different dates. Strictly speaking, this method only provides a population index for a colony, but at many sites this index provides a good estimate of the number of breeding pairs present.

Productivity

Make a note of the expected hatching and fledging dates while monitoring the breeding population. Clutches hatch 23 days after the start of continuous incubation and chicks fledge 33-42 days from hatching.

Start weekly recording from when the young are expected to hatch and record the status of pairs, and numbers and approximate ages of chicks, on a map using standard BTO codes. Young are considered to have fledged when they are capable of flying several metres.

At the end of the season, estimate the total number of fledged young and report this figure.

Alternative wader methodology (- Modified O'Brien and Smith (1992) method (Gilbert *et al.* 1998)

This may be suitable in some years, but at least once in the period of this plan and in further years to measure productivity of wader species, the alternative scan method should be used.

Survey breeding waders on each of three visits during the following periods:

First visit: 15 April -30 April

Second visit: 1 - 21 May

Third visit: 22 May - 18 June

Individual survey visits should be at least one week apart.

Surveys should only be carried out between one and four hours after dawn or three hours before dusk, avoiding cold, wet and windy conditions (wind above Beaufort Force 3: leaves and twigs, but not branches, in constant motion). If any surveys have to be undertaken during sub-optimal conditions, then make sure that this is recorded with the data.

Record Black-winged stilt, Spur-winged lapwing, Kentish plover, Stone curlew and Little-ringed plover from the vantage points (Information kiosk, hide, abandoned houses and former flea market: figure 7).

Allocate each bird seen to a single field or compartment - the first field in which it is recorded. If the bird was first observed in display-flight, it should be allocated to the field in the centre of its flight. Record the locations and activities of breeding waders.

Interpret the results of the surveys as follows:

Record the total number of birds seen. The estimated number of pairs is the maximum number of individuals (excluding birds in flocks) recorded at the site between mid-April and late May divided by two.

Or estimate number of pairs from the number of nests recorded (1 pair each) and the number of pairs seen if not on nests.

Lapwing productivity
(by Mark Bolton)

Four counts are required to estimate lapwing productivity. Therefore, to estimate lapwing productivity, undertake the three standard survey visits (see Modified O'Brien and Smith (1992) method), together with an additional fourth visit between 19 June and 8 July. All survey visits should be at least *one week apart*.

Well-feathered and fledged lapwings are easier to locate while scanning from a high vehicle, such as a tractor, than while walking through fields. Therefore, when estimating lapwing *productivity*, the third and fourth counts should be made from a high vehicle.

Record the number of lapwings with chicks, (or behaving as though they have chicks e.g. alarming, brooding) and the number of well-grown and fledged chicks seen on every visit. Plot these on your breeding wader survey maps using the following symbols:

Ly Adult with young or alarming/behaving as if with young

CW (no.) Number of well-feathered chicks e.g. CW1

CF (no.) Number of fledged chicks e.g. CF1

Enter your data on the BREEDING PRODUCTIVITY form (below).

Detailed studies have found that the number of chicks fledged in a season can be reliably estimated from the total number of well-grown and fledged young seen over the course of all four surveys, provided that surveys are carried out during the previously described survey periods and at least one week apart from one another. For example, suppose the numbers of chicks seen per survey are as shown in the table below.

Survey visit	Well-feathered	Fledged
1	0	0
2	1	0
3	2	1
4	1	3
Total	4	4

The total number of young fledged over the course of the season is eight. The chances of double-counting a well-grown chick as a fledged chick on the next survey tends to be offset by overlooking some chicks.

Report the estimated number of fledged young.



Figure 7: Current vantage point locations for regular wetland bird surveys, recommended for use with above methodologies

Lapwing breeding productivity recording form
Lapwing breeding numbers (example)

Visit No.	Date	Time	Weather	No. lapwing counted	No. calling adults counted	No. chicks in each growth stage	
						CW	CF
1	6/4	08:00 → 09:15	Overcast, Still	53	18	0	0
2	30/4	07:30 → 08:00	Sunny, Cold, Wind F3	46	18	0	0
3	20/5	06:00 → 06:45	Sunny, Warm, Wind F1	49	14	3	0
4	15/6	06:00 → 07:30	50% cloud, cold, still	56	11	5	2

Lapwing breeding numbers (Template)

Visit No.	Date	Time	Weather	No. lapwing counted	No. calling adults counted	No. chicks in each growth stage	
						CW	CF
1							
2							
3							
4							

Three-visit waterfowl counts on lowland water bodies

Again a simplified survey for use in years where resources are limited

Carry out three visits between early morning and 10.00 during the first halves of April, May and June.

Do not survey when visibility is poor, or in high winds or where large expanses of water are very choppy. Use suitable vantage points to count birds on open water. Record the species and, where relevant, sex of individual and groups of waterfowl using standard BTO codes.

If black-necked grebes are present, then carry out additional twice-weekly visits between mid-May and the end of June, avoiding very wet or windy conditions. During each visit record the total number of black-necked grebes seen, and also the number of pairs. Most birds (including non-breeders) will take part in courtship displays initially, but birds which have formed a pair will move around together for most of the season.

Count the following as breeding pairs:

Little and great-crested grebe

- (a) A pair with young.
- (b) One or two birds present on more than one occasion at sites with suitable nesting habitat.

Black-necked grebe

Number of pairs.

Ducks

- (a) A single pair = one pair.
- (b) A lone male = one pair.
- (c) Males in groups of 2-4 (2 males = 2 pairs, 3 males = 3 pairs etc).
- (d) Small male groups chasing a female (2males and one female = 2 pairs, 3 males and one female = 3 pairs etc).
- (e) Lone females (= one pair each), if their total number is larger than that of males.

Exclude groups of five or more males in the estimates of breeding pairs. Larger groups and flocks are probably non-breeding or wintering flocks.

Moorhen, coot, geese and swans

- (a) A territorial pair.
- (b) A pair with a nest or young.

For all waterfowl species, calculate the maximum number of pairs on each visit. Report the maximum number of pairs recorded during any of these visits.

Wildfowl productivity

Record broods on the third visit to estimate the breeding population (in mid-June) and on an additional visit in mid-July. Carry out the same recording methods as used to estimate population size, but also pay particular attention to surveying areas where duck broods may seek concealment. Record on a map the number, age class and location of any young seen. Record the age class as a fraction (e.g. $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ etc) of the adult size. For example, female teal + 8 ($\frac{1}{4}$) refers to a female teal with a brood of eight quarter-grown young.

Report productivity as the maximum number of young of at least $\frac{3}{4}$ adult size seen on any one visit.

APPENDIX 2: Land management recommendations

Management of surrounding land

The benefits of the management of Oroklini will be significantly increased if the land surrounding the SPA, including the IBA, catchment and other neighbouring farmland is managed in a complementary manner.

Reeds in catchment: Maintaining and managing the reeds (*Phragmites australis*) within the catchment will benefit the water quality of the lake as the reeds can help to remove nutrients from water as it moves slowly through the reedbed. Managing these reeds by cutting them once or twice through the spring and summer and making sure all the cut vegetation is removed from the site will help promote growth of the reeds and increase the uptake of nutrients, whilst ensuring the nutrients are not released back into the system as dead vegetation decomposes.

Clover or alfalfa fields: Irrigated fields which have a cover of clover or alfalfa in spring or early summer are particularly important for feeding Spur-winged lapwing and it is suggested that some fields of this are maintained during the breeding season. The irrigation of the fields with treated water will benefit the landowner as the yield of the crop will be greater, and may also benefit the lake (directly or indirectly). Care needs to be taken that if treated water is used for this purpose it is not applied at a rate such that the nutrient load of the lake is increased.

Cultivation of fields: Stone curlew require areas of disturbed ground for nesting and it is suggested at least half the fields adjacent to the lake, including the restored flea market, should be managed to be suitable for this species by March. No further use of machinery should be permitted in any fields adjacent to the lake from 1st April – 30th June to allow breeding birds to nest and raise chicks in these fields.

Use of pesticides and artificial fertilisers: Chemicals used for agricultural purposes may be carried into the SPA having potential to negatively impact on the habitat and species within the area. It is therefore recommended that no pesticides or artificial fertilisers are used on land within or adjoining the IBA.

Recommended methodology for the control of *Phragmites australis* (within SPA) where it has expanded from areas marked in figure 4.

During the preparation of this plan there have been several discussions regarding the reeds (*Phragmites australis*) within the SPA. It has been noted that the reeds within the catchment for the lake will be beneficial in reducing the nutrient load of the water before it enters the lake. The benefits of these reeds could be potentially increased by harvesting them annually in the growing season (July / August), cutting them low to the ground and removing all the cut material. It is believed that this would also been seen as a positive measure by the local community.

Phragmites australis are a freshwater species and are intolerant to salinities greater than 18 parts per 1000, therefore to minimise the spread of the species care should be taken not to alter the natural salinity of Oroklini Lake which may help to limit the spread of this species within the IBA.

In some areas of the SPA there is concern that *P. australis* may spread further to the detriment of nesting and feeding habitat or the SCI community and therefore a method for controlling these reeds is required. This should only be carried out after areas for treatment have been mapped carefully and partners have agreed control of these areas is required.

Causing multiple stresses to the plant has been shown to be effective in controlling this species in USA (URI CELS Outreach Center), therefore a combination of control measures is advised.

- The area should be prepared in summer by drawing down the water as much as possible such that the area(s) to be treated is (are) on dry ground. Spraying with Glyphosate is most effective if applied after the seed heads have developed, and chemical (at correct concentration) should be applied to the plant such that the leaves are covered, but liquid is not dripping from them. (*Note: if the concentration is too strong it will kill the top of the plant quickly and the chemical will not be taken into the root system and will therefore be less effective*)
- 2 – 4 weeks after the application of Glyphosate, when the plants are showing signs of yellowing, the area should be cut and all the arisings removed from the site for proper disposal.
- If possible, it may then be effective to flood the area over the cut stems

In future years, or where there are small areas to be treated it may be more effective to cut the stems to 10cm or less in height and apply glyphosate directly to the cut stem with a sponge applicator.

Care must be taken to only apply glyphosate to the target plants as it will kill all plants in contact with it.

Guidance adapted from: URI CELS Outreach Center, Common Reed (*Phragmites australis*) Control Fact Sheet. <http://www.uri.edu/cels/ceoc/documents/commonReed.pdf>

APPENDIX 3: Recommendations from 'Analysis of Pressures and Impacts on runoff water quality for the Oroklini Lake catchment' I.A.CO Ltd, 2014

PREVENTION AND CONTROL MEASURES FOR POLLUTION SOURCES

The Dry cleaner

The following recommendations apply:

- Compliance with all Environmental Permit terms should be strictly kept, especially those regarding waste management.
- There should be no storage of great quantities of tetrachloroethylene on site in order to avoid accidental spills and similar risks.
- Solvent wastes or solvent containing wastes should be managed in the proper manner as they consist hazardous material according to the European Waste Catalogue and Hazardous Waste List (Codes: 14 06 03 - other solvents and solvent mixtures, 14 06 05-sludges or solid wastes containing other solvents).
- A hazardous waste contingency plan must be developed if it is required, and emergency control equipment should be inspected on a systematic basis by the competent authorities.
- Waste areas should be systematically inspected and a log of outgoing wastes to the proper collectors should be kept. Proper handling procedures should be kept for transport.

The Restaurants

The following measures should be pursued:

- Use of dry clean-up methods to remove FOGs and reduce water consumption and sewer use. Avoid disposal of kitchen greases down the drain. Collect and send used grease to a licensed liquid industrial waste collector for rendering or conversion to biofuels. Find a licensed hauler that will provide storage barrels and free pick-up service.
- Ensure that grease traps (in case there are any) and interceptors are properly maintained. Caution should be taken never to hot flush through a grease trap.
- Never wash water down a storm drain, spill materials or wastes in the parking lot or yard without cleaning them up or allow materials or waste stored outside to leak.
- Clean equipment in a designated indoor area with a drain connected to the sanitary sewer. Never pour wash water down a storm drain or gutter.
- Dumpsters used for garbage should be protected from rainwater to avoid unwanted substances from entering storm drains. Some helpful hints for dumpster maintenance include keeping the dumpster lid closed to keep out rain water, replacing damaged or missing lids as soon as possible, never placing liquid waste or leaky garbage bags into a dumpster, keeping dumpsters or the dumpster enclosure locked to prevent illegal dumping, not hosing out the dumpster interior, applying absorbent over any fluids spilled in the dumpster, sweeping up litter, and replacing leaking dumpsters.

Agriculture

- Regulatory Administrative Act 263/2007 sets the Code for Good Agricultural Practice. Farmers should keep their agriculture activities within this legislative framework.
- Practices should always care in mind terms about quantitative restrictions on fertilizers per crop, per seasonal application restrictions etc.

- Agrochemicals used must be certified to be legal for use as per Agrochemicals Control Section, Department of Agriculture, Ministry of Agriculture, Natural Resources and Environment Legislation.

MANAGING THE TRAFFIC POLLUTION RISK

Control of Highway and public road pollution risk

Both the Paralimni – Larnaka Highway passing over the stream that enters the Oroklini Lake, and the public road connecting the coastal area to Oroklini Village that runs parallel to the Lake, and crossing it at a certain location, do not have any protection measures to prevent stormwater carrying polluting substances from traffic activity and or spills of petroleum, wastewater or other chemical substances, in the case of an accident, to end up in the Lake. The existing drainage conditions both of the Highway and the public road have been presented in detail in subchapter 2.2.4. 'Analysis of Pressures and Impacts on runoff water quality for the Oroklini Lake catchment' I.A.CO Ltd, 2014.

Two pollution conditions can occur:

- Regular stormwater runoff from the roadway reaching the stream that feeds the Lake or flowing directly to the Lake carrying pollutants such as hydrocarbons, lead, oil, etc., and
- Accidental Spill of a pollutant after a truck or bowser accident which can reach the stream that flows into the Lake or by the truck falling off the road and directly to the Lake.
- The protection system must cover both of these two pollution conditions. Such a system has been presented in detail and recommended by the Water Development Department for the case of roads crossing streams over bridges that flow to reservoirs used for drinking water.
- In the case of the Oroklini Lake this system is simplified to the extent that stormwater from the highway and the public road as well as in the eventuality of an accidental spill, are made to enter a pipeline that transfers them downstream of the Lake at the point of exit of the water to the stream that carries it to the sea.
- The following suggestions are conceptual and have to be properly designed and cost-estimated by a competent engineer on the basis of the existing topography of the area along the roadways.

The system would involve the following:

- Both, the highway and the road, should have a low wall constructed at the rim on either side to prevent runoff over either side.
- A crash barrier wall for at least some 50 to 100m needs to be constructed on either side of the highway at the point over the stream to prevent a truck or bowser to fall over in the case of an accident.
- The ditches shown on the Map 4-1 (see original document) should be extended as shown to transport stormwater and or spill to the existing stormwater sewers running towards the South on either side of the road passing under the highway.
- The ditch on the service road (Point E to F) should be extended to reach and be connected to the pipeline I at the eastern side of the public road.
- The public road should be equipped with a pipe on either side of the road, such as shown on Photo 4-1 (see original document), which will collect stormwater and spills from the roadside at various points and transport them away from the protected area.
- These pipelines (I at the eastern and II at the western side) will be connected to the existing stormwater sewers at either side of the public road at the point under the

Highway and discharge the stormwater at a point at the southern-most outlet of the Lake.

It would be useful if the spill on the occasion of an accident is led into a concrete basin for retaining oils (accidental spills etc.). This should have a capacity equal to that of a tanker truck and be quickly emptied after a pollution incident. During a storm, the concrete basin would overflow into the point of the stream at the exit of the Lake.

Maps and photos can be found in section 4 of the original document

Traffic speed bumps

It would be useful if traffic calming devices such as speed bumps are installed on the public road connecting the coastal area to the Oroklini Village from the point that this road runs parallel to the Lake area and up to the point where it passes under the Highway. This measure will slow traffic so that safety conditions are improved and traffic accidents next to the Lake are prevented.

EMERGENCY PLAN

An Emergency Operating Plan (EOP) needs to be drafted involving:

- Identification of potential hazards;
- Description of the emergency procedures;
- Acquirement and storing of basic tools (sorbents, safety uniforms, mobile tanks, pumps etc.);
- Training of staff and possibly carry out of occasional drills;
- Public campaign and reporting procedures for events;
- Preparation of lists of emergency contacts; and
- Establishment of a chain of command in the event of an emergency.

In developing an EOP the Fire Department should be consulted and be involved since it is within their capacity to protect the public's safety and have the equipment, the know-how and the training to respond immediately to situations of this kind.

Responding to a spill

The basic steps in responding to a spill, of a volume of a truck load or less, of an unwanted substance are:

- **Stop the spill.** Preferably by properly qualified and equipped personnel.
- **Contain and recover the spill.** Spread sorbent material, sand, straw, sawdust or even dirt from the roadside to stop the flow and soak the spill. Solidifiers in the market react with petroleum and turn it to a rubbery substance.
- **Collect the contaminated sorbent.** Buckets, garbage cans or barrels can be used if a truck with a tank is not available.
- **Secure the waste.** Dispose the waste in an approved manner.

In the case of a petroleum spill has reached water in a ditch or a pond, this can be recovered by using a sorbent such as dry straw, grass, or other natural material that will float. This contaminated sorbent can then be removed with a rake and thin-spread so that biodegradation can take place.

APPENDIX 4: List of bird species recorded at Oroklini Lake (from Worldbirds)

Breeding species are marked with a *

Species name	Scientific name
Chukar *	<i>Alectoris chukar</i>
Black francolin *	<i>Francolinus francolinus</i>
Quail	<i>Coturnix coturnix</i>
Greater white-fronted goose	<i>Anser albifrons</i>
Greylag goose	<i>Anser anser</i>
Shelduck	<i>Tadorna tadorna</i>
Gadwall	<i>Anas strepera</i>
Wigeon	<i>Anas penelope</i>
Mallard *	<i>Anas platyrhynchos</i>
Shoveler *	<i>Anas clypeata</i>
Pintail	<i>Anas acuta</i>
Garganey *	<i>Anas querquedula</i>
Teal	<i>Anas crecca</i>
Red crested pochard *	<i>Netta rufina</i>
Pochard	<i>Aythya ferina</i>
Ferruginous duck	<i>Aythya nyroca</i>
Tufted duck	<i>Aythya fuligula</i>
Little grebe *	<i>Tachybaptus ruficollis</i>
Black-necked grebe	<i>Podiceps nigricollis</i>
Greater flamingo	<i>Phoenicopterus roseus</i>
Black stork	<i>Ciconia nigra</i>
White stork	<i>Ciconia ciconia</i>
Glossy ibis	<i>Plegadis falcinellus</i>
Spoonbill	<i>Platalea leucorodia</i>
Bittern	<i>Botaurus stellaris</i>
Little bittern	<i>Ixobrychus minutus</i>
Night heron	<i>Nycticorax nycticorax</i>
Squacco heron	<i>Ardeola ralloides</i>
Cattle egret *	<i>Bubulcus ibis</i>
Grey heron	<i>Ardea cinerea</i>
Purple heron	<i>Ardea purpurea</i>
Great egret	<i>Casmerodius albus</i>
Little egret	<i>Egretta garzetta</i>
Cormorant	<i>Phalacrocorax carbo</i>
Lesser kestrel	<i>Falco naumanni</i>
Kestrel *	<i>Falco tinnunculus</i>
Red-footed falcon	<i>Falco vespertinus</i>

Species name	Scientific name
Hobby	<i>Falco subbuteo</i>
Saker	<i>Falco cherrug</i>
Peregrine	<i>Falco peregrinus</i>
Marsh harrier	<i>Circus aeruginosus</i>
Hen harrier	<i>Circus cyaneus</i>
Pallid harrier	<i>Circus macrourus</i>
Montagu's harrier	<i>Circus pygargus</i>
Sparrowhawk	<i>Accipiter nisus</i>
Goshawk	<i>Accipiter gentilis</i>
Common buzzard	<i>Buteo buteo</i>
Long-legged buzzard	<i>Buteo rufinus</i>
Water rail	<i>Rallus aquaticus</i>
Little crane	<i>Porzana parva</i>
Spotted crane	<i>Porzana porzana</i>
Common moorhen *	<i>Gallinula chloropus</i>
Common coot *	<i>Fulica atra</i>
Common crane	<i>Grus grus</i>
Eurasian stone curlew *	<i>Burhinus oedicephalus</i>
Black-winged stilt *	<i>Himantopus himantopus</i>
Avocet	<i>Recurvirostra avosetta</i>
Northern lapwing	<i>Vanellus vanellus</i>
Spur-winged lapwing *	<i>Vanellus spinosus</i>
Golden plover	<i>Pluvialis apricaria</i>
Ringed plover	<i>Charadrius hiaticula</i>
Little ringed plover *	<i>Charadrius dubius</i>
Kentish plover *	<i>Charadrius alexandrinus</i>
Jack snipe	<i>Lymnocyrtus minimus</i>
Common snipe	<i>Gallinago gallinago</i>
Black-tailed godwit	<i>Limosa limosa</i>
Bar-tailed godwit	<i>Limosa lapponica</i>
Spotted redshank	<i>Tringa erythropus</i>
Redshank	<i>Tringa totanus</i>
Marsh sandpiper	<i>Tringa stagnatilis</i>
Greenshank	<i>Tringa nebularia</i>
Green sandpiper	<i>Tringa ochropus</i>
Wood sandpiper	<i>Tringa glareola</i>

Species name	Scientific name
Terek sandpiper	<i>Xenus cinereus</i>
Common sandpiper	<i>Actitis hypoleucos</i>
Little stint	<i>Calidris minuta</i>
Temminck's stint	<i>Calidris temminckii</i>
Dunlin	<i>Calidris alpina</i>
Curlew sandpiper	<i>Calidris ferruginea</i>
Broad-billed sandpiper	<i>Limicola falcinellus</i>
Ruff	<i>Philomachus pugnax</i>
Collared pratincole	<i>Glareola pratincola</i>
Common gull	<i>Larus canus</i>
Heuglin's gull	<i>Larus heuglini</i>
Armenian gull	<i>Larus armenicus</i>
Yellow-legged gull	<i>Larus michahellis</i>
Caspian gull	<i>Larus cachinnans</i>
Lesser black-backed gull	<i>Larus fuscus</i>
Black-headed gull	<i>Larus ridibundus</i>
Slender-billed gull	<i>Larus genei</i>
Mediterranean gull	<i>Larus melanocephalus</i>
Little gull	<i>Larus minutus</i>
Gull-billed tern	<i>Sterna nilotica</i>
Sandwich tern	<i>Sterna sandvicensis</i>
Common tern *	<i>Sterna hirundo</i>
Little tern *	<i>Sternula albifrons</i>
Whiskered tern	<i>Chlidonias hybrida</i>
White-winged black tern	<i>Chlidonias leucopterus</i>
Black tern	<i>Chlidonias niger</i>
Woodpigeon	<i>Columba palumbus</i>
Turtle dove	<i>Streptopelia turtur</i>
Collared dove	<i>Streptopelia decaocto</i>
Great spotted cuckoo	<i>Clamator glandarius</i>
Barn owl	<i>Tyto alba</i>
Little owl	<i>Athene noctua</i>
Long-eared owl	<i>Asio otus</i>
Short-eared owl	<i>Asio flammeus</i>
Alpine swift	<i>Tachymarptis melba</i>
Swift	<i>Apus apus</i>
Roller	<i>Coracias garrulus</i>
Kingfisher	<i>Alcedo atthis</i>
Pied kingfisher	<i>Ceryle rudis</i>
Bee-eater	<i>Merops apiaster</i>
Hoopoe	<i>Upupa epops</i>

Species name	Scientific name
Wryneck	<i>Jynx torquilla</i>
Red-backed shrike	<i>Lanius collurio</i>
Lesser grey shrike	<i>Lanius minor</i>
Woodchat shrike	<i>Lanius senator</i>
Masked shrike	<i>Lanius nubicus</i>
Magpie *	<i>Pica pica</i>
Jackdaw	<i>Corvus monedula</i>
Hooded crow *	<i>Corvus cornix</i>
Great tit	<i>Parus major</i>
Penduline tit	<i>Remiz pendulinus</i>
Sand martin	<i>Riparia riparia</i>
Swallow	<i>Hirundo rustica</i>
Red-rumped swallow	<i>Hirundo daurica</i>
House martin	<i>Delichon urbicum</i>
Calandra lark	<i>Melanocorypha calandra</i>
Greater short-toed lark	<i>Calandrella brachydactyla</i>
Crested lark *	<i>Galerida cristata</i>
Woodlark	<i>Lullula arborea</i>
Skylark	<i>Alauda arvensis</i>
Fan-tailed warbler *	<i>Cisticola juncidis</i>
Cetti's warbler *	<i>Cettia cetti</i>
Moustached warbler	<i>Acrocephalus melanopogon</i>
Sedge warbler	<i>Acrocephalus schoenobaenus</i>
Reed warbler *	<i>Acrocephalus scirpaceus</i>
Greater reed warbler	<i>Acrocephalus arundinaceus</i>
Olivaceous warbler *	<i>Hippolais pallida</i>
Icterine warbler	<i>Hippolais icterina</i>
Willow warbler	<i>Phylloscopus trochilus</i>
Chiffchaff	<i>Phylloscopus collybita</i>
Blackcap	<i>Sylvia atricapilla</i>
Garden warbler	<i>Sylvia borin</i>
Whitethroat	<i>Sylvia communis</i>
Lesser whitethroat	<i>Sylvia curruca</i>
Barred warbler	<i>Sylvia nisoria</i>
Rueppell's warbler	<i>Sylvia rueppelli</i>
Sardinian warbler	<i>Sylvia melanocephala</i>

Species name	Scientific name
Cyprus warbler	<i>Sylvia melanothorax</i>
Subalpine warbler	<i>Sylvia cantillans</i>
Spectacled warbler *	<i>Sylvia conspicillata</i>
Rose-coloured starling	<i>Sturnus roseus</i>
Starling	<i>Sturnus vulgaris</i>
Blackbird	<i>Turdus merula</i>
Fieldfare	<i>Turdus pilaris</i>
Song thrush	<i>Turdus philomelos</i>
Robin	<i>Erithacus rubecula</i>
Bluethroat	<i>Luscinia svecica</i>
Black redstart	<i>Phoenicurus ochruros</i>
Whinchat	<i>Saxicola rubetra</i>
Stonechat	<i>Saxicola torquatus</i>
Common wheatear	<i>Oenanthe oenanthe</i>
Cyprus wheatear *	<i>Oenanthe cypriaca</i>
Isabelline wheatear	<i>Oenanthe isabellina</i>
Spotted flycatcher	<i>Muscicapa striata</i>
Pied flycatcher	<i>Ficedula hypoleuca</i>
Collared flycatcher	<i>Ficedula albicollis</i>
House sparrow *	<i>Passer domesticus</i>
Spanish sparrow	<i>Passer hispaniolensis</i>

Species name	Scientific name
Pied wagtail	<i>Motacilla alba</i>
White wagtail	<i>Motacilla alba</i>
Citrine wagtail	<i>Motacilla citreola</i>
Yellow wagtail	<i>Motacilla flavissima</i>
Yellow wagtail (Blue headed)	<i>Motacilla flava flava</i>
Yellow wagtail (Black headed) *	<i>Motacilla flava feldegg</i>
Grey wagtail	<i>Motacilla cinerea</i>
Tawny pipit	<i>Anthus campestris</i>
Meadow pipit	<i>Anthus pratensis</i>
Red-throated pipit	<i>Anthus cervinus</i>
Water pipit	<i>Anthus spinoletta</i>
Chaffinch	<i>Fringilla coelebs</i>
Serin	<i>Serinus serinus</i>
Greenfinch *	<i>Carduelis chloris</i>
Goldfinch *	<i>Carduelis carduelis</i>
Corn bunting	<i>Miliaria calandra</i>
Ortolan bunting	<i>Emberiza hortulana</i>
Cretzschmar's Bunting	<i>Emberiza caesia</i>
Black-headed Bunting	<i>Emberiza melanocephala</i>
Reed Bunting	<i>Emberiza schoeniclus</i>

**APPENDIX 5: Maximum species count (per annum) taken from monthly waterbird count data
(data from BirdLife Cyprus wetland bird counts)**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Little Grebe	15	14	22	25	12	22	39	60	23	26
Black-necked grebe							1			
Great Cormorant		150								
Great Bittern			1	1	1					
Little Bittern			1		1					
Black crowned night heron		2	15	2		3	5	5	21	
Squacco Heron		1	2	1	4	2	2	3		3
Cattle Egret	3	4	7	1	21	5	21	93	22	
Little Egret	8	15	33	1	9	10	97	18	9	18
Great Egret			5		1		2			73
Grey Heron	5	6	19	6		1		1	4	1
Purple Heron		20	12	1	3	6	1		1	23
Glossy Ibis	3	25	12	5	2	21	68		11	
Eurasian Spoonbill	2	2	3		1		6			
Greater flamingo		27	200	225	144	200	2	266		23
Greater white fronted goose								7		
Ruddy Shelduck					3					
Common shelduck			2							9
Eurasian Wigeon		2	23	2	2		1			
Gadwall					2		2			
Common Teal	250	470	150	239	180	200	468	385	141	144
Mallard	5	13	10	8	15	30	50	143	58	75
Northern pintail		2	4	16	12	10	20	15	10	2
Garganey	11	18	45		12	15	7	8	2	1
Northern Shoveler	45	81	150	30	75	100	75	363	165	539
Red crested Pochard					12	13	20	11	27	11
Common Pochard		3					1			
Ferruginous Duck			1		1		1	1		
Western Marsh harrier		1		1	2	1	2	2	2	3
Osprey			1							
Tufted Duck									1	
Water Rail			1	1	1	1	2	1	1	
Spotted crane		1					1			
Little Crane		3			1	1	3		2	
Common Moorhen	14	25	28	20	16	15	51	65	34	4
Common Coot	65	141	120	93	391	412	312	504	290	184
Common Crane	250		1		110					
Oystercatcher									1	
Black-winged Stilt	80	100	216	60	126	140	148	97	60	32
Pied Avocet				1			1	1		
Eurasian Stone curlew		2	2			2			3	
Little Ringed Plover	11	10	12	4	11	10	6	17		

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Common Ringed Plover		8	2	8	3	9	5	4		
Kentish Plover	2	2	2			1	50	11	5	
Eurasian Golden Plover					5		30			
Spur-winged Lapwing	30	41	25	25	51	37	61	46	46	39
Northern Lapwing	40	150	46	4	32	5	72	24	2	26
Little Stint	30	15	75	39	28	60	82	50	3	5
Temminck's Stint	5	1	1		2	1	4			
Curlew Sandpiper		4	6		11		2			
Dunlin		2	18	20	3	9	3	2	1	
Broad-billed Sandpiper		1			1					
Ruff	35	100	197	12	52	47	20	21	1	64
Jack Snipe		2	1	1	1		1			
Common Snipe	35	25	19	15	12	20	18	6	9	4
Great Snipe		1	1							
Black-tailed Godwit	5	8	3	1	2	2	3			3
Eurasian Curlew	3									1
Spotted Redshank		1	5		1	4	2	3		
Common Redshank	10	12	36	10	8	31	12	12	6	3
Marsh Sandpiper	2	15	3	1	1	1	3	3		3
Common Greenshank	1	4	4		4	2	3		1	
Green Sandpiper	8	7	35	2	4	3	8		1	2
Wood Sandpiper	54	40	10	6	116	7	28	8	5	1
Common Sandpiper	5	6	6	3	6	5	9	5	1	
Terek Sandpiper									1	
Ruddy Turnstone							1			
Mediterranean Gull					2	6	7			
Little Gull	1	1	1	1	2	1			1	
Common Black-headed Gull	400	170	347	470	300	100	67	66	51	69
Slender-billed gull	4	8	12	6		2				
Baltic Gull		8	1			1	4			
Heuglin's gull							1			
Siberian Gull			1							
Yellow legged gull	2	32	2			2		1		
Mew Gull					1					
Caspian Gull					18					
Black-legged Kittiwake					1					
Gull billed Tern							2			
Little Tern			12	2	12	12	4	30	14	
Sandwich Tern	2	2								
Whiskered Tern	1	1	1	2	1		4			
Common Tern			21			1				
Black Tern							2			
White-winged Tern	20	3	5	1	1	3	8			
Common Kingfisher	1	20	6		1	9	8	1	1	
Pied Kingfisher				1						

APPENDIX 6: List of studies/reports conducted through the LIFE project “Restoration and Management of Oroklini Lake SPA (CY6000010) in Larnaca, Cyprus” which is co-funded by the LIFE financial instrument of the European Union

Study/report		Reference title	Language	Partner	Year
Hydrology study		“Determination of important hydrological features for Oroklini Lake”	English (Greek summary available)	BirdLife Cyprus	2012
Favourable Reference Value report	Technical report in English	Setting Favourable Reference Values for Annex I bird species at Oroklini marsh as part of the LIFE project: “Restoration and Management of Oroklini Lake SPA in Larnaca, Cyprus”	English	BirdLife Cyprus	2014
	Brochure report in Greek	ΛΙΜΝΗ ΟΡΟΚΛΙΝΗΣ Τιμές Αναφοράς Ευνοϊκού Καθεστώτος Διατήρησης για τα σημαντικά είδη της περιοχής	Greek	BirdLife Cyprus	2014
Catchment water quality study		Analysis of Pressures and Impacts on runoff water quality for the Oroklini Lake catchment	English (Greek summary available)	BirdLife Cyprus	2014
Ichthyological study		Ichthyological Study for Oroklini Lake, Cyprus	English (Greek summary available)	BirdLife Cyprus	2014
Predation report		Μελέτη επίδρασης θηρευτών στα αναπαραγόμενα παρυδάτια στη Λίμνη Ορόκλινης	Greek (English summary available)	Game and Fauna Service	2014
Water Management Regime		Oroklini Lake, Cyprus Water Management Plan	English	BirdLife Cyprus	2014
Monitoring Protocol		Monitoring Protocol for Oroklini Lake	English	Game and Fauna Service	2014