



LIFE ANDROS SPA LIFE10 NAT/GR000637

Monitoring Plan for Bird Species on Andros Island



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Introduction

The present document contains a detailed description of the necessary methodologies to assess the distribution, population size, breeding performance and general conservation status of the project's avian target species throughout the project's duration. This monitoring plan will provide the information needed to evaluate the outcomes and actual efficiency of the implemented concrete conservation measures.

Various methodologies are available to monitor avian species populations, but this document compiles a selection of those that are most suited to Andros and this islands' islets terrain and ecological characteristics.

A comprehensive methodology is provided for each target species individually (when appropriate) or for species belonging to the same breeding habitat (in particular for passerines and wetland birds), providing detailed information on location, time periods, equipment and human resources needed, as well as some notes regarding weather, disturbance and general safety measures. In addition, in particular cases several methods are provided in order to chose the most appropriate according to the circumstances (location geography, human resources and time availability, etc).

All gathered data will subsequently be analysed by means of statistical programmes, input into HOS database, and processed in a GIS environment in order to establish breeding performance and population trends of all target species.

Methodology for species breeding on islets or coastal habitats

In general, for all field work completed on islets or coastal habitats, the following safety measures should be observed:

Weather conditions, disturbance and safety reminders

- Always wear a lifejacket while boarding a vessel
- Always wear a hat, suncream and have plenty of water with you
- Avoid very wet and windy conditions
- Avoid walking in the colony for any longer than is absolutely necessary
- Avoid any area of the colony containing burrows in danger of collapse
- If working alone, always ensure someone knows where you are and when you intend to return. If cliffs or steep slopes are to be climbed, use the correct safety equipment and do not work alone. Beware of soft and eroding cliff edges and overhangs, wear footwear with plenty of grip and use ropes or safety harnesses on steep slippery slopes.

Mediterranean Shag (Phalacrocorax aristotelis)

Breeding season survey - population census

Sought information

- The maximum number of Apparently Occupied Nests from any one count
- Different habitat types occupied by Mediterranean Shags and the density of nests in each habitat

- Digital photographic camera
- Binoculars
- Field datasheets
- GPS
- Topographic map of the area (1:10,000 scale)
- Colour spray/tape

Method 1: Counting Apparently Occupied Nests (AON) in randomly selected plots

Where: all colonies.

When: At least four visits from mid-March to mid-May (during the period when the maximum number of nests is occupied). This period is normally during late incubation and early nestling period. However local knowledge may be needed to establish the optimum dates). Any time of day is suitable. In the evening additional immatures and sub-adults may come to roost but this should not affect counts of occupied nests

Who: at least two observers per team.

- Define clearly the boundaries of the census area on a map, whether a length
 of coastline or a colony. For counting purposes and future reference, it is
 useful to subdivide this area further using easily recognisable natural features
 definable on a map (census sectors), and then annotate the map with nest
 counts. Keep the census area consistent between years.
- 2. The recommended count unit is the Apparently Occupied Nest (AON) i.e. active nest (bird sitting tight whether or not eggs or young were seen, or an unattended brood of young) and other attended, well-built nests (apparently capable of holding eggs). Record nests which do not fall into this category separately, as they are often abandoned, or destroyed by other pairs stealing nest material.
- 3. Make at least four counts of AONs between mid-March and mid-May. Report all counts, but the highest reliable count of the whole census area on a single occasion should be entered as the final population figure. Do not combine peak counts of individual subcolonies from different dates.
- 4. Mark on the map any parts of a colony that are difficult or impossible to see from land. Estimate (minimum and maximum) the number of AONs likely to be hidden, based on numbers on visible sectors (although these may not necessarily show similar densities to hidden sections) or on previous seabased versus land-based counts. If at all possible, check and count these sections from a boat on a calm day (especially if you estimate that hidden sections are likely to total more than 10% of the population). If a proportion of the birds in these sections can be seen from either land or sea, keep an additional note of the number of adults visible. Counts of adults should not be included in any detailed assessment of population changes for a colony, but may be required if a whole-colony estimate would otherwise be incomplete.
- 5. If possible, make an objective assessment of the general stage of the breeding cycle by recording the ratio of trace to well-built nests and the proportion of well-built nests that are empty. A subjective assessment of whether there seem to be fewer nests than expected from the numbers of adults present may provide an indication of an unusually late breeding

season, or a season where a large proportion of adults have not attempted to breed. Counts of loafing adults, including those well away from any nests, can be useful, but avoid count in the evening when 'extra' immatures and subadults may come to roost.

Breeding season survey - breeding success and productivity

Sought information:

- Number of chicks divided by the number of occupied, well-built nests
- Total number of nests where eggs or apparent incubation were recorded
- Total number of nests which failed
- Total number of nests which fledged one, two, three or four chicks
- Further notes on losses such as predation; eggs did not hatch; chick dead in nest, possibly starving.

- Digital photographic camera
- Binoculars
- GPS
- Topographic map of the area (1:10,000 scale)
- Field datasheets
- Colour spray/tape
- Boat (optional) and life-jackets
- Climbing gear (optional)

Method 1: Regular visits

Where: all colonies.

When: Visits every 7-10days from the end of February (when first chicks start hatching) till the end of May (fledging period), at any time of day.

Who: at least two observers per team.

- 1. This method may be used for pairs nesting on cliffs, rocks and accessible boulder sites. It involves visits to the colony to check the progress of breeding at numbered nest-sites every 7-10 days from the period when birds start laying (end-February) until the young are fully feathered (end of May). If the colony is small, try to check all the visible nests. Where it is large, however, you may need to sample. The higher the proportion of the population that can be checked the better.
- 2. When sampling a large colony, choose plots containing 10-30 nests. Check at least three study plots but preferably five or more. There are possible methods to select the plots:
 - a. Identify all potential suitable study plots and select randomly from these.
 - b. Divide the colony into (say) four or five approximately equal parts (either by area or number of nests) and pick the same number of plots in each area. This method is not as good as (a), but has been used where the number of possible plots is small.
 - *Whatever method you use, document exactly how you made your choice. If you are constrained to check only specific plots for some reason (e.g. safety, time, places which do not disturb birds or the public), record this. It is not necessary to use the same plots each season, unless they are also being used for population monitoring.
- 3. Photograph the selected plots, preferably when birds are at their nests and make large (A4) prints. Take a transparent overlay over the photograph. Mark the plot boundaries and the position of nests; number the nests. You could also take GPS waypoints.
- 4. Visit the area every 7-10 days from end-February onwards and for each nest record the state of the nest (e.g. few sticks, complete platform), nest contents (if visible do not flush sitting birds) and whether a bird appears to be incubating or brooding. Pay particular attention to large young on open ledges, as large young sometimes move away from the nests. You will have to assume that well-feathered young (with little or no down remaining on mantle and upperwings) which appear healthy will fledge.
- 5. Report the total number of young fledged divided by the number of nests where birds were definitely or probably incubating. If sample plots are used, give figures for each plot. Calculate colony productivity as the mean of plot means (±standard error). Do not pool the results from plots; there may be

marked differences between plots, and the mean productivity for the colony is best calculated as the mean of the plot figures (±standard error). Report the total number that failed, if possible with notes on causes (e.g. predation; eggs did not hatch; chick dead in nest, possibly starved), and the total number of nests that fledged one, two, three or four chicks.

Method 2: Three visits

This method is particularly recommended when limited time is available.

Where: all colonies.

When: at least 3 visits: one during incubation (end-February), one when the first chicks are about to fledge (end of April, beginning of May), and if possible, one follow-up visit to check on smaller chicks (between end of February to beginning of May). Any time of the day is suitable.

Who: at least two observers per team.

- 1. Select study-plots as in Method 1. Again, try to cover as much of the population is practical; in smaller colonies this may be all nests.
- 2. Check nests at least twice, once during incubation and once around the time when the first chicks are likely to fledge, when a search should also be made for additional well-built nests. Note the numbers of chicks in each nests and, if possible, their approximate size / age. If necessary, make a follow-up visit to check on smaller chicks from end-February to beginning of May. Report the number of chicks divided by the number of occupied, well-built nests, for each plot separately and the mean of the results from each plot (±standard error). The latter gives an estimate of productivity for the whole colony.
- 3. This method will overestimate production, as it assumes all chicks survive to fledge. The overestimate can be lessened by a follow-up visit, or by making visits to check on chicks that were still small during the second visit.

Audouin's Gull (Larus audouinii)

Breeding season survey - population census

Sought information:

- Maximum number of Apparently Occupied Nests.
- Maximum number of observed individuals

- Digital photographic camera
- Binoculars
- GPS
- Field datasheets
- Topographic map of the area (1:10,000 scale)
- Colour spray/marker

Method 1: Direct counts of nests

Notes to take into account:

- Audouin's Gulls are known to change colony site from year to year, so all suitable breeding islets should be checked each year.
- Colony size will be recorded as the number of nests and not as the number of pairs, since adult birds are not always visible from land and counts from the sea are not always feasible due to weather conditions. Also, number of adult individuals varies according with the time of the day.
- Visits should not exceed a maximum of 1.5 hours and should be completed preferably in the early hours of the day, when the sun is still not too hot (never during midday!)

Where: all previously known colonies.

When: at least one visit during the end of incubation (early May - around the 10th of May).

Who: 2-3 observers per team.

- 1. The area of the colony must be roughly mapped before fieldworkers land on the islet (and adult birds flush off), in order to identify the boundaries of the colony.
- 2. All the colony area must be searched and located nests will be marked with GPS waypoint and on-site with a coloured marker. Active and inactive nests should be recorded, as well as any predated/broken eggs.
- 3. Habitat type and nearby sources of disturbance should also be recorded.

Method 2: Number of apparently incubating adults and maximum number of adults

Notes to take into account:

- This method should be used whenever Method 1 is not feasible due to safety reasons, inaccessibility, rough weather conditions, time availability, time of day, etc
- In any case, maximum number of observed adults should always be recorded to be used as a reference.

Where: all previously known colonies.

When: at least one visit during the end of incubation (early May - around the 10th of May).

Who: 2-3 observers per team.

- 1. Counts of apparently incubating adults as well as maximum number of adult individuals observed will be carried out from neighbouring islets, from the same islet from a secure distance from the colony with the use of a telescope or from a boat if weather conditions allow it.
- 2. Counts should be made at set intervals and different times of day.
- 3. The correction factor of the number of pairs equals 0,75 x the maximum number of adult individuals observed.
- 4. Habitat type and nearby sources of disturbance should also be recorded.

Breeding season survey - breeding success and productivity

Sought information:

- Total number of nests where eggs or apparent incubation were recorded
- Number of eggs divided by the number of occupied nests
- Number of chicks divided by the number of occupied nests
- Total number of nests which failed
- Total number of nests which fledged one, two or three birds
- Further notes on losses such as predation; eggs that did not hatch; chicks dead in nest, etc
- Breeding success will be estimated from two factors: average number of eggs per nest, and chick survival (i.e. the proportion of young that successfully fledge)

- Digital photographic camera
- Binoculars
- GPS
- Field datasheets
- Topographic map of the area (1:10,000 scale)
- Colour spray/marker

Method 1: Regular visits

Notes to take into account:

Audouin's Gull is a sensitive species, therefore time spent on the colony should always be reduced to the minimum possible in order to reduce disturbance, probability of predation by Yellow-legged gulls or Ravens, and overexposure to heat.

Where: all previously known colonies.

When: a minimum of 2 visits are needed: one at the beginning of May (end of incubation) and one in early July (before fledging period).

Who: at least two observers per team.

- 1. In the first visit, following nest location and marking, nest content will be recorded.
- 2. In case of easily accessible colonies, subsequent visits could be made (late May early June) to record the number of hatched chicks, number of live and dead chicks and signs of predation. Date of hatching will be recorded as the day when the first chick hatched and if visits are performed after hatching has initiated, hatching date will be inferred by the age of chicks present in the nest.
- 3. During the last visit before the fledglings are able to fly, the fledglings could be ringed with metal and colour rings in order to assess juvenile and adult survival rates in future monitoring and other ecological parameters such as philopatry.
- 4. Breeding success will be estimated for each colony by counting the total number of fledglings during the last monitoring visit.

Eleonora's Falcon (Falco eleonorae)

Breeding season survey - population census

Sought information:

Maximum number of observed individuals

- Horn (120 DB)
- Digital photographic camera
- Binoculars
- GPS
- Field datasheets
- Topographic map of the area (1: 25,000 and 1:50,000 scale)
- Boat (speedboat or fishing boat)

Method 1: Direct census

Notes to take into account:

- The coastline is divided into sectors (GPS waypoints and sectors), so counted birds should be recorded in the corresponding sector. If these sectors are not available, special attention must be paid to record on the map the counted birds in the correct area or section of the coastline.

Where: all colonies.

When: one visit between the 15th of August and the 25th of September, during daytime (9 am till 5 pm).

Who: 2-3 observers per team plus the boat captain.

- Suitable breeding habitats (cliffs and inhabited islets) will be approached by boat and birds will be flushed with the horns and adult individuals counted while in the air.
- 2. Habitat type and nearby sources of disturbance should also be recorded.

Breeding season survey - breeding success and productivity

Sought information:

- Total number of nests with eggs
- Number of eggs divided by the number of occupied nests
- Number of chicks divided by the number of occupied nests
- Total number of nests which failed
- Total number of nests which fledged one, two or three birds
- Further notes on losses such as predation; eggs that did not hatch; chicks dead in nest, etc
- Breeding success will be estimated from two factors: average number of eggs per nest, and chick survival (i.e. the proportion of young that successfully fledge)

- Digital photographic camera
- Binoculars
- GPS
- Field datasheets
- Topographic map of the area (1:10,000 scale)
- Colour spray/marker

Method 1: Direct count of nests

Notes to take into account:

- Eleonora's Falcons usually nest in inaccessible high cliffs, although in some occasions they may nest in more accessible habitats, such as uninhabited islets. This methodology is to be carried out **only** if the nests are accessible safely.

Where: Panagia (Theotoko) islet colony.

When: at least three visits between the 15th of August and the 25th of September, during daytime trying to avoid the central hours of the day when the sun is at its highest.

Who: 2 researchers per team.

- 1. During the first visit nests are located, recorded with GPS and marked on-site with a coloured spray. Number of eggs, chicks, any signs of predation, etc are recorded in the datasheets.
- 2. In the subsequent visits the same methodology is carried out. If the chicks are large enough they could be ringed with a metallic ring.

Bonelli's Eagle (Aquila fasciatus)

Breeding season survey - population census

Sought information:

- Maximum number of observed individuals
- Number of occupied territories

- Digital photographic camera
- Binoculars
- Telescope
- GPS
- Field datasheets
- Topographic map of the area (1:25,000 and 1:50,000 scale)

Method 1: Direct census

Notes to take into account:

- The birds' behaviour will be indicative of the breeding stage: birds carrying nest material, birds roosting in their territory, droppings at perching sites close to the nest, etc.
- Birds that don't lay eggs, are not linked to the nest and therefore are absent from the territory, however, during incubation females stay in the nest and may not be visible giving the impression that the nest/territory is empty.

Where: all suitable nesting sites (both large and small rocky cliffs).

When: as many visits as are required to confirm occupancy of territory between January and the 5th of May (should be repeated several times if results are negative).

- 1. In order to locate all nesting sites and/or occupied territories, observation points (OP) will be used. The number of OPs per territory will vary depending on the needs and characteristics of each one, but should always guarantee the full coverage of the territory or potential territory to increase the chances of nest site detection. The location of the OP will also vary according to the area needed to be surveyed, ranging from points that cover a single cliff (i.e. known nest site), to those commanding a large area (e.g. known territory but unknown nest site). In cases such as the latter, while allowing a clear view of the area to be scanned, OP should not be located on very high spots (the birds might fly too low in the valley and could easily be missed). OP at nest sites should always be located at a distance far enough to avoid any possible disturbance to the breeding pair (i.e. 500-1000 m.), should provide the observer with some cover so as to not stand out in the landscape and should guarantee good visibility of the inside of the nest.
- Territory and nest site detection will be carried out with binoculars, while a telescope will be used to confirm a nest site and incubation. GPS handheld devices will be used to establish the locations of both observations points and nest sites.
- 3. The first visits should be completed between the 1st of January and the 5th of March. If no birds are detected, several visits should be carried out to confirm presence or absence of a territory.
- 4. A datasheet should be filled in for every visit and all fields should be recorded.

Breeding season survey - breeding success and productivity

Sought information:

Total number of fledged young

- Digital photographic camera
- Binoculars
- Telescope
- GPS
- Field datasheets
- Topographic map of the area (1:25,000 and 1:50,000 scale)

Method 1: Direct count of fledged young

Where: all suitable nesting sites (both large and small rocky cliffs).

When: a minimum of 3 visits (per territory) are needed: the first between the 1st of January and the 5th of May (should be repeated several times if results are negative); a second visit between the 15th of February and the 30th of March, and one last visit between the 30th of March and the 30th of May.

- 1. Nesting sites and/or occupied territories will be located from observation points (OP) (see above for details).
- 2. Once territory / nest site detection and incubation are confirmed using binoculars and a telescope when needed, breeding monitoring will be carried out with a telescope.
- 3. The first visits should be completed between the 1st of January and the 5th of March. If no birds are detected, several visits should be carried out to confirm presence or absence of a territory.
- 4. The second set of visits aims to monitor the breeding development should take place between the 15th of February and the 30th of March.
- 5. The last set of visits will take place between the 30th of March and the 30th of May in order to monitor successfully fledged juveniles.
- 6. Monitoring will take place during the first and last hours of the day, when the birds show a highest activity around the nesting area facilitating the detection of nesting sites and monitoring the development of the breeding success.
- 7. A datasheet should be filled in for every visit and all fields should be recorded.

Methodology for seabird census at sea

Breeding season survey - population census

Sought information:

Maximum number of observed individuals

- Digital photographic camera
- Binoculars
- GPS
- Field datasheets
- Topographic map of the area (1:25,000 and 1:50,000 scale)

Method 1: Direct census

Notes to take into account:

- In cases such as Eleonora's falcon, horns can be used in order to flush the birds and count all present birds with higher accuracy.

Where: all coastline and islets.

When: at least one visit at beginning of March.

Who: 1-2 observers per team.

- 1. Census is carried out from a boat travelling at a constant speed (5-13 miles/hour) and distance from the coast.
- 2. All birds and nests observed are to be counted and recorded on the datasheet
- 3. Habitat type and nearby sources of disturbance should also be recorded as indicated in the protocol.

Methodology for diurnal species breeding on farmlands and shrublands

Population and breeding surveys

Sought information:

- Presence of species
- Number of individuals/species
- Population trends

- Binoculars
- GPS
- Digital photographic camera (optional)
- Sound recorder (optional)
- Field datasheets
- Topographic map of the area (1:10,000 scale)
- Topographic map with 2x2 km square grid and 25 selected points (for Method 1)

Method 1: Point counts

Notes to take into account:

- This method is focused on detecting population trends of breeding species, but it will nevertheless also provide information regarding migratory species.
- Signs of breeding (carrying nest material, territorial calls or flights, etc) should always be recorded!
- This method should not be carried out on days of bad weather (rain, cold or wind)
- A sound recorder could help to identify unknown birds by their calls (the recordings should be checked at home, once all the points have been completed!)

Where: selected farmland and shrubland on Andros mainland.

When: a minimum of 3 visits are needed: the first visit to inspect the area and locate all points from which counts will be performed, a second visit between the 15th of April and the 15th of May, and one last visit between the 15th of May and the 15th of June. The 2nd and 3rd visits must take place a month apart. In order to provide the required data for method 3, it is strongly recommended to carry out the third visit within the month of May.

- 1. Within each 2x2km grid a number of 25 random, regularly placed, points will be selected. Fifteen (15) of the 25 points are randomly selected and are considered the main points from which counts will be performed. The remaining 10 points are considered replacement points to be used only in case main points are not accessible.
- 2. A first visit will be completed to the study area in order to locate the exact position, feasibility and route between the selected points in the field. The observer must record the type of habitat where each point is located.
- 3. During the second and third visits the actual point counts will be completed. All counts at points must be completed before 11 am, starting from dawn. Points should be visited always in the same order and approximately at the same hours.
- 4. Point counts: Recording time at each point is 5 minutes (the observer should wait a couple of minutes after arriving to the spot so birds can settle before he/she starts to record birds) and all observed and heard birds are recorded (only identified species should be recorded!). The distance from the observer must also be recorded using bands of 25, 25-100 and >100m radius around the point. Birds flying over the observer without landing are recorded as "flyovers". Special attention is essential to avoid double counts.

Method 2: Transect counts

Notes to take into account:

- This method is focused on detecting population densities but will nevertheless also provide information regarding migratory species.
- Most suitable for homogeneous and open habitats such as farmlands and for conspicuous species (such as the Crested Lark)
- Signs of breeding (carrying nest material, territorial calls or flights, etc) should always be recorded!
- This method should not be carried out on days of bad weather (rain, cold or wind)
- A sound recorder could help to identify unknown birds by their calls (the recordings should be checked at home, once all the points have been completed!)

Where: selected farmland and shrubland on Andros mainland.

When: a minimum of 3 visits are needed: the first visit to inspect the area, second visit between the 15th of April and the 15th of May, and one last visit between the 15th of May and the 15th of June (these visits must take place a month apart between each other!). In order to provide the required data for method 3, it is strongly recommended to carry out the third visit within the month of May.

- 1. A first visit will be completed to study the area and select the best transects and the route between them. The distance between transects should be above-500 meters, so the number of transects will vary according to the size of the patch to be surveyed. Transects will have a length of 500-1000 m (it is recommended to divide each transect into smaller sectors). The observer must record the type of habitat in which the transect is located.
- 2. During the second and third visits transects will be completed. All transects must be completed before 11 am, starting from dawn, always in the same order and approximately at the same hours.
- 3. Transects: the observer should walk along the transect at a *slow and constant* pace (2 km/hour in open farmlands). All observed and heard birds are recorded (only identified species should be recorded!). The distance from the observer must also be recorded using bands of 25, 25-100 and >100m running parallel on either side of the observer's track (distance is measured perpendicular to the observer's track, not actual distance from the observer). Birds flying over the observer without landing are recorded as "fly-over". Special attention is essential to avoid double counts (birds that advance forward as the observer walks), and birds heard behind the observer should not be recorded.

Method 3: Territory mapping and nesting monitoring

Notes to take into account:

- This method is to be used in combination with and based on the data collected in method 1 and/or method 2 explained above.
- Only suitable for territorial species (such as the Bunting or Lark families) with territorial (singing) males.
- When monitoring a nest, special care must be taken in order not to disturb the nesting pair.

Where: in those plots previously identified in methods 1 and/or 2 to hold target breeding pairs.

When: all located nesting sites must be visited at least once per week from the 15th of May till the end of August.

- 1. The location of all singing males observed while completing method 1 and/or 2 should be carefully mapped in order to establish their territories (maps 1:2,000 or 1:5,000 scale maximum).
- 2. Once the boundaries of the territories are delimited, the nests can be located by observing the adult birds fly back to the nest during nest-building, when the females return to the nest after a break in incubation, or, most often, when they were feeding chicks.
- The observer will record the state of the nests in the subsequent visits (number of eggs, number of chicks, number of fledged birds, failed nest, sings of predation, etc).

Methodology for nocturnal species breeding on farmlands and shrublands

Population and breeding surveys

Sought information:

- Presence of species
- Number of individuals/species
- Population trends
- Presence/ absence and numbers of Little Owl
- Little Owl population trends

- Head-torch
- GPS
- 2 minute-long Little Owl territorial call recorded on an MP3 or portable CD player.
- Megaphones that meet or exceed 10 watts and are able to broadcast owl calls without distortion
- Compass
- Digital photographic camera (optional)
- Sound recorder (optional)
- Field datasheets
- Topographic map with 10x10 km square grid and 5 selected points for method 1
- Topographic map with 2x2 km square grid and 16 selected points for method 2

Method 1: Point counts

Notes to take into account:

- Census must be completed only on nights with good weather conditions
- This methodology will provide information on the presence of most nocturnal raptors.

Where: selected farmland and shrubland on Andros mainland.

When: a minimum of 3 visits are needed: one first visit to get to know the area, second visit between the 1st of March and the 15th of May, and one last visit between the 15th of April and the 30th of June (these visits must take place a month apart between each other!).

- A first visit will be completed during daytime to study the area and locate exact position, feasibility and route between the selected points in the field. A total of 5 points 1,5 km apart from each other will be selected in each 10x10 square. The observer must record the type of habitat where each point is located.
- 2. During the second and third visits the actual point counts will be completed. The census must start 15 minutes after sunset and end approximately 2 hours later. The counts should always be carried out in the same order and approximately at the same hours.
- 3. Point counts: time of recording at each point is 10 minutes (the observer should wait a couple of minutes after arriving to the spot before he/she starts to record birds) and all observed and heard birds are recorded (only identified species should be recorded!) as well as the time they were seen/heard.

^{*}Further notes: although call-playback methods have been used in the past to survey for multiple nocturnal raptor species, this methodology is no longer considered acceptable as it has been proved that the broadcast of calls of various owl species at one sample station within in the same night may inhibit owl response from some of the species.

Method 2: Playback methodology for Athene noctua

Notes to take into account:

- This methodology exploits the vocal responses of territorial Little Owls to conspecific calls.
- This methodology, with minor changes, could be applied to other nocturnal raptors if any other species are found to breed on the island.
- Census must be completed only on nights with good weather conditions

Where: selected farmland and shrubland on Andros mainland.

When: 4 visits uniformly between the 1st of March and the 31st of May from sunset to midnight.

Who: 1-2 observer/s per team.

- 1. A 2x2 km grid will be established and subsequently divided into 16 squares of 25 ha each, locating a playback station at the centre of each square. A first visit will be completed during daytime to study the area and locate exact position, feasibility and route between the playback stations. The location of the playback stations can be slightly modified, as long as they are 500 metres apart from each other. The observer must record the type of habitat where each point is located.
- 2. During the survey visits, the call sequence must be played three times separated by one minute silent periods at a natural volume. Playback is stopped as soon a Little Owl responds. In addition, the observer should wait 5 minutes after the last sequence. The position of all the responses must be recorded with the use of a compass on a field map. Time, number of owls, and sex must also be recorded on the protocols. Playbacks should always be carried out in the same order and approximately at the same hours.
- 3. <u>Determination of occupancy:</u> a site will be considered occupied by a pair if a) a male and female are heard or observed within 100 m of each other on two or more night visits (these observations do not need to occur on the same visit); b) a male is seen taking a food item to a female; c) a female is detected on a nest; d) one or both adults are seen with a young. Resident single status will be assigned to any location with the presence or response of a single owl within the same general area on three or more occasions during a single breeding season, with no response by an owl of the opposite sex after at least three complete surveys.
- 4. If further information is pursued, visits should be made during the day in order to find nests and gather data on number of chicks and fledged young.

Methodology for species wintering in wetlands

Population surveys

Sought information:

- Presence of species
- Number of individuals/species
- Population trends

- Binoculars and telescope
- GPS
- Tally counter
- Digital photographic camera (optional)
- Sound recorder (optional)
- Topographic map of the wetland (1:5.000 scale)

Method 1: Ground counts

Notes to take into account:

This method is an adaptation from the Midwinter Counts methodology and is focused on detecting population trends of wintering species, but nevertheless it will also provide information regarding migratory species.

Where: all wetlands on Andros mainland.

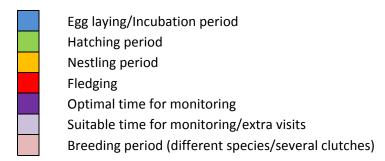
When: a minimum of 2 visits are needed: one first visit to know the area and a second visit between the 10th and 20th of January.

- 1. A first visit will be completed to study the area and locate exact position, feasibility and route between the selected points in the field. The observer must select as many points as needed to fully cover the whole area of the wetland. The observer must take GPS waypoints of and routes to every selected point in order to locate them easily in the following visit. The observer must also map the site and subsite boundaries, thus delimiting the count units to be used in all successive counts. In addition, a small description of each site or subsite should be provided as well as information on the level of water and tide.
- 2. During the second visit the actual point counts will be completed. Time of the day to complete the counts should take into account facts such as: human presence (hunter, walkers), tides, light, bird concentration (roosts).
- Recording time at each point should be that needed to fully cover the point's site or subsite. All birds seen and heard should be recorded (only those identified!).

Monitoring timetable

	Species	Jan				Feb			Mar			Apr			May			Ju	ın		Jul		Au	g	Sep				Oct			
Breeding period Census	Phalacrocorax aristotelis																															
Breeding monitoring	desmarestii																															
Breeding period																																
Census	Larus audouinii																															
Breeding monitoring																																
Breeding period																																
Census	Falco eleonorae																															
Breeding monitoring																																
Breeding period																																
Census	Aquila fasciatus																															
Breeding monitoring																																
Breeding period	Diurnal species																															
Census/Breed. monitoring	breeding on farmlands/shrublands																															
Breeding period	Nocturnal species breeding on																															
Census/Breed. monitoring	farmlands/shrublands																															
Census monitoring	Species wintering in wetlands																															

Table legend:



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Annexes

Datasheet for population counts



Datasheet for population counts LIFE ANDROS SPA LIFE10 NAT/GR000637



Census count ansfotelis etaigeled B rufinus H fescietus eudouini 2 ivis Time Time Sector (finish) Islet Name Comments (start) code Disturbance at Area Presence Habitat Presence of fresh Hiegal Presence of Stock Military activities. Sector type at of other water Presence of people on code (YANAJ): constructions Fisheries Tourism Breeding Hunting Works. exercises Other (Y/N/U): coast [vi Comments (disturbance) animals.



Datasheet for population counts LIFE ANDROS SPA LIFE10 NAT/GR000637



KEY		Disturbance:				
Comments:	Light conditions at sector	Fisheries: C. Chastal, M. Middle-sized (Purse-seine, Bottom traviers),				
	Method of approach ivesse, four, other	A. Amaleur, O. Cliner				
	Presence of unsuitable habitat: Settlements, Beaches, etc.	Tourism: SL: Slaring bioar, SP: Speedocat, T. Tourist bioar, Sw:Swimming,				
	Presence of safe anchoring site (YMXU)	T. Tretking, C., Climbing, CA.Campring, O. Other				
Habitat type 1≤N	lagus, 2=Barrigue, 3=Bores, 4=Vertica clife, 5=Rody shore, 6=Familiand, 7= Other	Stock-breeding: Presence of G. Buats, S. Bheep, S.F. Settlements				
Presence of othe	ribird species: A- Aduts, I- Immatures	M. Movement of an male, Cr. Other				
Presence of othe	r animals: G= goats, S= sheep, R= rabbits, D= dogs, C= cats, Ra=Rats, C= other	Hunting H: Presence of numbers, S: Signs of numbing				
Presence of constructions. C= currently used, P= Uned in past		Works B Buildings P. Road works, D. Other				
24-24-2000-0-24-000		Military exercises, C. Observation of exercises, S. Gigns of exercises				
		Other e.g. Egg collection, Nest destruction, etc.				

Datasheet for nest counts and breeding history



Datasheet for nest counts and breeding history LIFE ANDROS SPA LIFE10 NAT/GR000637



(1st)					DATE	E (2nd	1)				DATE	(3rd)	(DAT	E (4th)			DATE (5th)
e (P):					GPS	file (P):				GPS	file (P):	8			GPS	file (P):	ŝ		GPS file (P):
/ Islet	t Ref	code:		8			Com	ments	5													***************************************
							Adult	smax	-													
of ap	proac	:h:	0	8			Juver	niles n	nax:								-	00		30 -	30	
F	st type	_		Egg					Chick			,		Samples taken			use		11	guit	Comments (eg Method of nest markin Predation details, Ringing Ad / Juvs,	
Mari	Nes	Nes	1st	2nd	3rd	4th	5th	1st	2nd	3rd	4th	5th	1st	2nd	3rd	4th	5th	N N	Hab	Prec	Ring	recoveries, etc.)
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Method of approach: 1= vessel, 2= foot, 3= other Aspect of nest; N. NE, E, SE, S, SW, W, NW

Chick: # & A: Alive, D: Dead (eg. 1A, 1D)

Samples taken: E= Eggshell, PI= prey item, P= Pellet, DC= Dead Chick, BP= Bird Part, WB= Whole Bird, O= Other

Evidence of nest use: D= droppings, PE= Pellets, S= smell, O= other

Nesting habitat type: 1= vertical cliffs, 2=gentle rocky coast, 3=scree, 4=slope with vegetation, 5= Other (in comments)

Ringing: Date of ringing (Adult / Juvenile in comments)

Predation (in comments): E= eggs, C= chicks, A= adult & number of each (eg. 2E, 1C. etc)

NEST TYPES

- A: Under bush
- B: Under boulder
- C: On ledge and in small caves of high cliffs
- D: In potholes and cliffs
- E: Cliff tops and caves, ledges & pigeonholes of highly weathered cliff
- F: In cave of accessible sites
- G: Under bush and boulder
- H: On open ground
- I: In burrow
- J: Other (description in comments)

Datasheet for breeding success and productivity of Bonelli's Eagle

2007 800 4000	Gener	al data	- AT 1815 - 181 - 181
Observers:		Date:	
Territory:		Time:	
	S	lte	
Closest landmark:			
Co ordinates:			
1	Territory ch	naracteristics	
Nest location - Tree		Nest location - 0	cliff
Nest height:		Cliff height:	
Tree species:		Nest height on t	he cliff:
Main vegetation type on the sl	ope:	Cave Crev	ice Cliff edge
		Other:	
Orientation of the cliff or slope	d .		
Rack type:	1.02000000	10200049999	Topic of the sour recovers and
Limestone Siliceaus		Sandstone	Conglomerate
	State of	territory	
Territory with 1 pair:		Age of male:	
Territory with 1 individual:		Age of female:	
Empty territory (with nest/s):	112.0		
Potential territory (unknown n			
	Breedi	ng stage	
Courting displays:	\$100 miles (\$100 m	24.000	
Incubation:	Number of eggs:		ccessful incubation:
Chicks:	Number of chicks		l chicks:
Fleeglings:	Number of fledg	(107 <u>75)</u>	
2007		ords	
	ine for each important record v		ate of the territory)
Time		Observations	
	Concord	tion issues	
(In a radiu	is of 3 km surrounding the nest		t of the territory)
Paved roads:			P. C.
Dirt roads:			
Power-line network:			
Housing:			
Telecomunication poles:			
Wind-farms:			
Hunting:			
[- [- [- 1] - [-			
[전쟁][[[[[[[]]]]][[[[]]][[[]]][[[]][[]][[
[- [- [- 1] - [-	Makitat d	accrintion	
Interactions with other species Other disturbance: (In a radiu	Habitat d	lescription for from the central poin	t of the territory)

Datasheet for point counts at farmlands and shrublands

Afe . NATURA		E ANDROS SE	eet for poi	nt counts NAT/GR000633	7	Life Andros
This part of the datashed 2x2 Plot Code:	st is only filled in	0009	Observer:	1		
Visit:	1st	2nd	Date:		1	1
Weather condition	ns				(647)	2000
Cloud	I	Visibility		Rain	Wind	
Temperature		Altitude		1		
This part or the datashee Fill in the species you're Wait for 1 minute Point Code:	cord separately .	in each distance cale	scory or in the 'Pr ig time 5 min Star	utes only. t time		
		Distance		h time	-	:
Species Code	<25m	25-100m	Distance categories 25-100m >100m Fly-overs			ments
Cloud	Visibility	Rain	Wind]		
1 = 0-33%	1 = Good	1 = None	1 = Calm	1		

2 = Light

2 = 33-66%

3 = 66-100%

2 = Moderate 2 = Drizzle

3 = Showers

Datasheet for transect counts at farmlands and shrublands

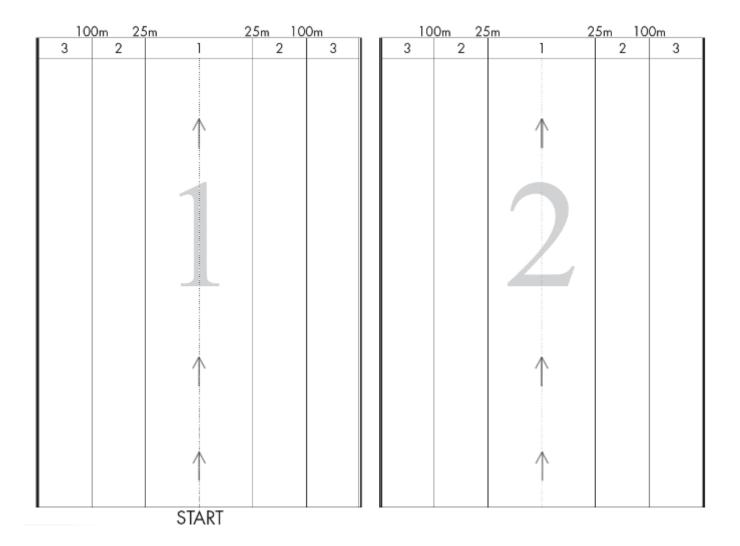




Life MATURA		ANDROS SI	PA LIFE10		637		Life Andros
Time part of the dataster Transect Code:	d is only blind in	occe	Observer:		1		SSAN NO.
Visit:	1st	2nd	Date:	. (2)		I	I
Weather condition	ns						
Cloud		Visibility		Rain		Wind	Ÿ
Temperature		Altitude		1			
Tims part of the dataster. Fill in the species you re-				y-overst pollumin			
Wait for 1 minute Habitat (description	before recor	ding. Recordin					
Transect			Star	t time			
coordinates:			Finis	sh time			
- East the management			ategories			0.000	1000
Species Code	<25m	25-100m	>100m	Fly-overs	Sector	Side	Comments
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Cloud	Wieibilits:	Dain	Wind	1	· ·	· ·	
= 0-33%	Visibility 1 = Good	Rain 1 = None	1 = Calm				
0 - 00 000/	0 11 1	0 - 0	0 11-14	4			

Cloud	Visibility	Rain	Wind		
1 = 0-33%	1 = Good	1 = None	1 = Calm		
2 = 33-66%	2 = Moderate	2 = Drizzle	2 = Light		
3 = 66-100%	3 = Poor	3 = Showers	3 = Breezy		

Datasheet for transect counts at farmlands and shrublands (continued)



$Data sheet \ for \ nocturnal \ point \ counts \ at \ farmlands \ and \ shrublands$

Uho.	NATURA 200	Datasheet for nocturnal birds (LIFE ANDROS SPA LIFE1D NAT/GRD00637)						Life A	ndros	
Square code:			Observer	:		Comme	ents			
Visit#:	1 st	2nd	Date:		11					
Cloud cover		Moon		Rain		1				
Temperature		Height		Wind		1				
Wait for 1 min befor	e starting.	Recording ti	me: 10 mir	1						
			Startin	ng time:	4	- 3		Commer	nts	
Point #:	5		Endin	g time:	5.5	3				
				т	ime of obs	servation				
Species	1 min	2 mln	3 min	4 min	5 min	6 min	7 min	8 min	9 min	10 min
Point #:				ng time:				Commer	nts	
			1 100000000		ime of obs	ervation				
Species	1 min	2 min	3 min	4 min	5 min	6 min	7 min	8 min	9 min	10 min
Moon		-	Cloud co	ver	Rain	-	Wind			·
1 = New	5 = Full		1 = 0-339	5	1 = None	2	1 = None	2		
2 = Crescent	6 = Gibb	ous waning	2 = 33-66	i%	2 = Light rain 2 =		2 = Light	2 = Light wind 1-2 Beaufort		
3 = First Quarter	7 = Last (Quarter	3 = 66 10	10%	3 = Heav	y rain	3 = Stron	ng wind 3	5 B	
4 = Gibbous waxing	8= Wani	ng crescent	*		38		in-			

Datasheet for Athene noctua counts





Datasheet for Athene noctua counts (LIFE ANDROS SPA LIFE10 NAT/GR000637)



Square code:	T.	Observer:					
Visit #:		Date:	1	1			
Cloud cover	Moon	Rain	Wind				
Temperature	Height						
		Starting time:	:		Comment	s	
Point #:		Ending time:	:			**************************************	
Response #	Time	# of birds	Sex	l Br	earing	Comments	
nesponse #	ims	II of birds	Jun		an mg	Commence	
-	i	Starting time:	:	1	Comment	<u> </u>	
Point #:		Ending time:					
			-10		1000		
Response #	Time	# of birds	Sex	Bearing		Comments	
						-	
		1					
Moon		Cloud cover	Rain	Wind		<u> </u>	
1 = New	5 = Full	1 = 0-33%	1 = None	1 = None			
2 = Crescent	6 = Gibbous waning	2 = 33 66%	2 = Light rain	2 = Light	wind 1 2 B		
3 = First Quarter	7 = Last Quarter	3 = 66-100%	3 = Heavy rain	3 = Stron	rong wind 3-5 B		
4 = Gibbous waxing	8= Waning crescent	Ž.				7	

$Data sheet for {\it Midwinter counts} \ at \ wetlands$

* like * NAT	京 京	or miwinter counts at OS SPA LIFE10 NAT/G		Opvigozorikh etaipeia
Wetland		Observers		
Date			•	
		Weather conditions		
Cloud cover		Visibility		
Rain		Wind		
	Descri	ption of Observation P	oint	
Observation Point	Description	Water level	Impact of weather conditions on counts	Impact of disturbance on counts
		Bird counts		
Observation point	Species	Number	Comr	nents
		1		
		<u> </u>	1	1
Cloud cover	Visibility	Rain	Wind	
0-33%	Good	No	No wind	
33-66%	Medium	Light rain	Breeze (1-3 B)	
66-100%	Bad	Heavy rain	Strong wind (4-6 B)	