



NATURALIST NOTE

September 2013



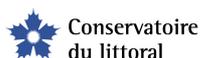
The breeding bird community of Sazani island (Albania) : state of knowledge and management recommendations

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Résumé / Abstract

RESUME :

Deux missions de terrain se sont déroulées sur l'île de Sazani en Septembre 2012 et Mai 2013 dans le cadre de l'Initiative PIM en vue d'améliorer les connaissances sur ce territoire méconnu et d'élaborer des recommandations en matière de gestion.

Une étude sur les populations d'oiseaux de l'île a été réalisée à l'occasion de la seconde mission.

Mots-clés : Sazani, Albanie, expertise, oiseaux marins, rapaces

ABSTRACT :

Two field missions have been organized in September 2012 and May 2013 in the framework of PIM Initiative, in order to improve the naturalist knowledge on this unknown territory and to define recommendation in term of site management.

A study on bird population of the island has been realized at the occasion of the 2nd mission.

Key-words : Sazani, Albania, expertise, seabirds, raptors

Mission data

Location : Sazani island - Vlorë (Albania)

Dates : May 27th to June 1st 2013

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PIM Initiative for Mediterranean Small Islands

Since 2006, the Conservatoire du Littoral (French coastal protection agency) have coordinated an international program dedicated to the promotion and assistance to the management of micro-insular territories, called the PIM Initiative, co-funded by the French GEF (FFEM), the French Water Agency and the City of Marseille. The PIM initiative aims to exchange and share knowledge and know-how necessary for the emergence of good management practices of these exceptional areas.

At the occasion of field missions and trainings, wardens, scientists, technicians, naturalists, managers, NGOs or representatives of local authorities work together to promote the conservation of Mediterranean small islands, and the implementation of concrete management actions, with a positive impact on ecosystems, biodiversity, natural resources and uses.

Partnership This mission was organized in the framework of a cooperation between the Conservatoire du Littoral, the UNDP Program in charge of Albanese Marine Protected Areas, the Universities of Tirana and Vloa and the APAWA (Association for the Protection of Aquatic Wildlife of Albania), with the support of the French Embassy in Albania.

The main objective of this mission is to realize a management scheme of the island, based on the inventories done during the mission of September 2012 on the basis on the new expertise and data collected during the mission.

The inventories will improve naturalist knowledge on the site in order to define management recommendations (integrated land-sea) on the area (potentially, in coordination with the UNDP project dedicated to drafting the management plan of the MPA-Karaburuni Sazani - newly created in 2010).

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1. General data

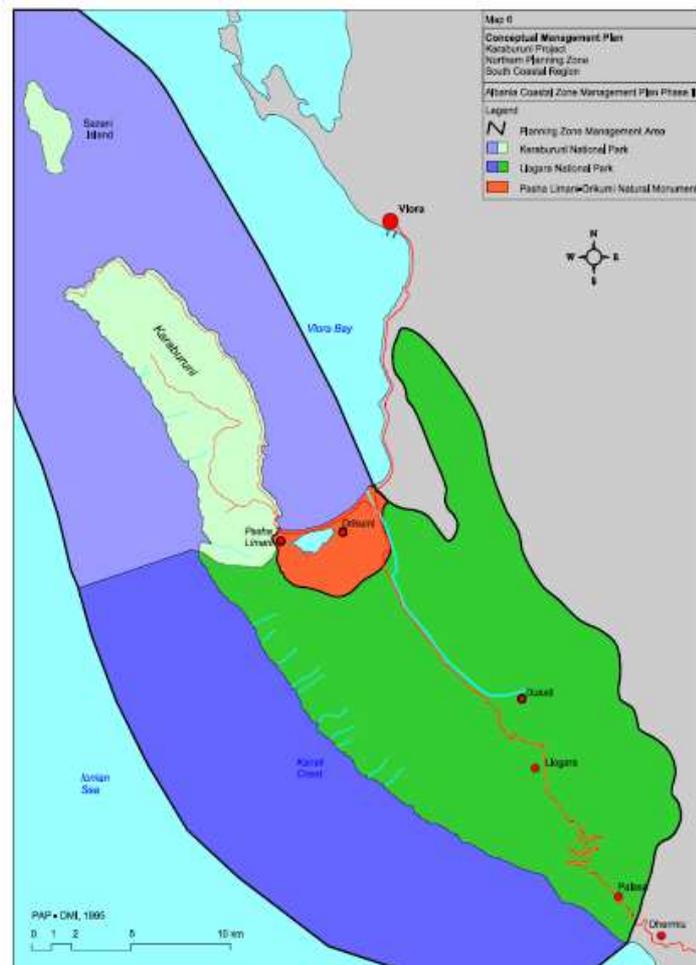


Included in the Karaburun-Sazani's AMP perimeter, Sazani Island is the biggest Albanian (570 ha, 4,8 km long and 2km wide), with a maximum altitude of 337 meters.
 Located in the administrative area of the city of Vlora, the island is situated 6,5 nautical miles west from the Port of Vlora.

© C. Damery, 2011

Karaburun peninsula represents the western part of the Vlora bay and is crossed by the formal border line between the Adriatic and Ionian seas. Including Sazani Island, the whole area has been identified as a priority conservation area from different national and international study sources.

However, Sazani Island is not included in the Llogara-Karaburun National Park perimeter. The establishing of the MPA of Karaburun-Sazani in 2010 (first Albanian MPA) is the first step to allow sustainable exploitation of marine area resources, while preserving its biodiversity and landscape.



Marine and terrestrial area proposed in the Management plan for coastal areas (source : MedWetCoast, 2004)



2. Uses and history of the site

In view of its position between the Adriatic and the Ionian Sea, the island has always been a strategic military defence point.

The history of the occupation of the island is very complex, notably between the Second World War and nowadays, and the presence of military buildings, bunkers and a network of galleries are a testimony of the former important military uses of the area.

In the 15th century it was a Turkish possession, then Italian in the 18th century and then the island was handed over to Greece in 1864 and subsequently abandoned in 1914. The installation of an Italian military base was ratified in 1915 in the Treaty of London. The Italian authorities built a lighthouse and naval fortifications before settling the families of fishermen.

The island was under German occupation from 1943 to 1944 before it was taken over by Albania. The island has also certainly hosted a Russian military base.

The access to the island is controlled and ruled by the Albanian army. An Italian-Albanian military unit was set up in 1997, aiming to control the illegal traffic at sea.



Photo: C. Damery, 2011

In the 1970s, the island was thought to have been inhabited by over 300 families, mainly employed by the army and marine fleet. Buildings allowing the welcoming of a permanent population have been realized, in parallel with the development of the military base: houses, schools, hospital, library, cinema, party hall, football field. In the middle of 1980s these families were removed from Sazani and currently the island is not inhabited. The remains of numerous buildings are still to be seen today.



Photo: C. Damery, 2011

The island's inaccessibility and the lack of inhabitants made it possible to conserve the natural habitats. Currently, access to the island is possible by authorization from the Ministry of Defence and the Border Police. An additional permit is necessary from the Ministry of Environment in case of research and environmental activities. There is no regular transport to the island, but access by boat can be provided by dealing with local fishermen, when the necessary authorizations and permits from the authorities have been provided preliminary.

Actually, only a small population of military (Italian and Albanian) is living in the island.

Sazani island, in addition to its marine peculiarities (rocky cliffs, sandy and pebbly beaches, and other coastal habitats) is characterized by a heterogeneous landscape, composed of a number of patches of various extent, corresponding to different terrestrial habitats and ecotones. Even geomorphology is rather irregular due to the presence of two hills about 300m high and two different types of limestone formation, creating variable slopes and surface irregularities. Such a mosaic pattern led to expectation of a high richness and complex interactions among species, in comparison to many other small Mediterranean islands that merely support seabird breeding sites and stop-over conditions for migrating birds.

In general, Albanian avifauna is poorly documented. Historical published papers can be counted on one hand and date back to the 1800s as just more than anecdotes or very short lists of species. Later, that information was included in some works that aimed to summarize bird knowledge (Ticehurst & Whistler 1932), or add few new observations (Thorpe et al. 1936, Whistler 1936). Heterogeneous bibliography in the Albanian language was reviewed in the 1980s to update the Albanian checklist (Nowak 1980, Nowak 1989).

More information is available on waterbirds. Systematic counts in mid-winter 1993 were performed in coastal wetlands (Hagemeyer 1994), and progressively some inland lakes were included in the following winter census schemes realized by the Tour Du Valat Research Centre. In addition, an ornithological survey was carried out in 1996 that aimed to gather information on the status of the breeding waterbirds of Albanian wetlands (Zekhuis and Tempelman 1998). In the same project, which did not include Sazani island, a list of 235 species was produced and partially mapped as the outcome of occasional observations out of wetlands and breeding bird survey records (van Winden in Zekhuis and Tempelman 1998). Among the mapped breeding species, Vlora district resulted relatively important for Kestrel (*Falco tinnunculus*), swift species, Red-rumped Swallow (*Cecropis daurica*), Tawny Pipit (*Anthus campestris*), Eastern Olivaceous Warbler (*Iduna pallida*), Sardinian Warbler (*Sylvia melanocephala*). The 1996 survey remains the strongest coordinated effort concerning bird monitoring in Albania.

Recently, a collection of ornithological observations throughout Albania has been published by Polish researchers (Sachanowicz et al. 2008). Again, this recent work presented qualitative data, basically consisting in travel notes, that at most enriched the bird checklist known from the 90's. Sachanowicz and colleagues also attempted a rough grouping of some species observed during their travels. They divided the apparently commonest species from rare and localized ones. The Authors also reported some remarks about Albanian mature forests and associated species.

In this scenario of poor knowledge of bird distribution and phenology throughout most of Albania, the bird community of Sazani island can be considered as virtually unknown before the second PIM surveys.

In order to obtain as much information as possible on the Sazani bird community, an ornithological survey was carried out at the end of May 2013. Qualitative and semi-quantitative data were collected, and data stored following PIM indications. Considering the conservation aims of the surveys, the results and final remarks are commented in this report according to their respective significance.

METHODS

One ornithologist (Fabrizio Borghesi from ISPRA, Italy) stayed day and night on the island from 28th to 30th of May. Table 1 presents the general time budget of activities carried out in these days. In order to collect data on breeding birds, and obtain indication about relationship among species and between species and habitats, different bird monitoring methods were applied (Bibby et al. 2000). Semi-quantitative data on songbirds were collected adopting "point counts" method, also known as "IPA" (Blondel et al. 1981). Other data were collected by sailing around the island and sitting before and after sunset on a promontory to observe seabirds and/or listen their calls. Furthermore, whenever observation and geo-referencing were possible (for example, moving on the island from one location to another), notes of occasional contacts were taken, birds seen or heard were mapped, and size of flocks counted or estimated. One mist-net for small birds (and bats) was available, and used when possible.

Activity	28th	29th	30th	Method
Exploration of cliffs and beaches	H 12.00 - 16.00	-	-	Observation by binoculars during circum-navigation
Mist-netting	H 19.30 - 23.00	H 12.15 - 15.15	-	Mistnetting in shrubs (one net 12m long, 240cm high, 16mm mesh)
Inland exploration	H 20.00 - 21.00	H 05.40 - 12.00 H 17.30 - 19.00 H 21.30 - 23.30	H 05.50 - 10.00 H 10.30 - 12.30	Free observation exploring habitats, mapping spots
Point counts	-	H 05.40 - 08.30	H 05.50 - 07.30	Listening and watching for 10' minutes at each point
Sea-watching	-	H 19.00 - 21.30	-	By telescope from a coastal spot after sunset
Searching of sign of presence	-	-	H 12.30 - 13.30	Searching for Eagle Owl pellets

Table 1. Time budget of bird monitoring activities carried out on Sazani island in May 2013

During the short visit in May, an area of 1,36 km² out of 5,69 km² was explored in the daytime, corresponding to about the 18% of the total island surface. Over half of the area covered by daytime observations was also explored after sunset (0.748 km², corresponding to the 10% of the total). For the present report, 'explored areas' were drawn following the paths walked through by the observer night-time and day-time, adding around a buffer of 50-80 m either side when dense vegetation was present, or more (up to 200 m) in open areas (Fig. 1).

Occurrence of birds was precisely mapped whenever possible. Regarding species easily detectable at long distance, the actual position of each detection was estimated and plotted by using in the field a printed map provided by a 20" of degree grid. For this reason, some detection points resulted outside of the explored areas.

Figure 1 also shows the belt around the island controlled from the boat. On the same map, all detections (from boat and from inland) were plotted and the grid superimposed.

Survey from vessel

Once arrived on the island, on 28th of May, a boat trip was immediately undertaken. In the stretch between 12.00 am and 4.00 pm a circumnavigation was performed, with some stops close to the small inlets situated in the western coast in order to allow marine biologists to check rocks and collect samples. All beaches and cliffs were carefully explored with 10 x 42 binoculars and each bird mapped (Fig. 1).

Inland exploration

Due to the short time available, priority was given to walk all accessible ways. Paths between two different 'points' (see below and Fig. 2), were walked at a slow pace, in order to record bird species that could elude standardized counts. Several recordings during the daytime were made while staying near the base camp at the port (Fig. 1), or reaching southernmost and northernmost lookouts. Nocturnal birds were recorded immediately after the evening sea-watching, while returning to the base camp after sunset, or directly listening from a point near the base camp close to the port.



Fig.1 Explored areas in May, 2013 (orange = daytime; pink = night-time; area explored at night is totally included in the daytime area). All bird detections are plotted (azure triangles = from sea; orange dots = from land), being each point relative to one or more recordings (QGIS processing: F.Borghesi)

Point counts

Ten 'point counts' were done (Fig. 2), and observations performed staying 10 minutes in each one (by watching and listening) with unlimited distance (Blondel et al. 1981). Only birds identified without doubt were recorded. Since some areas were impossible to be reached in the limited available time, and most of the explored areas were surrounded by dense vegetation, IPAs were spaced rather closely to each other, without incurring a relevant risk of double counting. IPA method was applied exclusively between 5.00 and 8.30 a.m., avoiding windy and rainy conditions.

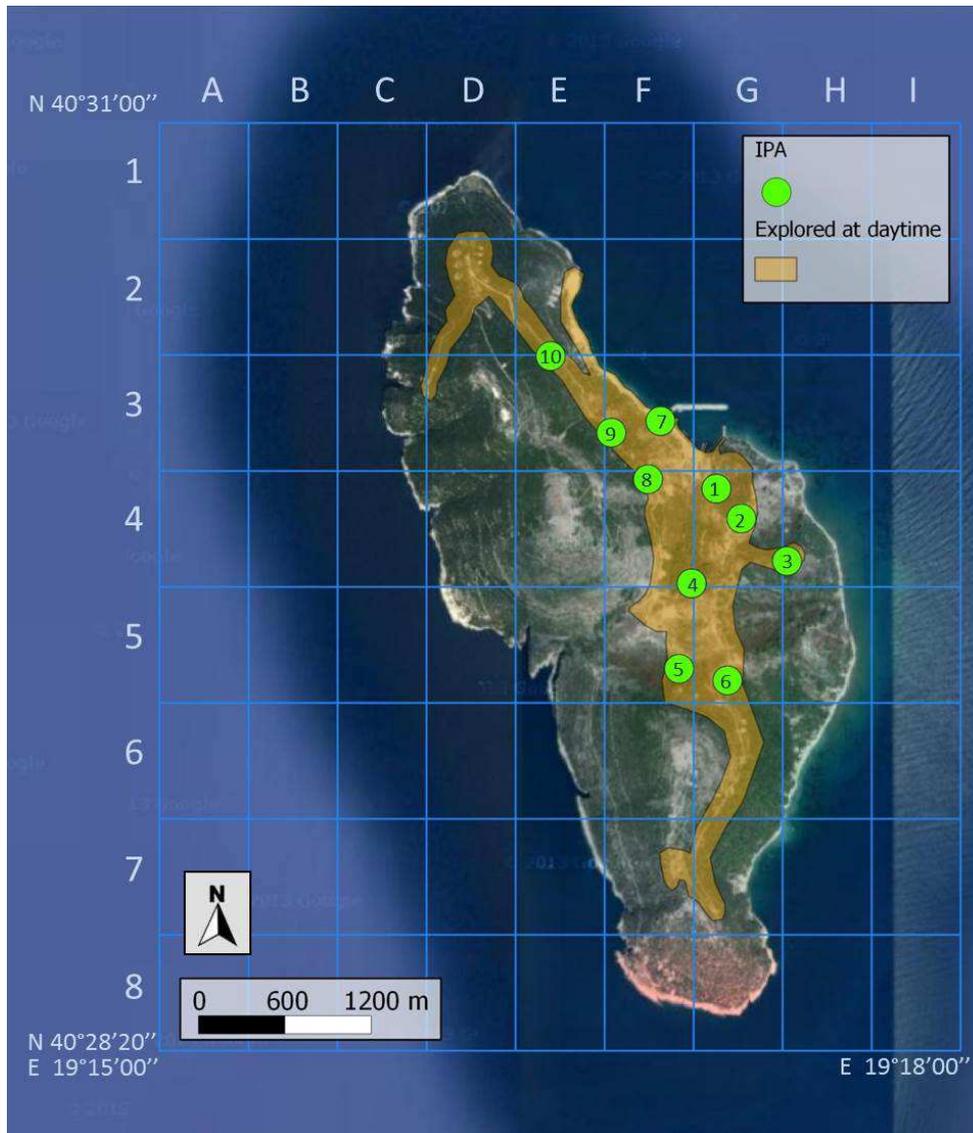


Fig.2 Explored area during the day (orange area) in May, 2013, and 'point counts' (IPAs, green dots). (QGIS processing: F.Borghesi)

Mist-netting

One mist net (12 metres long, 2.40 metres high, with mesh of 16x16 mm) was placed in a bushy passage not far from the base camp (Fig. 3), in order to assess the presence of any passerine species that could have escaped to visual/acoustic monitoring. Necessarily, the mist-netting effort was little, having only one net and short time slots available. Two sessions of about three hours were performed on 28th and 29th of May (Table 1). Conditions were not suitable to attempt night-time captures of seabirds (e.g. Storm-petrels).

Sea-watching

Two sea-watching sessions were scheduled, in order to check and possibly quantify shearwater presence off the western cliffs of Sazani island. Unfortunately, only one of them could be performed, due to early departure from Sazani on 30th caused by bad weather. During daytime on 28th, southernmost and northernmost lookouts were selected, and in the evening of 29th the southernmost one was reached to assess the presence of shearwaters approaching the south-western cliffs after sunset (Fig. 3). On that occasion, a scope 20x-60x was used to search for bird rafts until darkness, then listening for shearwater calls continued to about 10.00 pm. On 29th moon phase was waning (full moon on 25th) and the sky was partly cloudy (about 70%).

Searching of prey remains and owl pellets

Eagle owls (*Bubo bubo*) presence, already ascertained during the PIM survey carried out in September 2012, suggested the need to devote a period of time to collect pellets in order to obtain diet information about this relevant species. A three-people search was performed on 30th within a pinewood presumably used by owls for resting, breeding, or roosting (Fig 3).



Fig.3 Here mapped the sea-watching point (dotted lines approximate viewing angle), from which possible presence of shearwaters approaching south-western coast was checked (azure triangle), the Eagle owl (*Bubo bubo*) pellet search zone (yellow rhombus), and the location of the mist-net used to capture some small birds (red dot) (QGIS processing: F.Borghesi)

RESULTS AND COMMENTS

From 28th to 30th of May, 39 (possibly 40) species have been recorded. The uncertainty is due to doubtful identification of Pallid Swift (*Apus pallidus*) from Common Swift (*Apus apus*) in late spring, under the local conditions. A complete check list with phenological attributes related to all species is reported in Annex 1.

During the investigated period, the bird community of the island was mainly represented by Passeriformes (22 species), followed by Accipitriformes and Falconiformes (5 species on the whole), Columbiformes (3 spp.), Apodidiformes (2-3 spp.), Strigiformes (2 spp.), Caprimulgiformes (1 sp.), Charadriiformes (1 sp.), Coraciiformes

(1 sp.), and Pelecaniformes (1 sp.). Notably, four species of Corvidae were found, Jackdaw (*Corvus monedula*) being largely the most common of them.

Survey from vessel

Unexpectedly, seabirds resulted as rare if not absent breeders in Sazani. Boating allowed watching a few Yellow-legged Gulls (*Larus michahellis*) and one immature Shag (*Phalacrocorax aristotelis desmarestii*) (Fig. 4), but no sign of nesting was found. No shearwaters were recorded, except for very few Cory's Shearwaters (*Calonectris diomedea*) that came across while reaching the island from the Albanian coast or returning back to Vlora harbour. Only lone individuals far from the island were seen, consequently this species was not included in the check-list of this report (Annex 1). On the other hand, cliffs and coastal creeks hosted remarkable numbers of breeding swifts, mainly Alpine Swift (*Apus melba*), Hirundinidae, and Rock Dove (*Columba livia*) (Fig. 5 and 6). All the perimeter of the island was also frequented by numbers of Jackdaw, presumably 2-3 pairs of Raven (*Corvus corax*), as well as 2-3 pairs of Kestrel. Except for one pair of Common Buzzard (*Buteo buteo*), likely the same that was seen above the woods in the next days, Kestrel was the only diurnal raptor observed from the sea. Blue Rock Thrush (*Monticola solitarius*) was present at least in the C4 and E5 sectors (use Fig. 1 to locate that cells in the grid).



*Fig.4 Very few seabirds were seen during boating around Sazani island. On the left two immature Yellow-legged Gulls (*Larus michahellis*), on the right a young Shag (*Phalacrocorax aristotelis desmarestii*). (Photo: F. Borghesi)*



*Fig.5 Rock Dove (*Columba livia*) represents an important presence in the steep rocky habitats along the western side of Sazani island. (Photo: F.Borghesi)*



Fig.6 Remarkable sightings of some breeding species observed from boat. Red circles show probable breeding sites of Rock Dove (*Columba livia*). A foraging spot for this species was located near the red star position during inland exploration (8 indd.). Square-shaped symbols refer to Hirundinidae flying close to cliffs. House martin (*Delichon urbicum*) and Red-rumped Swallow (*Cecropis daurica*) were rare along the coastline, preferring to nest in buildings, while a small Crag Martin (*Ptyonoprogne rupestris*) colony was found near the yellow square. Alpine Swift (*Apus melba*) was seen in correspondence of all coastal points mapped here. (QGIS processing: F.Borghesi)

Results from IPAs

'Point counts' (Fig. 2) focused on inland birds. The bird community in the eastern island seemed to be dominated by Greenfinch (*Carduelis chloris*) and Blackbird (*Turdus merula*). The western side was much less explored, but the different landscape and vegetation suggests to not extend this result throughout Sazani. Subalpine Warbler (*Sylvia cantillans*) and Turtle Dove (*Streptopelia turtur*) resulted similarly diffuse, but less abundant. Probably depending on the density of canopied trees, Goldfinch (*Carduelis carduelis*) and Eastern Olivaceous Warbler, showed more irregular distribution (both recorded in four points out of ten). Adults of Blue Tit (*Parus caeruleus*) were observed in five points out of ten, often while they were carrying food for chicks (Fig. 7). The actual spread of this species might be underestimated due to the date of this survey. House Sparrow (*Passer domesticus*) and House Martin (*Delichon urbicum*) resulted abundant in the vicinity of the port and in deserted villages. Only one record referred to Collared Dove (*Streptopelia decaocto*), Golden Oriole (*Oriolus oriolus*), Sardinian Warbler, Chaffinch (*Fringilla coelebs*), and Linnet (*Carduelis cannabina*) respectively. During 'point counts' also birds flying over were identified by sight and recorded. Red-rumped Swallow and Jackdaw were seen in seven and six points respectively, an indication of the widespreading of these two species through the island. Other species recorded during IPAs were Common Buzzard (*Buteo buteo*), Scops Owl (*Otus scops*), Raven (*Corvus corax*), Carrion Crow (*Corvus corone cornix*), and Alpine Swift. Concerning the latter species, during IPA no. 1 (use Fig. 2 to locate it on the map) a passage of a train of flocks was met, and collectively 255 individuals moving from SW to NE were counted. Detailed results of IPAs are entirely reported in Annex 2.



Fig. 7 A Blue Tit (*Parus caeruleus*) observed during IPAs carrying food for chicks. Blue Tit is probably one of the commonest passerines breeding on Sazani, together with Greenfinch (*Carduelis chloris*), Blackbird (*Turdus merula*), Subalpine Warbler (*Sylvia cantillans*) and Eastern Olivaceous Warbler (*Iduna pallida*).
(Photo: F.Borghesi)

Occasional observations

More than one hundred occasional sightings allowed the extension of the list of species achieved through IPAs and the boat trip, and to add more qualitative information on the bird community. An immature Golden Eagle (*Aquila chrysaetos*) was seen twice, while exploring grasslands in F5 cell and soaring in F7. A pair of adult Common Buzzards and a further two individuals were recorded. Hobby (*Falco subbuteo*) and Sparrowhawk (*Accipiter nisus*) records came from single and fleeting observations. A foraging flock of eight Rock Doves were encountered in E3 sector (Fig. 6). Evidently less common than other Corvidae, two Jays (*Garrulus glandarius*) were seen in the southern part of the island. Both individuals were shy and silent.

In general, species resulting as most abundant in 'point counts', seemed to be common also in areas not covered by IPAs, including the far ends of Sazani. However, Sardinian Warbler seemed to gradually replace Subalpine Warbler, where the Mediterranean scrub became more dense and exposed to the sea. The meadows in the valley crossroads in the middle of the island (F5 and G5 sectors) and the remains of a village dispersed in the G4 sector, appeared to be suitable habitats for birds species like House Martin, House Sparrow, and even Blue Rock Thrush (Fig. 8), but they were also intensively visited by foraging Red-rumped Swallows, Alpine Swifts, Jackdaws, Turtle Doves, and apparently Nightjars (*Caprimulgus europaeus*). Some occasional records concerned species thought to be migrating through the island, namely Bee-eater (*Merops apiaster*), Garden Warbler (*Sylvia borin*) (a fat individual was captured by mist-net), and Isabelline Shrike (*Lanius isabellinus*). The latter is probably the rarest and most unexpected species listed in this report.

Figure 1 also shows a spot made off-shore using the telescope. This recording refers to an Alpine Swift flock observed just before sunset. The size of the flock (250-300 individuals) was similar to the number of Alpine Swift counted during IPA no.1, but the actual correspondence between the two observations could not be verified.



Fig.8 On the left, a Blue Rock Thrush (*Monticola solitarius*) alarming near the deserted buildings in G4 sector. On the right, an old nest of House Martin (*Delichon urbicum*) occupied by House Sparrow (*Passer domesticus*).
(Photo: F.Borghesi)

Nocturnal birds

After sunset, the island hosted much nocturnal bird activity. Data collected at night from fixed points, and by walking back to the base camp after evening sea-watching, regarded three species: Nightjar, Scops Owl, and Eagle Owl (Fig. 9). Nightjars and Scops Owls seemed to be apparently more concentrated in the woods and the overgrown areas near the port, but this pattern might result from a bias, due to the longer time spent near the base camp at night. However, walking back to the base camp at a slow pace in the darkness, no entries of both species resulted from the well wooded G6 and G7 sectors. Conversely, when approaching the port, Scops Owl songs became more frequent and Nightjar were heard mainly from the surroundings of the base camp. Eagle Owl song is audible from longer distance than calls of the two previous species, and normally from every place one or two individuals could be heard. This seems to indicate the presence of a significant population of Eagle Owl, even larger than as mapped in figure 9, since paired males should be more silent in respect to the unpaired ones in May.



*Fig.9 Nocturnal birds recorded in May. The distribution is strongly dependent on the survey efforts, but reveals that Eagle Owl (Bubo bubo) seems to be widespread throughout most of the island (large yellow dots), the northern and western parts being unexplored for this species. Also Nightjar (Caprimulgus europaeus) and Scops Owl (Otus scops) appear to be very common and widespread (respectively, squares and azure dots).
(QGIS processing: F.Borghesi)*

Overall comments

On the whole, most of the species recorded in May were certainly or very probably breeding on the island. Six species were most likely in erratism or on passage, namely Shag, Golden Eagle (*Aquila chrysaetos*), Yellow-legged Gull, Bee-eater (*Merops apiaster*), Garden Warbler (*Sylvia borin*), Isabelline Shrike (*Lanius isabellinus*) and Golden Oriole (*Oriolus oriolus*). Regarding Sparrowhawk (*Accipiter nisus*), Hobby (*Falco subbuteo*), Barn Swallow (*Hirundo rustica*), Black-eared Wheatear (*Oenanthe hispanica melanoleuca*), the observation

conditions did not offer any clue on local status, nevertheless, breeding on the island is possible. The remaining 28-29 species recorded can all be considered as breeding in Sazani, with different levels of certainty.

Three main ecological elements connected to bird community were evident in Sazani island. First, coastal habitats (in particular on the western side) support breeding populations of Kestrel, Rock Dove, up to three species of swifts, Crag Martin, Blue Rock Thrush, Raven and Jackdaw, but apparently no seabirds. It is unclear if Eagle Owl usually nests on the rocky coasts or only in inland woods, or both.

Secondly, the complex landscape pattern (mosaic of pinewoods and oaks, Mediterranean scrub, grassy open areas, stony slopes) hosts a rich and diverse community of breeding songbirds, in addition to nocturnal insectivorous birds: Nightjar and Scops Owl. Moreover, ruins, bunkers and buildings are occupied by nesting Red-rumped Swallow, House Martin and House Sparrow. Such variable environmental conditions do rather recall mainland habitats than typically more uniform insular landscape.

Lastly, the very abundant population of rabbits and the diffuse presence of rats even in the most extreme corners of the island, support a significant resident population of birds of prey, the most relevant being Eagle Owl. However, large amounts of prey for predators (including swallows and swifts) seems to attract also non-resident birds of prey, such as falcons, hawks, and Golden Eagle. The wide population of rats and rabbits may also represent the reason of the huge presence of Corvids, which act as scavenger of other birds' prey scrap (Fig 10).

Noticeably, the abundance of Red-rumped Swallow in Sazani fits what is known from the rest of Vlora district (van Winden in: Zekhuis and Tempelman 1998) and confirms what seems to be a national hotspot for this species. Conversely, during the 1996 survey, House Sparrow was scarce in Vlora, and Spanish Sparrow (*Passer hispaniolensis*) was the more abundant sparrow found near the coast. The opposite is true for Sazani. Similarly, Greenfinch and Subalpine Warbler were very common on the island, but seem to be practically absent around Vlora according to maps by van Winden (in: Zekhuis and Tempelman 1998).

Eagle Owl is missing in the Albanian breeding atlas of 1996 (van Winden in: Zekhuis and Tempelman 1998), though in that occasion large parts of the mountain regions were not visited. Nevertheless, the coast was intensely explored, and no Eagle Owls were found in April and May 1996. On Sazani, Eagle Owl could interact with at least a part of the bird community, depending on the fluctuations of mammals on the island. The presence of a significant population of this large predator may explain the absence of Peregrine Falcon (*Falco peregrinus*) as a breeder in local cliffs, and possibly even the absence of any seabird colony on the island.



Fig. 10 Prey remains found on the island. On the left, a rabbit only partially consumed, probably by scavenger birds. In the middle, recent remains of a rabbit, likely killed by Eagle Owl. On the right, tortoise remains. The latter finding may indicate that Golden Eagles visiting Sazani could catch tortoise and drop them to break their shells, as documented in literature (Cramp & Simmons, 1979).

(Photos: F. Borghesi)

FINAL REMARKS AND MANAGEMENT SUGGESTIONS

The survey led in 2013 can be considered as a good starting point to further investigations on the Sazani bird community. In fact, most of the ecological issues regarding the avifauna of the island are far from being fully understood. As a consequence, further bird monitoring is desirable. The seabird subject, in particular, remains to be clarified, regarding both movement involving the Sazani coast, and breeding. A juvenile Shag of the subspecies *desmarestii* was found while fishing very close the northwestern coast. It was probably an erratic bird, but the period of the survey was not suitable to assess breeding of this species. Assessing the capacity of the island to provide favourable habitats for rare species is also very important, because conservation of some threatened birds is a main concern for the international scientific community (e.g. *Bubo*

bubo, *Caprimulgus europaeus*, just to mention two species found on the island in May). A list of essential monitoring activities to be scheduled in the near future are proposed hereafter.

Additional monitoring and studies

- Seabirds. Prospecting for shearwater (and other seabirds) colonies offered no positive outcomes, but the time devoted to this activity was too little to detect possible small colonies. Focused surveys should be carried out in the favourable breeding periods to explore at sunset and night-time the western coast from different lookouts.
- Eagle Owl. Interactions between this species and the bird community, as well as the small mammals, should be clarified, before any change to the management of the island takes place. Therefore, it is important to assess the diet and behaviour of Eagle Owl resident populations, through specific research.
- Raptors. Sazani seems to offer important feeding resources for raptors, in terms of undisturbed open areas, and abundant mammals and birds. Monitoring of birds of prey is needed to assess the role of the island even for eagles and falcons breeding far away. Concerning this goal, it could be useful for Albania to join the European programme "Eurapmon" (www.eurapmon.net).
- Unexplored zones. Stony hills and remote areas are still practically unexplored. Several species of great importance could breed in these environments. Focused investigations would be helpful to improve the check-list with relevant breeding species not yet found (e.g. *Calandrella brachydactyla*, *Anthus campestris*, *Sylvia undata*, *Hippolais olivetorum*, etc.). IPAs or transects should be repeated and increased to cover unexplored habitats.
- Songbird stopping-over. It is likely that Sazani, due to its position and environmental characteristics, might be an important stop-over island for a number of species migrating in spring through the Mediterranean Sea towards North-East Palearctic, or along Adriatic coast. This aspect is, as yet, totally unexplored.

Management recommendations

- Though presently scarce, the achieved knowledge on the avifauna supports the wise identification of Sazani Island and its surroundings as a priority conservation area, and suggests the need to hasten the inclusion of Sazani Island in the Llogara-Karaburun National Park perimeter.
- Preservation of coastal habitats, as potential breeding sites for seabirds and raptors, especially cliffs and inlets along all the western side, should be integrated in biodiversity and landscape preservation issues of the Karaburun-Sazani Marine Protected Area (MPA). In particular, navigation near the western side of the island should be prohibited except for study and a wide buffer area identified. Special actions should be undertaken to prevent blast fishing in all the Albanian seas, and best practice to reduce the incidental catch of seabirds during fishing adopted.
- If a different outcome is decided for Sazani in future, for example including touristic use (with consequent creation of hospitality structures, improved path network, etc.), it is necessary to consider the unavoidable impact that this will cause to vulnerable habitats and species. The plain meadows in central Sazani and other accessible areas (already known as feeding and nesting areas for a number of species), as well as forests near the port, would be heavily and rapidly altered. It will be necessary to create a zonation of the island on the basis of adequate protection levels, making sure to safeguard most of it from human presence. However, it is highly recommended to promote only mild tourism forms, avoiding mass tourism in-and-around Sazani.
- In case of new human settlement, only low-impact facilities should be promoted (phytodepuration of sewages, micro wind turbines, solar panels on roofs, etc.), and impacting ones accurately banned (excessive lights, chemical and organic pollution, wind farms, extensive solar plants, suspended wires, new paved routes, etc.).
- The huge population of rats represents, as on many islands, a conflicting presence with regard to any (future) human settlement and a limiting factor of the successful breeding of birds. However, any pest control initiatives, in the Sazani case, should be very carefully evaluated, considering that 1) there would be no immediate benefit for important seabird populations, as far as present data suggest, and 2. they would obviously affect negatively the diversity of birds of prey by secondary poisoning and decrease of prey.
- Regarding birds, no exotic species were found. This condition should be granted in the future.
- Ban of any kind of hunting is highly recommended.
- A future greater influx of humans on the island inevitably will increase fire risk. Even small fires could destroy essential habitats for Eagle Owl, Scops Owl, and other woodland bird species that are part of the Sazani bird community. A forest service unit on the island should be settled, equipped by fire prevention system.

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ANNEXES

Annex 1. Check-list of species reported during the Sazani island survey of May 2013. Taxonomic reference: AERC (<http://www.aerc.eu/documents.html>). B=Breeding; M=Migrating; E=Erratic

<i>Taxon</i>	<i>Field mission of May 2013</i>	<i>Phenology</i>
Phalacrocorax aristotelis desmarestii	X	E
Accipiter nisus	X	M ?, B ?
Buteo buteo	X	B
Aquila chrysaetos	X	E
Falco tinnunculus	X	B
Falco subbuteo	X	M ?, B ?
Larus michahellis	X	E
Columba livia	X	B
Streptopelia decaocto	X	B
Streptopelia turtur	X	B
Otus scops	X	B
Bubo bubo	X	B
Caprimulgus europaeus	X	B
Apus apus/pallidus	X	B
Apus melba	X	B
Merops apiaster	X	M
Ptyonoprogne rupestris	X	B
Hirundo rustica	X	M ? B ?
Delichon urbicum	X	B
Cecropis daurica	X	B
Oenanthe hispanica melanoleuca	X	M ? B ?
Monticola solitarius	X	B
Turdus merula	X	B
Iduna pallida	X	B
Sylvia cantillans albistriata	X	B
Sylvia melanocephala	X	B
Sylvia borin	X	M
Parus caeruleus	X	B
Oriolus oriolus	X	M ?, B ?
Lanius isabellinus	X	M
Garrulus glandarius	X	B
Corvus monedula	X	B
Corvus corone cornix	X	B
Corvus corax	X	B
Passer domesticus	X	B
Fringilla coelebs	X	B
Carduelis chloris	X	B
Carduelis carduelis	X	B
Carduelis cannabina	X	B

Annex 2. Semi-quantitative results from IPA method (Blondel et al. 1981).

<i>Taxon</i>	1	2	3	4	5	6	7	8	9	10
Buteo buteo	2	1								
Streptopelia decaocto							1			
Streptopelia turtur		3	1	1	1	2	1	1	2	
Otus scops						1				
Apus melba	255	20-40		16		3				
Delichon urbicum	8	2	6	2			5			
Cecropis daurica	5		2	4	1	2	7	1		
Turdus merula	5	1	2	2	3	1	2	2	2	
Iduna pallida	2		1		1		2			
Sylvia cantillans (albistriata)	1		1		2	1	1	2	2	2
Sylvia melanocephala										2
Parus caeruleus		2	1	2		3			2	
Oriolus oriolus			1							
Corvus monedula	1	1		7	1		5			2
Corvus corone cornix		1	1	2	1		1			
Corvus corax	2						2			
Passer domesticus		10	4-8		1	2	1	2	2	
Fringilla coelebs			1							
Carduelis chloris	6	1	1	2		6	3	1	2	
Carduelis carduelis			1	1	1			1		
Carduelis cannabina		1			3					