

BIRD OBSERVATIONS AT SIDI TOUI NATIONAL PARK, TUNISIA

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Résumé

Les résultats de l'enregistrement opportuniste des espèces d'oiseaux au cours de 6 visites dans le Parc national de Sidi Toui, qui est situé dans la zone de steppe présaharienne du sud-est de la Tunisie, contribuent à l'élaboration d'une liste officielle pour cette aire protégée. Les 59 espèces détectées durant cette étude comprennent 6 espèces nouvelles dans la catégorie « espèce limitée à un biome » non répertoriées parmi les 13 espèces de cette catégorie dans l'évaluation initiale du parc national comme une ZICO (Zone importante pour la conservation des oiseaux). La diversité des migrateurs ainsi que les espèces nicheuses et résidentes avérées et potentielles fournissent ensemble une preuve claire du bénéfice que tire la biodiversité au sens large de la conservation de ce site mise en œuvre par la Direction Générale des Forêts tunisienne. Les principaux résultats comprennent la présence régulière de rapaces tant migrateurs que visiteurs indiquant une source de proies localement élevée, l'enregistrement du Sirli de Dupont *Chersophilus duponti* dans une aire protégée tunisienne et la présence pendant la saison de reproduction des 10 espèces d'alouettes connues pour habiter le sud de la Tunisie dans cette zone. Le PN de Sidi Toui intègre avec succès la gestion des intérêts culturels traditionnels, avec la conservation des antilopes menacées au niveau international tout en protégeant un échantillon de référence d'un habitat et d'une région où la biodiversité est gravement affectée par les niveaux élevés de surpâturage par le bétail. Des recherches supplémentaires sur l'avifaune fourniront une liste d'espèces plus complète et des preuves supplémentaires confirmant la grande valeur de ce parc national.

Abstract

The results of opportunistic bird species recording at the Sidi Toui National Park, classified as an Important Bird Area in the pre-saharan steppe zone of south-eastern Tunisia, provide a contribution to development of a formal species list for the park. The 59 species detected include 6 additional biome-restricted species not listed among the 13 species in this category cited in the original IBA assessment for the national park. The diversity of migrants, plus proven and potential breeding species and residents together provide clear evidence of the wider biodiversity benefit provided by conservation management implemented by the Tunisian 'Direction Générale des Forêts' at this site. Key results include the regular presence of migrant and visiting raptors indicating a locally elevated prey base, documentation of Dupont's lark *Chersophilus duponti* within a Tunisian protected area, and the breeding season presence of all 10 lark species known to inhabit southern Tunisia within this localised area. Sidi Toui NP successfully integrates management of traditional cultural interests, with conservation of internationally threatened antelopes while protecting a representative baseline for a habitat and region where biodiversity is otherwise severely impacted by high livestock grazing levels. Further research on the avifauna will provide a more complete species list and further evidence affirming the high conservation value of this National Park.

Introduction

Sidi Toui National Park lies in south-eastern Tunisia in the Governorate of Medenine. Centred on N32° 41'40" E11° 14'41", it is 40 km south of the nearest town at Ben Guerdane, and 140 km south of the

tourism centres on the island of Djerba (Fig. 1). The 63 km² (6315 ha) park, created in 1991, is managed by the Direction Général des Forêts (DGF). It conserves a representative zone of Mediterranean dwarf shrub steppe and its associated wildlife and protects the environment around a cluster of 14 ancient religious sites (Marabouts) on the low hills of Djebel Sidi Toui (178 m.a.s.l.), at the centre of the park. General access to the park is managed by the DGF. Each year in mid-October, pilgrims from Tunisia and neighbouring countries traditionally visit the park for 2-3 days to participate in a festival celebrating the saints associated with the Marabout sites (Souissi 2008). Sidi Toui National Park is classified as an Important Bird Area (IBA) (Amari & Azafzaf 2001, Birdlife International, 2020a, b) on the basis that it is thought to hold a significant component of bird species largely restricted to two biomes: the Mediterranean North Africa biome and the Sahara-Sindian biome.

Climate: The park lies in the pre-saharan arid Mediterranean zone. Summers can be extremely hot (>45°C reported) and winter temperatures down to 5°C. Annual rainfall rarely exceeds 100 mm, mainly falling between October to April, but is unpredictable and variable with occasional wetter years. There is no natural permanent surface water, but small short-lived rain-pools may form in rocky areas after showers. The area can be affected by hot dry sirocco winds in any season, but which can be particularly strong in the spring periods, bearing dust and sand from the Sahara.

Vegetation: Notable plant associations include the dwarf shrub *Rhanterium suaveolens* and the tall grass *Stipa lagascae* on the plains; the hill slopes support several woody shrub species such as *Periploca laevigata*, *Rhus tripartitum*, *Gymnocarpus decander*, *Ziziphus lotus* and *Lycium arabicum*, providing shelter. On sand sheet accumulations shrubs such as *Retama retam* and various grasses, including *Aristida* sps., *Stipagrostis* sp. and *Pennisetum* sp. are present. In frequent dry periods the vegetation appears uniform and rather grey, but in spring an array of flowering forbs and herbs such as *Anvillea radiata*, *Echium* sp., *Daucus* sp., *Rumex* sp. and *Matthiola* sp. contribute to a spectacular mosaic of rich colour (Fig. 2).

Management: The park is protected by a 36 km double fence-line around the perimeter to exclude livestock and protect larger wildlife from illegal hunting. This has resulted in significantly increased vegetation cover and diversity (Tarhouni *et al.* 2014, 2017) and as a result the park now stands out clearly from the surrounding landscape in standard satellite imagery (Nasa Earth Observatory 2008), making its location and limits self-evident on Google Earth (Fig. 1).

Four permanently manned ranger posts guard the entry point gates and a visitor centre (Ecomusée) has been constructed in 1993 in the interior. Access around the park is via a network of established off-road tracks, most comfortably traversed using 4x4 vehicle. Two look-out towers (mirador) have been created on elevated points to provide extensive views over the habitat and scenery. Water troughs and shelters have been installed to support the population of oryx in 1999.

Wildlife: Amongst larger mammals, the park supports a small indigenous population of dorcas gazelle *Gazella dorcas*. Porcupines *Hystrix cristata*, Cape hares *Lepus capensis* and red fox *Vulpes vulpes* are also present as well as Golden jackal (*Canis aureus*), which following genetic evidence are now often called African Golden Wolf *C. anthus* (Karsene *et al.* 2019). Visitors are likely to encounter a growing population of Scimitar-horned oryx *Oryx dammah* at large in the park, and a small captive group of exceedingly rare slender-horned gazelles *Gazella leptoceros*. Both these species are present as part of Tunisia's national effort to conserve the most threatened large wildlife of the Saharan and sub-Saharan regions. Reptiles are less well documented but desert monitor *Varanus griseus* and horned viper *Cerastes cerastes* are among those confirmed present.

Here we focus on the bird life of the park. The observations reported were made opportunistically during a series of short routine visits to monitor the oryx and gazelle populations made between 2007-2011. This species list is not comprehensive, but it is intended as a contribution to the development of a formal bird list for the National Park.

Methods

Bird species were recorded opportunistically during six visits of 10–14 days each, made in 4 years between 2007 and 2011. The observations were made during the northern spring and autumn periods only, involving 3 visits in April, two in October and one in November. Although April represents a period of elevated breeding activity, the seasonal sample is restricted with limited coverage of the autumn migration period. As bird monitoring was not the focus of the visits, no formal bird survey methods or population counts were used and we assume that under-recording of bird species affects the results. This has been partially explored by applying a species richness estimator (Jackknife 1, EstimateS, Colwell 2013) to the species discovery rates obtained.

Results

The list of 59 species detected in this limited sample is given in Table 1, which also indicates months in which each species was recorded and the 41 species for which record photographs are available. All 24 images included in this document were taken by the authors in Sidi Toui National Park.

Estimation based on extrapolating the discovery rates implicit in Table 1 (see methods) indicates that these data support an estimate of c. 80 species (95% c.i. 70-90 species) that might be expected in total during the April and Oct-Nov sample period from this level of survey effort. Twenty-three species were recorded in both spring and autumn, 22 species were recorded in spring only and 14 species in autumn only.

Direct evidence of breeding was recorded from four species. A recently fledged Red-rumped wheatear, a prominent and characteristic resident species at Sidi Toui NP, was photographed on 17/04/2007. Great grey shrike fledglings were observed on 18/04/2007. A lesser short-toed lark nest with three chicks was found on 22/04/2011. Two cream-coloured courser fledglings were running with adults also on 22/04/2011. Following the national status assessments of Isenmann *et al.* (2005) at least an additional 20 species in Table 1 may be considered potential breeders based on presence in suitable habitat and season.

In separate years, fresh corpses of a probable nightingale on 14/04/2007 and one year later at a nearby location a whinchat on 01/04/2008 were found lying among vegetation on the ground in near identical condition strongly suggesting they had been partially swallowed then rejected by snakes.

Discussion

Analysis of the 6 species list samples in Table 1 confirms the expectation that the combined list reported here is far from complete for the reserve. Extension of recording to all months of the year, and application of specific bird survey methods is needed and will certainly result in detection of additional species. Probably well beyond the 70-90 species predicted from extrapolation of data derived here from low intensity surveys in limited periods of the year only.

The more important result is that the species found highlight the successful role Sidi Toui National Park is playing in conserving arid land biodiversity in southern Tunisia. The regular presence of raptor species, particularly Golden eagle, and good numbers of harriers on passage, are indicators that the protected vegetation is also supporting a significant prey base of small mammals, including hares, plus insects and reptiles. In season, Montagu's harriers may be seen daily, usually travelling well apart in ones and twos, actively hunting as they pass through; marsh harriers and pallid harriers behave similarly, though are generally less frequent. Golden eagles were consistently present and certainly attracted to the area to hunt. We have not seen evidence that golden eagles are nesting at Sidi Toui and the low hills do not provide obvious nest sites. But the rich vegetation and hills probably do provide important landmarks for migrating raptors such as short-toed eagles and Egyptian vultures.

The species list provides further support for the IBA status of Sidi Toui National Park. The park was originally classed as an IBA on the basis of eight species considered restricted to the Mediterranean North Africa biome, and five restricted to the Sahara-Sindian biome (Amari & Azafaf 2001). This updated list adds three new species to the Mediterranean North Africa component: thick-billed lark, Dupont's lark and spectacled warbler; and three species are also added to the Sahara-Sindian biome dependent group: bar-tailed lark, streaked scrub warbler and trumpeter finch.

All 10 lark species known to be inhabiting southern Tunisia (Cocker 2005, Isenmann *et al.* 2005) were confirmed simultaneously present in Sidi Toui National Park in the breeding season. Dupont's lark, listed as Near Threatened in the IUCN Red List (Birdlife International 2020c), is represented at Sidi Toui by the more rufous eastern sub-species *C. d. margaritae*. So far as we are aware these observations provide the first confirmation of Dupont's lark under protection within a Tunisian National Park.

Snakes and monitor lizards are widely acknowledged as significant predators of bird nests. The discovery of corpses of adult whinchat and nightingale both apparently partially swallowed by snakes, suggests direct predation by species such as horned vipers may be a relatively elevated threat for adult small migrants in this habitat, where they are obliged to shade and feed on or near the ground in the low vegetation. The predation risks are especially higher during spring when these small migratory birds arrive at the National Park depleted and tired after a long desert crossing.

We also note that at least four species in this short list have been subject to significant taxonomic reassessment in recent years. In consequence, alternative names exist in available identification literature for some quite prominent species. North African populations of great grey shrike have been affected this way (Olsson *et al.* 2010, Birdlife International 2020d). Although some crested larks show notably long bills at Sidi Toui, genetic research suggests these are not the same as the long-billed 'Maghreb lark' of Morocco (Guillaumet *et al.* 2006, 2008). The full species status of Maghreb wheatear relative to the Mourning wheatears further east is also debated (Schweizer & Shirihi 2013). We have assigned an observation of a black-eared wheatear to the Eastern black-eared wheatear (*Oenanthe melanoleuca*, a pale-throated individual), recently shown to be a separate species to western black-eared (or Spanish) wheatear *O. hispanica* (Schweizer *et al.* 2018). We note also the mildly red-capped appearance of greater short-toed larks encountered at Sidi Toui, consistent with North-west African populations assigned to *C. b. rubiginosa*; another variable species subject to genetic investigation. There is growing recognition of endemism among North African bird populations (Isenmann & Thévenot 2018, 2020) and Sidi Toui NP holds several species of interest in this context.

These results add Dupont's lark and Egyptian vulture to Pallid Harrier as species at conservation risk documented to use the park. We did not find or hear of any evidence of one key species for the area, the African Houbara *Chlamydotis undulata* during this survey period (see Birdlife International 2020b), emphasising the need for more focused bird survey work.

Sidi Toui National Park is of particular interest in successfully integrating protection of a place of cultural importance, with national projects for conservation of extremely threatened antelopes (Molcanova 2006, Molcanova & Wacher 2011) and providing a representative and rare island of protected vegetation and biodiversity. The associated bird community shows a high proportion of biome-dependent species, which also indicate how this protected location is supporting small mammal and insect populations. Sidi Toui NP is particularly well-placed to assist migrant bird species on an important flyway between the Palearctic and sub-Saharan Africa. Achieving a more complete list of Sidi Toui National Park's avifauna will add further evidence of the importance and value of this site.

Acknowledgements

We thank the Direction Générale des Forêts in Tunis, for permission to work at Sidi Toui NP and support throughout. At Sidi Toui National Park we thank all the Park staff for assistance and frequent warm hospitality. We particularly remember Mons. Ameer Mertah, former Conservateur of the park, who informed and inspired many visitors with his deep knowledge and care for the landscape and wildlife of Sidi Toui. Support for the visits to monitor oryx at Sidi Toui NP was provided by the Sahara Conservation Fund, the Mohamed bin Zayed Species Conservation Fund and the Convention on Migratory Species. We also thank Abdelkader Jebali for translating the abstract of this note and Mohamed Amezian for contributing very helpful information and comments.

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Table 1. Bird species recorded in Sidi Toui National Park over six 1-2-week surveys between April 2007 to November 2011. SR = Sight record, NE = nest with young FL = recently fledged young.

Name	Species	Photo	Apr. 2007	Oct. 2007	Apr. 2008	Oct. 2010	Apr. 2011	Nov. 2011	Season recorded
Caille des blés	<i>Coturnix coturnix</i>	Y			SR		SR		Apr.
Percnoptère	<i>Neophron percnopterus</i>	Y			SR				Apr.
Aigle royale	<i>Aquila chrysaetos</i>	Y		SR	SR	SR		SR	Apr. & Oct/Nov.
Busard des roseaux	<i>Circus aeruginosus</i>	Y					SR		Apr.
Busard cendré	<i>Circus pygargus</i>	Y	SR		SR	SR	SR		Apr. & Oct/Nov.
Busard pâle	<i>Circus macrourus</i>					SR			Oct./Nov.
Circaète Jean-le-Blanc	<i>Circaetus gallicus</i>	Y					SR		Apr.
Faucon crécerelle	<i>Falco tinnunculus</i>					SR	SR		Apr. & Oct/Nov.
Oedicnème criard	<i>Burhinus oedicnemus</i>	Y			SR		SR		Apr.
Courvite isabelle	<i>Cursorius cursor</i>	Y				SR	FL		Apr. & Oct/Nov.
Pluvier guignard	<i>Charadrius morinellus</i>	Y				SR			Oct./Nov.
Ganga cata	<i>Pterocles alchata</i>						SR		Apr.
Guêpier d'Europe	<i>Merops apiaster</i>	Y					SR		Apr.
Pigeon biset	<i>Columba livia</i>	Y		SR		SR			Oct./Nov.
Tourterelle des bois	<i>Streptopelia turtur</i>	Y			SR		SR		Apr.
Chevêche d'Athéna	<i>Athene noctua</i>	Y	SR		SR	SR	SR		Apr. & Oct/Nov.
Engoulevent d'Europe	<i>Caprimulgus europaeus</i>	Y			SR		SR		Apr.
Cochevis huppé	<i>Galerida cristata</i>	Y	SR	SR	SR	SR	SR	SR	Apr. & Oct/Nov.
Cochevis de Thékla	<i>Galerida theklae</i>	Y	SR	SR	SR	SR	SR	SR	Apr. & Oct/Nov.
Alouette calandrelle	<i>Calandrella brachydactyla</i>	Y			SR		SR		Apr.
Alouette pispolette	<i>Alaudala rufescens</i>	Y			SR	SR	NE		Apr. & Oct/Nov.
Ammomane isabelline	<i>Ammomanes deserti</i>			SR		SR	SR		Apr. & Oct/Nov.
Ammomane élégante	<i>Ammomanes cincturus</i>	Y		SR		SR	SR		Apr. & Oct/Nov.
Alouette de Clotbey	<i>Ramphocoris clotbey</i>	Y					SR		Apr.
Alouette bilophe	<i>Eremophila bilopha</i>	Y		SR			SR		Apr. & Oct/Nov.
Sirlin de Dupont	<i>Chersophilus duponti</i>	Y		SR		SR	SR		Apr. & Oct/Nov.
Sirlin du désert	<i>Alaemon alaudipes</i>	Y		SR		SR	SR		Apr. & Oct/Nov.
Hirondelle rustique	<i>Hirundo rustica</i>			SR	SR	SR	SR		Apr. & Oct/Nov.
Hirondelle de fenêtre	<i>Delichon urbicum</i>					SR			Oct./Nov.
Hirondelle de rivage	<i>Riparia riparia</i>						SR		Apr.
Pipit rousseline	<i>Anthus campestris</i>						SR		Apr.
Pipit à gorge rousse	<i>Anthus cervinus</i>						SR		Apr.
Bergeronnette printanière	<i>Motacilla flava</i>		SR	SR			SR		Apr. & Oct/Nov.
Rougegorge familier	<i>Erithacus rubecula</i>	Y				SR			Oct./Nov.
Rougequeue de Moussier	<i>Phoenicurus moussieri</i>	Y				SR		SR	Oct./Nov.
Traquet moiteux	<i>Oenanthe oenanthe</i>			SR			SR		Apr. & Oct/Nov.
Traquet noir et blanc	<i>Oenanthe melanoleuca</i>	Y					SR		Apr.
Traquet halophile	<i>Oenanthe halophila</i>	Y		SR		SR			Oct./Nov.
Traquet du Désert	<i>Oenanthe deserti</i>	Y	SR	SR		SR			Apr. & Oct/Nov.
Traquet à tête grise	<i>Oenanthe moesta</i>	Y	FL	SR	SR	SR	SR	SR	Apr. & Oct/Nov.
Rosignol philomèle	<i>Luscinia megarhynchos</i>	Y	SR						Apr.
Tarier des prés	<i>Saxicola rubetra</i>	Y			SR		SR		Apr.
Tarier pâtre	<i>Saxicola rubicola</i>	Y				SR		SR	Oct./Nov.
Dromioque du désert	<i>Scotocerca inquieta</i>			SR		SR	SR		Apr. & Oct/Nov.
Fauvette à tête noir	<i>Sylvia atricapilla</i>			SR					Oct./Nov.
Fauvette grisette	<i>Sylvia communis</i>						SR		Apr.
Fauvette à lunettes	<i>Sylvia conspicillata</i>	Y				SR			Oct./Nov.
Fauvette mélanocéphale	<i>Sylvia melanocephala</i>	Y						SR	Oct./Nov.
Pouillot siffleur	<i>Phylloscopus sibilatrix</i>	Y					SR		Apr.
Pouillot véloce	<i>Phylloscopus collybita</i>					SR			Oct./Nov.
Gobemouche noir	<i>Ficedula hypoleuca</i>						SR		Apr.
Gobemouche gris	<i>Muscicapa striata</i>						SR		Apr.
Pie-grièche du désert	<i>Lanius excubitor elegans</i>	Y	FL	SR	SR	SR	SR	SR	Apr. & Oct/Nov.
Pie-grièche à tête rousse	<i>Lanius senator</i>	Y	SR				SR		Apr.
Cratérope fauve	<i>Argya fulva</i>			SR		SR	SR		Apr. & Oct/Nov.
Moineau espagnol	<i>Passer hispaniolensis</i>	Y	SR	SR	SR	SR	SR		Apr. & Oct/Nov.
Verdier d'Europe	<i>Chloris choris</i>	Y						SR	Oct./Nov.
Roselin githagine	<i>Bucanetes githagineus</i>	Y		SR	SR	SR	SR		Apr. & Oct/Nov.
Bruant du Sahara	<i>Emberiza sahari</i>	Y				SR			Oct./Nov.



Fig. 1 Location of Sidi Toui National Park (inset) and satellite view showing contrast caused by presence of protected vegetation within the National Park boundary. Google Image © 2020 Maxar Technologies / Image © 2020 CNES / Airbus.



Fig. 2 Typical vegetation of Sidi Toui National Park with herd of scimitar-horned oryx grazing.



Cochevis de Thékla (*Galerida theklae*)



Cochevis huppé (*Galerida cristata*)



Sirli de Dupont (*Chersophilus duponti*)



Sirli du Désert (*Alaemon alaudipes*)



Alouette pispolette (*Alaudala rufescens*)



Alouette calandrelle (*Calandrella brachydactyla*)



Alouette bilophe (*Eremophila bilopha*)



Alouette de Clotbey (*Rhamphocoris clotbey*)



Busard cendré (*Circus pygargus*)



Busard des roseaux (*Circus aeruginosus*)



Percnoptère (*Neophron percnopterus*)



Aigle royale (*Aquila chrysaetos*)



Traquet noir et blanc (*Oenanthe melanoleuca*)



Traquet halophile (*Oenanthe halophila*)



Traquet du Désert (*Oenanthe deserti*)



Traquet à tête grise (*Oenanthe moesta*)



Oedicnème criard (*Burhinus oedicnemus*)



Courvite isabelle (*Cursorius cursor*)



Pluvier guignard (*Charadrius morinellus*)



Chevêche d'Athéna (*Athene noctua*)



Tourterelle des bois (*Streptopelia turtur*)



Engoulevent d'Europe (*Caprimulgus europaeus*)



Pie-grièche du désert (*Lanius excubitor elegans*)



Roselin githagine (*Bucanetes githagineus*)