

**Reintroduction and conservation
of North African / red-necked ostrich,
Struthio camelus camelus,
to protected areas in southern Tunisia**
Report and funding proposal

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Cover: Red-necked ostrich male © Marwell

This page: Ostrich group, Dghoumes NP © Marwell

Introduction

We would like to welcome you to the first report on a project that aims to conserve the North African subspecies *Struthio camelus camelus* in Tunisia and seeks to inform all holders of ostrich *Struthio camelus* sp. on the latest developments.

Marwell Wildlife has had a long history of collaborative work in Tunisia. In 2011 Marwell signed a Memorandum of Understanding with Tunisia's Direction Générale des Forêts to develop and deliver a national strategy to restore Sahelo-Saharan species and habitats. This project – Reintroduction and conservation of North African / red-necked ostrich, *Struthio camelus camelus*, to protected areas in southern Tunisia, is part of this strategy.

We hope you will find this document informative and interesting, and would like to invite you to join us and our partners in our efforts to re-establish this stunning bird in the Tunisian landscape. For any questions or to support the project, please contact Tanya Langenhorst, Marwell's Acting Head of Conservation Biology, on TanyaL@marwell.org.uk.

Section A of this document contains a historical background, information on the current situation and a summary of all activities in Tunisia since a reintroduction plan was formulated.

In **Section B** we are presenting our proposed activities for 2015/16 together with their associated costs.

Section A. Past and Present Status, and Activities

Conservation status of the North African / red-necked ostrich

Ostriches, *Struthio camelus*, are widespread and locally abundant across grasslands and deserts of East and Southern Africa. Hence, it is unsurprising that with large extant populations and as a species widely farmed across the world for their meat, feathers and ornamental eggs, the ostrich is listed as Least Concern on the IUCN Red List (Birdlife International, 2012). However, there is no specific assessment of the distinct, red necked, North African subspecies, *S.c. camelus*, despite disappearing from most of its former range. Indeed, having previously occupied the largest area of any of the four remaining ostrich subspecies, *S.c. camelus* is now thought to be restricted to just a few fragmented populations in Cameroon, Chad, Central African Republic and Senegal (SCF, 2014a). Accordingly, CITES lists ostriches from North Africa in Appendix 1.

Conservation efforts are, however, underway. Birds originating from Chad have been used to establish a population of *S.c. camelus* in the Souss Massa National Park in Morocco (Muller & Engel, 2003), and more recently spawning a similar initiative in the Safia Reserve south of Dahkla (Moroccan Birds, 2013). Elsewhere, ostriches originating from Sudan have been used for reintroduction in the Mahazat as-Sayd Protected Area in central Saudi Arabia in lieu of the now extinct *S.c. syriacus* (Islam et al, 2008). Meanwhile, community-based projects in Niger sustained by the Sahara Conservation Fund are the first participatory initiatives that seek to breed and reintroduce North African ostriches. This was made possible by local conservationists in the Air Mountains who protected the last of the country's ostriches in captivity (SCF, 2014b) following their rapid demise in the wild (Ostrowski et al., 2001).

North African / Red-necked Ostrich EEP

Following an urgent appeal to all responsible authorities, Dr. Heiner Engel, then Zoological Director in Hannover Adventure Zoo, Germany, was given the go-ahead in 2010 to collect 24 ostrich eggs from the Moroccan Souss Massa National Park and bring them to Germany for breeding. Only eight chicks hatched from 24 eggs; all of which died within just a few days.

Early in 2011, Heiner Engel and his colleague Maren Frerking returned from a second trip to Morocco with another 24 North African Ostrich eggs to Germany. This time seven cocks and eight hens hatched out and survived. These birds formed the basis of the new Red-necked Ostrich EEP which was set up in autumn 2011.

Currently, a very small number of zoos in Germany, England and most recently the Netherlands have received young Red-necked Ostrich. First hatches occurred in 2014, and eggs have again been laid this spring. The EEP management sits with Maren Frerking in Hannover, Germany.

Ostriches in Tunisia

Ostriches were once abundant in the south of Tunisia, but following overexploitation had disappeared by the end of the Nineteenth Century, with the species last recorded in 1887 (Kacem et al., 1994; Cooper et al., 2009). Twenty Southern ostriches, *S.c. australis*, were imported in 1973, with 13 adult birds transferred to the Orbata Faunal Reserve in Gafsa five years later. Their descendants were eventually distributed to several other locations across the country, including releases into protected areas in the absence of the indigenous sub-species (Kennou Sebei et al., 2009).

Reintroduction of *S.c.camelus* to protected areas in Southern Tunisia

Three decades later, the plan to source reintroduction stock of the indigenous subspecies, *S.c.camelus*, came to fruition as these birds became available. This began in 2008 with the importation of birds from Souss Massa National Park in Morocco. These Moroccan ostriches are descendant from a Chad line of birds.

Eight of these birds (5.3) have since been managed in a 10 ha enclosure in Orbata Faunal Reserve (OFR) and have begun to reproduce, with nine chicks hatched successfully in 2013, and a further eight in 2014.

Meanwhile, four birds (1.3) have been managed in an enclosure in Dghoumes National Park (DNP). This group started breeding in early 2011 with six chicks (5.1) grown to adulthood so far.



Photos 1&2: Moroccan birds in Orbata Faunal Reserve © Marwell

In 2012, the Saudi Wildlife Authority's National Wildlife Research Centre in Taif donated unrelated chicks from a Sudanese blood line to the breeding and reintroduction programme in Tunisia, so that the country can be repopulated with a more genetically diverse, and hence more viable group. Nine juveniles (6.3) have been raised in captivity at Friguia Animal Park near Sousse, with planned translocation to Orbata Faunal Reserve in early 2015 to consolidate the breeding programme at that site. Genetic analysis confirms that these birds are pure *S. c. camelus* and compatible with their counterparts of Chadian descent (Fleischer, 2013).



Photos 3 & 4: Saudi birds arriving in Friguia Animal Park © Marwell

Over the last three years, Marwell's Tunisian based conservation biologist and veterinarian, Marie Petretto, has monitored each group very closely to ensure they will be able to forage for food, form balanced social groups, and protect themselves against predators.



Photos 5/6/7: Checking on the ostriches Marie & park staff; Marie Petretto & Chawki Najjer © Marwell

In October 2014, nine (5.4) North African ostriches were released from their enclosure into Dghoumes National Park, marking the first stage of reintroduction for a species missing from the Tunisian landscape for 127 years. By the end of the year, two nests and several eggs had appeared. Then in December 2014, three (1.2) of the Saudi birds were moved to an acclimatisation and quarantine enclosure in Sidi Toui National Park prior to a planned release in the first quarter of this year.



Photos 8/9/10/11: Ostriches courting and breeding in Dghoumes NP © Marwell

During a trip to Tunisia in February 2015 Marwell's Director of Conservation, Dr Tim Woodfine, and Marie visited Dghoumes NP to see the adult birds released in 2014. They also got to see the most recent group of hatchlings which had been rescued by national park staff and placed into a holding pen during extensive flooding of the area. A brief viewing of the breeding facilities in Orbata Faunal Reserve and discussion with the reserve manager confirmed that further improvements have to be made to the facilities there before captive breeding of birds for reintroduction can be stepped up.



Photo12 and below, 13: red-necked ostriches back in the Tunisian landscape for the first time in 127 years © Marwell

Proposed activities

We now seek to breed and release North African ostriches across a network of national parks and reserves in southern Tunisia. A two year timeframe is envisaged for this initial phase.

Specifically, the project will focus on:

1. Establishing a breeding programme for North African ostriches in the Orbata Faunal Reserve (OFR) in Gafsa.
2. Monitoring and managing North African ostriches released in Dghoumes and Sidi Toui National Parks
3. Building Tunisian capacity for the management, monitoring and training of ostrich translocation projects
4. Developing and implementing a national meta population management plan for North African ostriches



Our Conservation Partners in Tunisia:

CRDA: Commissariats Régionaux au Développement Agricole (CRDA) of Medenine, Tozeur and Gafsa
DGF: Direction Générale des Forêts - the statutory authority for wildlife and protected area management in Tunisia
DGSV: Direction Générale des Services Vétérinaires

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B. Proposed Activities for 2015-16

Project Management

The project is being undertaken at the request the Direction Générale des Forêts (DGF), the statutory authority for wildlife and protected area management in Tunisia. It will be implemented in partnership with Marwell Wildlife under existing Memoranda of Understanding with DGF and the Direction Générale des Services Vétérinaires (DGSV), together with the Commissariats Régionaux au Développement Agricole (CRDA) of Medenine, Tozeur and Gafsa.

Timing & Costs

A two year timeframe is envisaged for this initial phase. General project costs will be underwritten by Marwell Wildlife, including Marwell staff time and overheads, as well as provision of vehicles and other in-country travel. However, additional funding is sought to meet specific costs such as equipment and materials, and to support local personnel in the direct management and monitoring of ostriches in Orbata FR, Dghoumes NP and Sidi Toui NP, as well as provision for training. At this stage only per capita sums can be given for the translocation and release of ostriches in year 2 to additional protected areas as this will depend on how many birds will be translocated and to where.

1. Captive breeding of North African ostriches at Orbata Faunal Reserve

Orbata Faunal Reserve is geographically well positioned to supply ostriches to the network of protected areas in the south of Tunisia. It also benefits from the convenience of being located just outside Gafsa with good communications, access to necessary resources and logistical support. The site has existing facilities for managing ostriches, albeit in need of some infrastructural repairs and improvements. Moreover, the team already has experience and a successful track record of both *S.c. australis* (Sebei et al., 2009) and more recently *S.c. camelus*. They have expressed an interest in staff training and a desire to embrace new techniques and technologies. The facility will now focus on solely breeding the North African subspecies, *S.c. camelus*. These birds will be closely managed and habituated to human presence to facilitate low stress husbandry and translocation of offspring to protected areas.

Outputs

- *S.c. camelus* breeding established in Orbata Faunal Reserve (OFR).
- Individual birds available for translocation

1. Captive Breeding in OFR/Liaison & monitoring	£
Repairs and upgrades to infrastructure at OFR	2,000.00
Fieldwork mileage to OFR @ 700 km / quarter @ £0.30 / km	840.00
Ostrich feed – 18 tons/year @ ±£255.00 / ton	4,590.00
Incubator for up to ~12 eggs	1,700.00
	7,130.00

2. Monitoring and managing North African ostriches released in Dghoumes and Sidi Toui National Parks

Released ostriches will be monitored closely in the 8,000 ha Dghoumes National Park (est. 1995) and the 6,300 ha Sidi Toui National Park (est. 1993). Both sites are examples of remnant sub-desertic continental arid steppe that have been subject to ongoing efforts to restore vegetation and reintroduce indigenous species with encouraging results.

Improvements in infrastructure originally designed for antelope projects are needed in both national parks to create holding facilities for ostriches, together with purchase of veterinary equipment and consumables in case of the need for intervention. Otherwise, monthly post-release monitoring visits are planned, while local personnel would benefit from training in ostrich husbandry, field observations and record keeping.

Outputs

- Secure and growing populations of semi free-ranging ostriches (i.e., within fenced protected areas) in Dghoumes National Park (DNP) and Sidi Toui National Park (STNP).
- Tunisian personnel trained and competent in ostrich husbandry and post-release monitoring

2. Ostrich monitoring in DNP and STNP	£
Fieldwork mileage to DNP or STNP @ 1,500 km / month @ £0.30 / km	5,400.00
Repairs and upgrades to infrastructure at DNP and STNP	700.00
Veterinary equipment & consumables	300.00
Training materials	175.00
	6,575.00

3. Capacity Building for ostrich translocation projects

The project will locally employ a Project Manager, Chawki Najjer, who has recently graduated with a veterinary doctorate, and a Project Assistant to work alongside him. In addition, internship opportunities will be created for eight Tunisian students (four per year) under agreement with DGSV. Training opportunities will also be available for personnel in OFR and national parks staff.

Outputs

- Tunisian personal experienced and trained in the management, planning and implementation of ostrich translocation/release projects as well as veterinarians gaining experience in ostrich biology and veterinary care.

3. Capacity Building	£
Project Manager @ £550.00/month 25% of time	1,650.00
Project Assistant (2 days per month at OFR) @ £95.00/month	1,140.00
	2,790.00

4. Developing and implementing a national meta population management plan for North African ostriches

Physical translocations of ostriches between these sites to avoid inbreeding and optimise retention of genetic diversity will be undertaken as part of this project. If reproduction is as successful as hoped, releases of birds into additional protected areas will be undertaken to create a national meta population of ostriches in several sites.

Outputs

- A national meta population management plan delivered, with initial translocations of ostriches undertaken between sites.
- Processes and outcomes documented and shared, with experiences informing and being applied to the planning of ostrich release projects in additional protected areas.

Ostrich Translocation for Metapopulation Management	£
Veterinary screening, drugs and consumables per ostrich	150.00
Capture and transport material and equipment	475.00
Transportation (mileage) and ostrich feed en route	700.00
	1,325.00

Summary of funding proposal North African Ostrich conservation 2015/16

1. Captive Breeding in OFR/Liaison & monitoring	£
Repairs and upgrades to infrastructure at OFR	2,000.00
Fieldwork mileage to OFR @ 700 km / quarter @ £0.30 / km	840.00
Ostrich feed – 18 tons/year @ ±£255.00 / ton	4,590.00
Incubator for up to ~12 eggs	1,700.00
	7,130.00
2. Ostrich monitoring in DNP and STNP	£
Fieldwork mileage to DNP or STNP @ 1,500 km / month @ £0.30 / km	5,400.00
Repairs and upgrades to infrastructure at DNP and STNP	700.00
Veterinary equipment & consumables	300.00
Training materials	175.00
	6,575.00
3. Support for local personnel	£
Project Manager @ £550.00/month 25% of time	1,650.00
Project Assistant (2 days per month at OFR) @ £95.00/month	1,140.00
	2,790.00
Total for year 1	£ 16,495.00

In addition we will need extra funds for the following year for ostrich translocations. For now we can only give per capita amounts, as the correct costs will depend on number of ostriches and translocation sites. It will be a multiple of below figures.

Ostrich Translocation for Metapopulation Management	£
Veterinary screening, drugs and consumables per ostrich	150.00
Capture and transport material and equipment	475.00
Transportation (mileage) and ostrich feed en route	700.00
	1,325.00