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Short communication

First successful breeding of Osprey *Pandion haliaetus* in Sardinia since 1968

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Abstract - In 2020, a pair of ospreys nested in the north western coast of Sardinia and the successful fledging of two chicks is the first record in the island since 1968. The last reported breeding occurred in the eastern coast of the island and after that the species was considered extinct. Ospreys regularly migrate, estivate and winter in Sardinia, with a wintering population of about 40 individuals in 2018. This new breeding episode is not resulting from reintroduction projects and may be related to the dynamics of the close population of Corsica and to the exceptional absence of human disturbance along the coast due to COVID 19 lock-down.

Key-words: Osprey, breeding, Porto Conte Regional Park, Mediterranean.

Riassunto - Nel corso del 2020 una coppia di falco pescatore si è riprodotta lungo la costa nord occidentale della Sardegna portando all'involo due giovani. Questa nidificazione è la prima dopo l'estinzione della specie sull'isola avvenuta nel 1968, anno dell'ultima nidificazione nota. In Sardegna il falco pescatore è migratore, svernante ed estivante regolare, la popolazione svernante nel 2018 è stata di circa 40 individui. Questa nuova nidificazione non è correlata a progetti di reintroduzione ed è probabilmente da mettere in relazione con la dinamica della vicina popolazione corsa e alla assoluta assenza di disturbo umano lungo la costa a seguito del lockdown adottato come misura per contrastare la diffusione del virus SARS-CoV-2.

Parole chiave: falco pescatore, nidificazione, Parco Regionale di Porto Conte, Mediterraneo.

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INTRODUCTION

Osprey *Pandion haliaetus* is a cosmopolitan bird of prey with a wide distribution in different biogeographical regions of the world (Poole, 1989). The number of osprey nesting pairs in Europe, northern Africa, and the Middle East ranges between 9,500 and 11,500 (Schmidt-Rothmund *et al.*, 2014). More than 50% of the European population breeds in Scandinavia and in some other countries of central Europe (Bai & Schmidt, 2011).

In the Mediterranean area the conservation status of the species is considered unfavourable (Thibault *et al.*, 2001; Muriel *et al.*, 2010; Dennis, 2016), with less than 80-100 breeding pairs distributed between Corsica, the Balearics, Morocco and Algeria (Monti, 2012).

In continental Italy it was a former breeder up to 1960's - 1970's; extinction was caused mainly by direct persecution and eggs depredation. The last known breeding records were reported in Sicily around 1968 (Iapichino & Massa, 1989) and in Apulia in 1955 (Frugis & Frugis, 1963).

A re-introduction project is ongoing since 2006 in the Maremma Regional Park (Tuscany) aiming at re-establishing a breeding population that would potentially inter-connect with the nearby Corsican breeding population (Sforzi *et al.*, 2007); between 2006 and 2010, 33 nestling Ospreys were taken from nests in Corsica and 32 were reintroduced via hacking techniques. During the period 2011-2019, 1-5 pairs have bred in Tuscany at 1-4 sites (Monti *et al.*, 2014; Monti *et al.*, 2018a; Sforzi *et al.*, 2019).

The Italian total winter population has been increasing since the mid-1990's, and it has been estimated at 50-100 birds during the last decade (Brichetti & Fracasso, 2018).

In Sardinia, about 60-50 pairs were estimated to breed in several coastal areas (Orosei gulf, Montiferru di Terrenia, Capo Frasca, Bosa area, Capo Caccia) and in small islands (Caprera and Tavolara) but they disappeared during the 1960's (Schenk, 1976; Schenk, 1977; Schenk, 2015; Schenk personal communication; Thibault *et al.*, 2001). Together with the reported causes of the extinction (disturbance and eggs and chicks removal by local fishermen), in Sardinia must be added the massive use of DDT in the post II World War program to eradicate malaria in the years 1946-1950, when 110 km² of wetlands had been treated with a dose of 30 mg/m² (Ames, 1966; Pratesi & Tassi, 1973; Tognotti, 2009; Grove *et al.*, 2009).

In 1977 and following years, there have been some breeding attempts with no success (Schenk, 2015).

In Sardinia in 2011, Porto Conte Regional Park and LIPU (Lega Italiana Protezione Uccelli - Birdlife partner in Italy), carried out a wildlife management project, aiming to promote the recolonization of the species in the area, with the building of artificial nests and the placement of decoys for attracting floaters.

Since 2017, the wintering Sardinian population has been monitored by the Gruppo di Ricerca Sardo sul Falco Pescatore (Sardinian Research Group on Osprey) together with LIPU and AFNI (Associazione Fotografi Naturalisti Italiani - Italian Nature Photographer Association) to increase the knowledge about the species and to promote a Regional Action Plan to facilitate the breeding of Osprey in the island.

Sardinia's wetlands, especially Mistras Lagoon (a Ramsar Site in Oristano territory), are the most important areas for wintering of this species in the Mediterranean basin, with a population of more than 40 individuals in 2018 (Gruppo di Ricerca Sardo sul Falco Pescatore, unpublished). During January 2017, a total of 22 birds were counted in the Oristano wetlands, with 15 individuals in Mistras lagoon only (Fozzi *et al.*, 2017).

Sardinia also plays an important role in the migration of the northern European population, in particular for individuals coming from the Fennoscandia region (Spina & Volponi, 2008).

STUDY AREA AND METHODS

Porto Conte Regional Park, in the north-western Sardinia, was founded in 1999; it covers 5,000 ha and includes the Capo Caccia Marine Protected Area, a SAC (Special Area of Conservation ITB010042) and SPA (Special Protection Area ITB 013044). It has about 60 km of coasts, with beaches and cliffs, high up to 326 m at Punta Cristallo, in Capo Caccia calcareous promontory; Capo Caccia has high conservation value for the breeding of seabirds and birds of prey (Aplington *et al.*, 2000); on its cliffs, both Griffon Vulture (*Gyps fulvus*) and Egyptian Vulture (*Neophron percnopterus*) breed (Berlinguer *et al.*, 2019; Life Project Under Griffon Wings, 2019). The southern limit of the Regional Park is Calich Lagoon, a brackish lagoon used as a fish farm by a local fishermen's cooperative. It is about 2,5 km long, with an average depth of about 1,5 m, covering an area of 92 ha. The only connection with the sea is a channel at the port of Fertilia, heavily modified by human activity. The insufficient supply of fresh water causes a predominance of brackish waters in the lagoon, and also along the final course of the tributaries, with consequent changes in terrestrial land marine fauna and flora. The ichthyofauna is represented mainly from *Mugilidae* (*Liza saliens*, *Liza ramada*, *Mugil cephalus*) and European Eel (*Anguilla anguilla*); valuable species such as European Sea Bass (*Dicentrarchus labrax*) and Gilt-head Seabream (*Sparus auratus*) are scarce (Progetto ReTraLagS, 2017).

Monitoring of the nesting area was made from a vantage point about 350 m far from the nest for no longer than 2 hours per day (Ruddock & Whitfield, 2007; Triay & Siverio, 2008; Hardey *et al.*, 2009) with a 25 - 50x82

telescope, a 10x42 binocular, and a Nikon Coolpix P950 camera, and it was carried out by LIPU, General Directorate for Civil Protection of the Sardinia Region/ISPRA (Istituto Superiore per la Protezione e la Ricerca Ambientale) and Sardinian Research Group on Osprey. Behaviour was recorded on data sheets (Altmann, 1974) e.g. activity or display by one of the partners, feeding activity, interaction with an intruder. (Fig. 1).



Fig. 1 - Map of Corsica, with the red ellipse that highlights the location of the Scandola Nature Reserve; in Sardinia, in the red square, the area of the Porto Conte Regional Park, adjacent to the city of Alghero. The green box represents the Park area, the “Capo Caccia Isola Piana” Marine Protected Area in dark blue and the Osprey nesting area with the pink ellipse. / Mappa della Corsica, con l’ellisse rossa che evidenzia la localizzazione della Riserva Naturale di Scandola; in Sardegna nel quadrato rosso l’area del Parco Regionale di Porto Conte, limitrofo alla città di Alghero. Nel riquadro in verde è rappresentato il territorio del Parco, in celeste scuro l’Area Marina Protetta “Capo Caccia Isola Piana” e con l’ellisse rosa l’area di nidificazione del Falco pescatore.

RESULTS

At the end of June, after a specific survey, a nest with two chicks of about 5 weeks was found, suggesting that eggs could have been laid around 15th April, the average incubation phase lasting 37 days (Cramp & Simmons, 1980). The breeding pair consists of a female with no

rings, thus of unknown origin, and a six years old Corsican, male wearing a green coloured pvc-ring from Corsica (Euring BS15961 on right leg; Green pvc ring with white code CBB on left leg, ringed by F. Monti, O. Duriez and J. M. Dominici at Scandola Reserve (Corsica) at nest Palazzo, on the 26/06/2014). (Fig. 2).

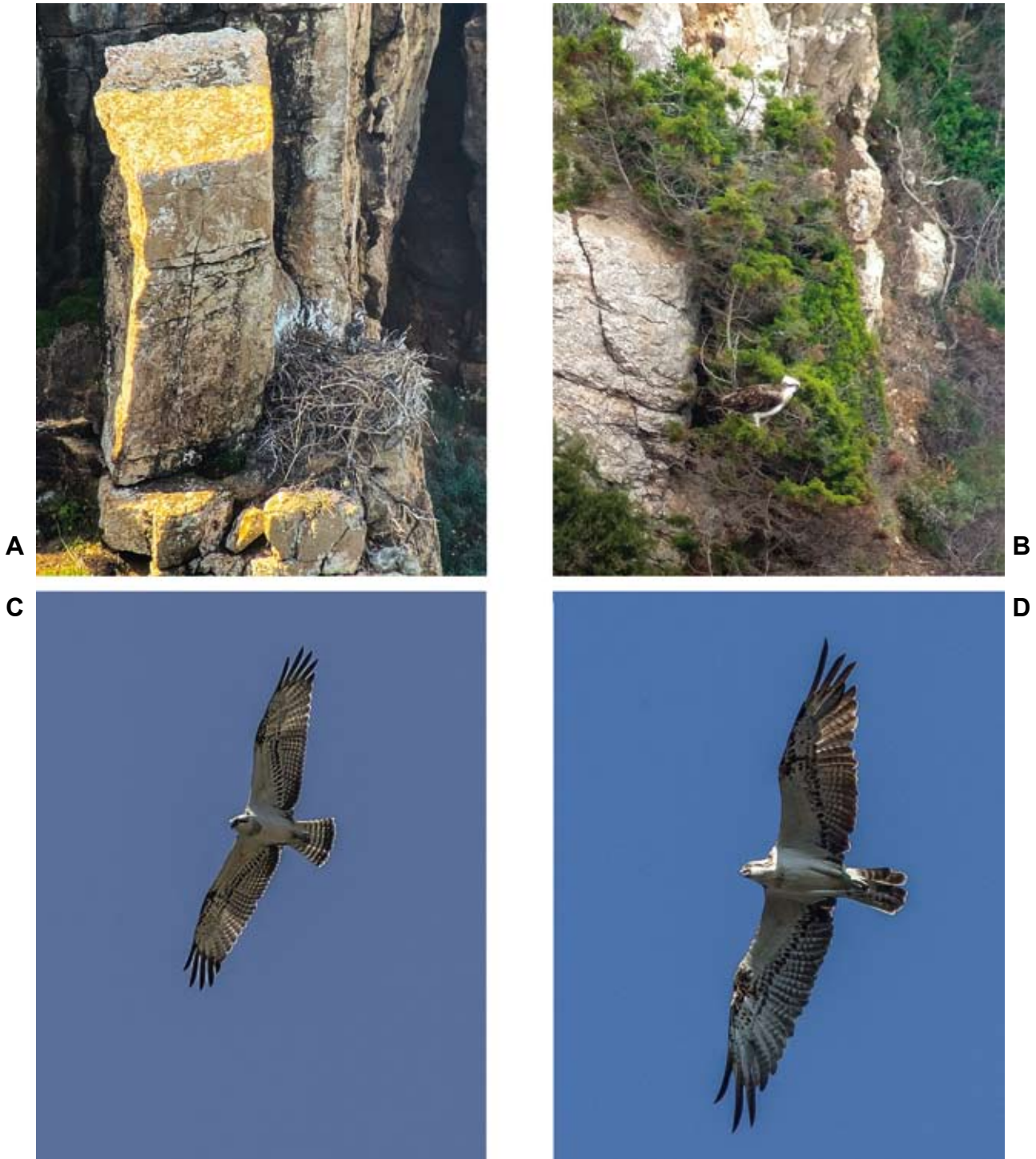


Fig. 2 - A) Nest with the two nestling Osprey located on the cliff at about 70 m above sea level. / Nido con due giovani di falco pescatore ubicato sulla falesia a circa 70 m slm. (Digiscoping - Photo/Foto R. Fozzi, 07/07/2020). B) Adult female in the perch above the nest used to control the surrounding air space. / Femmina adulta nel posatoio sopra il nido utilizzato per controllare lo spazio areo circostante. (Digiscoping - Photo/Foto R. Fozzi, 07/2020). C) Young male during the first flight tests. / Giovane maschio durante le prime prove di volo. (Photo/Foto A. Fozzi, 07/2020). D) CBB ringed male in flight near the breeding site. / Maschio inanellato CBB in volo nei pressi del sito riproduttivo. (Photo/Foto A. Fozzi, 07/2020).

Fishing activities were carried out mainly by the male in the coastal area, while no fishing activity has been recorded in Calich Lagoon, that was used to fish during the pre-breeding period instead.

The female actively defended the aerial space surrounding the nest; an active nest of Common Kestrel (*Falco tinnunculus*) was present about 200 m far on the cliff; nests of Peregrine Falcon (*Falco peregrinus*), Griffon Vulture and Egyptian Vulture are also present in the area. Interactions with Griffon Vultures, Egyptian Vultures, Peregrine Falcons, Yellow-legged Gulls (*Larus michaëlis*), Common Ravens (*Corvus corax*) and Rock Doves (*Columba livia*) have been observed.

The chicks fledged on 9th July (presumably a female) and on 11st July (presumably a male) at the estimated age of 7 weeks: the sexing of the fledglings has been supposed on the base of relative dimensions, plumage and jizz (Strandberg, 2013).

After the fledging, the chicks stayed near the nest and were fed by the parents; they were subject of a specific monitoring both near the nest and in Calich Lagoon (Bustamante, 1995).

Special restriction measures were undertaken by the creation of a buffer zone around the nest area to limit human disturbance through a temporary prohibition of access by boat less than 200 m from the coast and by terrestrial visits (Agenzia Speciale di Porto Conte, 2020 decree n.3/2020).

Ospreys built their nest in an area where an old nest was once present (Schenk, 1976; Torre *et al.*, 1991); in 2011, in that same area, Porto Conte Regional Park and LIPU carried out a wildlife management project to facilitate the recolonization of the species (Gustin M., Torre A., Paddeu R., 2013, per. com.). Given the current poor conservation status of both nests and decoys after 9 years since their placement, the 2020 breeding could be related to the renovated suitability of the area, thanks to the lack of human disturbance and the unexpected absolute calmness due to Covid-19 lockdown (DPCM 9th March 2020).

This recolonization might also be linked to the situation of the Corsican population, where the main cause for the low breeding success is disturbance by human activities (Monti *et al.*, 2018b); in fact, even if the number of territorial pairs in Corsica is stable (31), numbers of fledged juveniles passed from 64 in 2008 to only 12 in 2019. The saturation point of suitable breeding territories has also been reached (Bretagnolle *et al.*, 2008). Furthermore, it is interesting to notice that a female that was ringed in Corsica in 2014, in 2018 moved to south-western France to breed (Csabai, 2019) and another green ringed female started breeding in 2018 in Orbetello (Sforzi *et al.*, 2019).

To promote the conservation of Osprey in Sardinia and in the Mediterranean region, and to facilitate the gradual increasing of the natural settlement of breeding pairs, a series of coordinated action at international level, including all the nations involved, should be activated (Dennis, 2016); there is also the real probability that, following the overlap of different European populations on the wintering grounds, mixed pairs between Corsican Ospreys and ones from centre and northern Europe may occur, given

also the increasing of the Mediterranean wintering population and the reduction of migration length (Martin *et al.*, 2019).

In Sardinia, starting from the experience of the Sardinian Research Group on Osprey, a working group, including all the Institutions involved and with the support of ISPRA, should be created, to write a regional action plan whose main goals will be:

- the protection and the monitoring of the breeding site;
- the evaluation of the current habitat suitability of the historical breeding sites of the species;
- the monitoring of all the potential suitable breeding sites, especially the ones in the northern part of Sardinia, and the definition of measures to mitigate the potential disturbance;
- to continue the monitoring and the census of the wintering population and to ensure appropriate protection measures of all wintering areas,
- to evaluate potential new wildlife management measures such as the building of artificial nests and the placement of decoys in suitable areas such as Asinara National Park and Santa Teresa Gallura coast.

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