

Observations on the Sooty Falcon (*Falco concolor*): nesting behaviour and distribution in Egypt

Mohamed HABIB^{1*}, Ahmed SALAMA², Wael THABIT², Tamer RAMADAN², Mohammed GEBREL² & Ahmed HASAN²

Received: March 02, 2025 – Revised: January 30, 2026 – Accepted: March 11, 2026



Habib, M., Salama, A., Thabit, W., Ramadan, T., Gebrel, M. & Hasan, A. 2026. Observations on the Sooty Falcon (*Falco concolor*): nesting behaviour and distribution in Egypt. – Ornis Hungarica 34(1): 22–30. DOI: 10.2478/orhu-2026-0003

Abstract The main objective of this study was to improve understanding of the distribution and breeding areas of the Sooty Falcon (*Falco concolor*) in Egypt, in support of the implementation of the International Action Plan for the species. Between August 2023 and November 2024, we conducted a census of Sooty Falcon breeding colonies in the Egyptian Red Sea Islands, the White Desert, South Sinai, and the Nile Valley. Breeding pairs were counted, and nests were recorded where possible. We documented 182 breeding pairs in the Eastern Desert and Red Sea Islands, 123 pairs in the Western Desert, 20 pairs in South Sinai, and five pairs in the Nile Valley. In 2024, a previously unknown breeding colony was discovered in the Dakhla Oasis, comprising approximately 15 breeding pairs. A very small proportion of the population appears to reside in Egypt year-round, although their exact numbers remain poorly known. At Red Sea colonies, we recorded field evidence of breeding activity, including pellets and plucked feathers. In addition, a transitional-phase individual was observed during the first week of April near the Hamata mangrove. Securing long-term funding is essential to ensure the continuation of annual surveys, the exploration of additional potential breeding areas, and the effective monitoring of Sooty Falcon populations in Egypt. Such efforts will contribute to more accurate population estimates and improved assessment of distributional trends and conservation status.

Keywords: population monitoring, Dakhla Oases, Red Sea Islands, Western Desert, breeding colonies

Összefoglalás A tanulmány fő célja a hamvas sólyom (*Falco concolor*) egyiptomi elterjedésének és költőterületeinek jobb megismerése volt, a fajra vonatkozó Nemzetközi Akcióterv megvalósításával összhangban. 2023 augusztusa és 2024 novembere között felmértük a hamvas sólyom költőkolóniáit az egyiptomi Vörös-tengeri szigeteken, a Fehér-sivatagban, a Dél-Sínai-félszigeten és a Nílus-völgyében. A költőpárok számát minden esetben rögzítettük, és ahol lehetséges volt, a fészkeket is felmértük. A Keleti-sivatagban és a Vörös-tengeri szigeteken összesen 182 költőpárt, a Nyugati-sivatagban 123 költőpárt, a Dél-Sínai-félszigeten 20 költőpárt, a Nílus-völgyében pedig öt költőpárt dokumentáltunk. 2024-ben egy korábban ismeretlen költőkolóniát fedeztünk fel a Dakhla-óázisban, ahol megközelítőleg 15 költőpár fészkel. A populáció nagyon kis része egész évben Egyiptomban tartózkodik, azonban pontos egyedszámuk továbbra sem ismert. A Vörös-tengeri kolóniáknál a költési tevékenység nyomait, például köpeteket és kitépett tollakat találtunk. Emellett április első hetében egy átmeneti tollazatú egyedet figyeltünk meg a hamatai mangrove közelében. Az éves felmérések folytatásához, új potenciális költőterületek feltárásához és a hamvas sólyom egyiptomi állományának hatékony monitorozásához elengedhetetlen a hosszú távú finanszírozás biztosítása. Ezek az erőfeszítések hozzájárulnak az állomány méret pontosabb meghatározásához, valamint az elterjedési mintázatok és a természetvédelmi státusz alakulásának megbízható nyomon követéséhez.

Kulcsszavak: állományfelmérés, Dakhla-óázisok, Vörös-tengeri szigetek, Nyugati-sivatag, fészkelő kolóniák

¹ P. O. Box 432, Hurghada, Red Sea, Egypt

² Nature Conservation of Egypt, Ministry of Environment, Egypt

* corresponding author; e-mail: mrhydro3@hotmail.com

Introduction

The Sooty Falcon (*Falco concolor*) breeds in remote desert environments extending from eastern Libya through the Middle East, including Egypt, Palestine, the Arabian Peninsula, the Persian Gulf, Iran, and southern Pakistan (Orta *et al.* 2020) (Figure 1). In Tunisia and Morocco, the species is known only as a vagrant (Hamrouni 2007), and it has never been recorded in India (Praveen *et al.* 2017). During the non-breeding season, Sooty Falcons winter primarily in Madagascar and along the coast of continental Africa (Orta *et al.* 2020).

The species has adapted to a highly specialized ecological niche by shifting its breeding season to late summer and early autumn, thereby coinciding with the trans-Saharan and trans-Arabian migration of Palearctic passerines from Eurasia, which constitute an important food resource (Coles & Williams 2004). The core breeding range of the Sooty Falcon consists of predator-free islands in the seas surrounding the Arabian Peninsula, including the Red Sea, the Gulf of Aden, the Gulf of Oman, and the Persian Gulf (Orta *et al.* 2020). Breeding populations on these islands may reach relatively high densities due to the limited availability of suitable nesting sites combined with abundant prey resources. Behavioural observations indicate that the species typically nests in a semi-colonial manner (Clapham 1964, McGrady *et al.* 2017). In contrast, breeding on the mainland is much less frequent and occurs sporadically from Libya in the west to southern Iran and Pakistan in the east.

Earlier estimates placed the global population at 10,000–19,999 breeding individuals (BirdLife International 2017). More recent assessments suggest that the number of breeding pairs in the Arabian core area – comprising Kuwait, Saudi Arabia, Bahrain, Qatar, the United Arab Emirates, Oman, and Yemen – is approximately 450 pairs (Jennings & Sadler 2007). Only a small number of breeding pairs are thought to occur at the western and eastern extremes of the species' range, namely in Libya and in Iran and southern Pakistan, respectively. With the exception of Saudi Arabia, population estimates for the Red Sea Islands remain scarce, and no breeding population estimates are currently available for Somalia, Djibouti, or Sudan (Shobrak *et al.* 2003, Leonardi *et al.* 2024).

In Egypt, Goodman and Meininger (1989) estimated that 150–300 breeding pairs occur, the majority nesting on Red Sea Islands, with only a limited number breeding in mainland desert habitats, including approximately 20 pairs in Sinai. Shobrak *et al.* (2003) estimated a total of 300 breeding pairs along the entire Egyptian Red Sea coast. Subsequently, Habib (2019) recorded 170 breeding pairs on the Egyptian Red Sea Islands and documented breeding activity as early as late April, which is atypical for a summer-breeding species. In the Western Desert, Salama *et al.* (2020) reported 101 breeding pairs in White Desert National Park, while Parr and McGrady (2023) counted 29 individuals on Tiran and Sanafir Islands.

As a result of revised population estimates and growing concern over population size and trends, the Sooty Falcon has recently been classified as Vulnerable. The current global breeding population is now estimated at approximately 1,400–2,000 pairs (Orta *et al.* 2020).



Figure 1. Sooty Falcon female in flight (Photo: Mohamed Habib)

1. ábra Repülő tojó hamvas sólyom (Fotó: Mohamed Habib)

Uncertainty regarding the conservation status of the Sooty Falcon, together with evidence of a small and declining global population, highlights the need to clarify the status of Egypt's comparatively large Red Sea breeding population. Although substantial data are available for much of the species' range, the paucity of recent information from Egypt is particularly striking. To address this knowledge gap, we initiated the first systematic assessment of the Sooty Falcon breeding population in key regions of Egypt, while explicitly accounting for financial and logistical constraints. Our primary objective was to obtain a representative assessment of

breeding areas, with particular emphasis on the El Dakhla Oasis. However, given the extensive spatial scale of the study area in Egypt and our limited resources, we adopted a targeted survey strategy to maximize coverage and data quality.

Methods

Between August 2023 and November 2024, we conducted surveys of Sooty Falcon breeding colonies in the Egyptian Red Sea Islands, the White Desert, South Sinai, and the Nile Valley (Figures 2, 3). Each breeding site was visited twice during the breeding season – once at the beginning and once at the end. To minimize disturbance and stress at the colonies, visits were limited to a maximum duration of 20 minutes and were conducted either in the early morning or shortly before sunset. All sites shown in the illustrated map were surveyed.

The survey area extended from the Gulf of Suez Islands in the north to Zabarjad and Rocky Islands in the south. Island sites were accessed by boat, whereas the White Desert, South Sinai, and Nile Valley regions were surveyed using four-wheel-drive vehicles. Binoculars, spotting scopes, and cameras were employed to identify, count, and photograph birds. Breeding pairs and nests were recorded where possible.

To minimize disturbance, most observations and counts were conducted from a distance using spotting scopes. Although this approach effectively reduced disturbance, it limited our ability to locate all nests. To further reduce potential impacts on breeding birds, visits

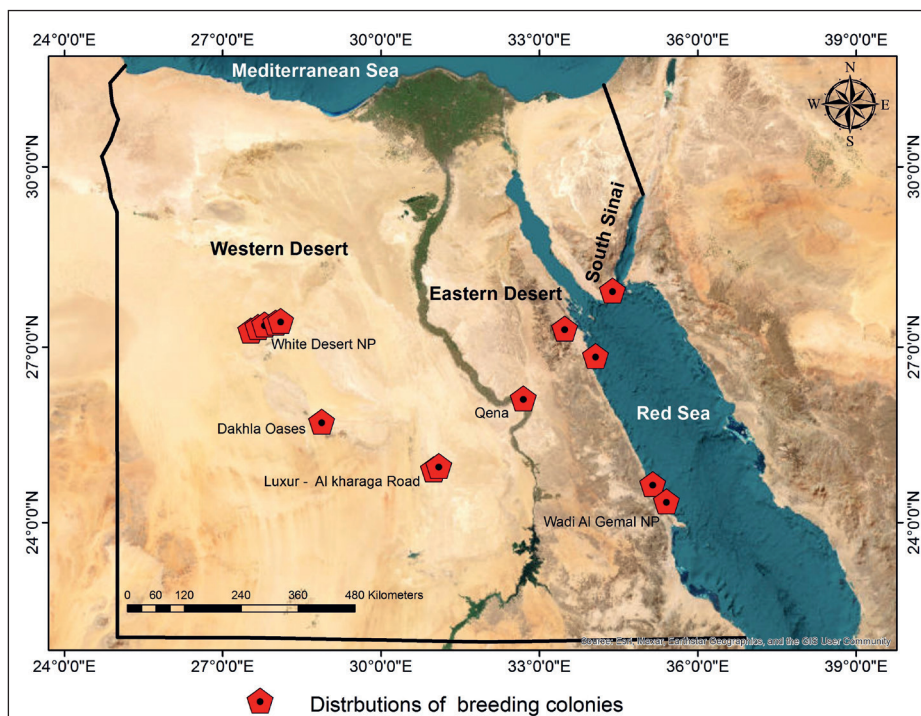


Figure 2. Observation and distribution of breeding colonies in Egypt
2. ábra A fészkelőkolóniák és a megfigyelések helye Egyiptomban



Figure 3. Breeding area in the White Desert (Photo: Mohamed Habib)
3. ábra Fészkelőhely a Fehér Sivatagban (Fotó: Mohamed Habib)

to each colony were restricted to a maximum of 20 minutes (cf. Walsh *et al.* 1995), with individual nest inspections lasting no longer than 3–5 minutes. All observations were carried out between 07:00 and 15:00.

Results

General distribution and abundance

The breeding colonies in the Eastern Desert and Red Sea Islands comprised a total of 182 breeding pairs, while 123 breeding pairs were recorded in the Western Desert, approximately 20 breeding pairs in South Sinai, and five breeding pairs in the Nile Valley (Figure 4). During the survey, a previously unknown breeding colony was discovered at the Dakhla Oasis (Eastern Desert), consisting of approximately 15 breeding pairs.

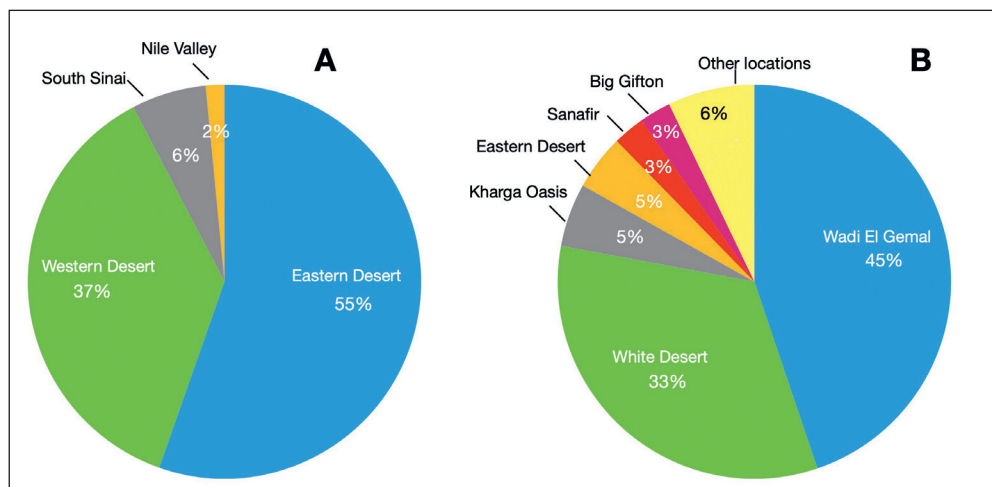


Figure 4. Abundances of Sooty Falcon breeding pairs, expressed as percentages, in macro-regions of Egypt (A) and specific locations (B). The category “Other locations” summing areas representing 2% or less of the Sooty Falcon population and includes Nuibaa, Manfaloat, Wadi Degla, Nile Valley, Umm El Hemate, Sharm El Sheikh, Umm El Sheikh, and Mahabese governorates

4. ábra A hamvas sólyom százalékosan kifejezett állománya (A) Egyiptom makrorégióiban, és (B) az egyes területeken

Two breeding pairs are known to reside in Egypt year-round (Mohamed Habib, unpublished data), although little is known about their activities outside the breeding season. In an additional observation, birders reported a transitional-phase individual at the Hamata mangrove forest and in the Fayoum Oasis during the first week of April (Figure 5A). Furthermore, on 10 November 2024, we surveyed the southern Egyptian Red Sea Islands to search for adult or juvenile birds. Although no individuals were observed during this survey, we recorded prey remains and other evidence indicating recent falcon



Figure 5. (A) A second calendar year specimen (April), (B) pellets and plucked feathers found near breeding Sooty Falcon colonies (Photo: Mohamed Habib)

5. ábra (A) Egy másodéves példány (áprilisban), (B) köpetek és tépések egy hamvas sólyom fészkelőkolónia közelében (Fotó: Mohamed Habib)

presence. In addition, a suspected second-calendar-year individual with unusual plumage was observed (Figure 5B).

Breeding sites

Sooty Falcons breed either solitarily on cliffs of fossilized coral islands or colonially on sandy islands with bare surfaces or those partially covered by halophytic vegetation (Figure 6A, B). The most important factor influencing nest-site selection is the availability of partial or complete shade, which provides protection from direct solar radiation during July–August, when ambient temperatures may exceed 50 °C.

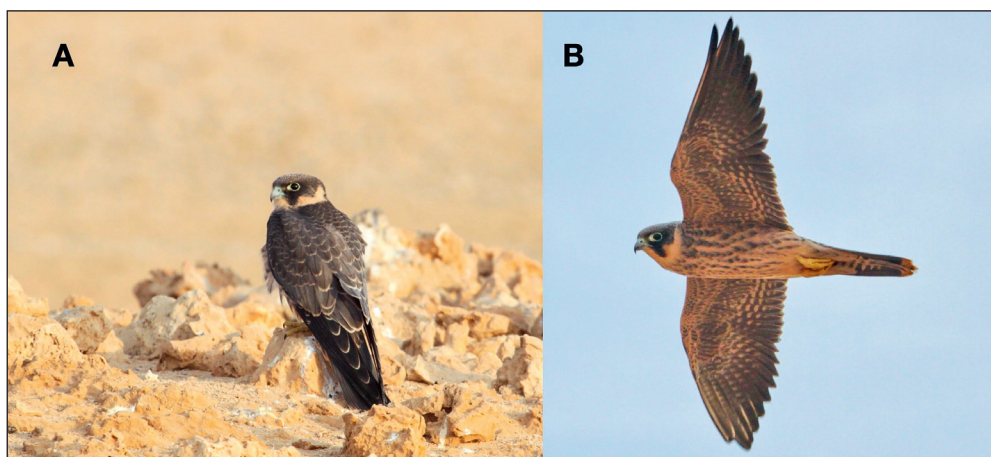


Figure 6. Perched (A) and flying (B) Sooty Falcon fledglings at the Red Sea Islands (Photo: Mohamed Habib)

6. ábra Pihenő (A) és repülő (B) fiatal hamvas sólyom a Vörös-tengeri szigeteken (Fotó: Mohamed Habib)

Discussion

Our survey indicates that four regions in Egypt support a total of approximately 325 breeding Sooty Falcons, representing roughly 20% of the estimated global population (Figure 4) (Leonardi *et al.* 2024). This places Egypt among the countries with the largest known breeding populations worldwide, alongside Eritrea, Saudi Arabia, and Libya. Given their global significance, these Egyptian colonies require strict protection from future development and disturbance, particularly in coastal environments and archipelagos.

In addition to the breeding population, the maximum size of the non-breeding population recorded during our survey was approximately 60 individuals. In Egypt, the Sooty Falcon is primarily a summer breeder but may also include a small resident component. Breeding activity, including brooding of three eggs, has been documented as early as late April (Habib 2019), which is unusually early for a summer-breeding species. A limited number of individuals appear to remain in Egypt year-round, although their exact numbers and spatial distribution remain poorly known. The observation of a transitional-phase bird during the first week of April near Hamata (Figure 5A), as well as reports from the Fayoum Oasis by birders, further suggests the presence of non-migratory or early arriving individuals and highlights the need for targeted surveys outside the main breeding season.

On the Egyptian Red Sea archipelago islands, Sooty Falcons exhibit two distinct breeding strategies: solitary nesting and colonial breeding. Breeding sites are typically located on the Red Sea Islands and in the White Desert, areas that provide both isolation from terrestrial predators and high prey availability. Key prey resources include nestlings of Lesser Crested Tern (*Thalasseus bengalensis*), White-eyed Gull (*Ichthyaeetus leucophthalmus*), and a wide range of migratory passerines (Figure 5B). These ecological conditions likely explain the repeated use of these sites across years.



Figure 7. Sooty Falcons are used as decoys by falconers (Photo: Mohamed Habib)

7. ábra A hamvas sólymokat csalimadárnak használják a solymászok (Fotó: Mohamed Habib)

Despite the importance of the Egyptian population, little is known about the migratory routes and wintering areas of individuals breeding in Egypt. Birds appear to initiate autumn migration shortly after fledging, typically between the last week of October and the first week of November. However, their wintering destinations remain unknown. It is currently unclear whether Egyptian breeders overwinter in southern or south-eastern Africa, Madagascar, or a combination of these regions. Satellite telemetry and other tracking approaches are therefore essential to resolve these uncertainties.

Our estimates of breeding numbers on the Egyptian Red Sea Islands differ markedly from earlier reports. Grieve and Millington

(1999) recorded 185 breeding pairs on Wadi El Gemal Island alone in 1998, whereas our survey identified only 135 pairs at the same site, indicating a decline of approximately 27% over the past 15–20 years. Similar declines in Sooty Falcon breeding populations have been reported elsewhere in the region, including Bahrain, the United Arab Emirates, and Oman (Kavanagh & King 2008, Shah *et al.* 2008, McGrady *et al.* 2016). However, the underlying causes of these declines remain poorly understood.

Notably, all Red Sea Islands in Egypt are designated as protected areas, which should, in principle, limit large-scale development. Sooty Falcons select these islands primarily due to their isolation from predators and the availability of abundant prey. Nevertheless, minimizing disturbance to both breeding falcons and their prey remains essential, particularly in sensitive areas such as the Hamata Archipelago. Documented threats are currently considered minor but include fledglings becoming entangled in fishermen's nets and the capture of juvenile falcons by falconers. Juveniles of both Sooty Falcon and Eleonora's Falcon (*F. eleonora*) are occasionally used as live decoys to trap Peregrine Falcon (*F. peregrinus*) and Saker Falcon (*F. cherrug*) (Figure 7).

Finally, further research is urgently needed to better understand the small number of Sooty Falcons that remain in Egypt year-round. The size and ecological role of this resident or partially resident population remain largely unknown. Securing funding for comprehensive, year-round surveys will be critical for accurately assessing population size, identifying key habitats, and informing effective conservation measures.

Acknowledgements

The authors would like to thank The Nature Conservation Sector of the Egyptian Environment Affairs Agency for providing facilities during the survey in protected areas. Special thanks go to Dr. Michael McGrady for his continuous support and encouragement in conducting this research.

References

- BirdLife International 2017. *Falco concolor*. – The IUCN Red List of Threatened Species 2017. DOI: 10.2305/IUCN.UK.2017-3.RLTS.T22696446A119400295.en
- Clapham, C. S. 1964. The birds of the Dahlac Archipelago. – Ibis 106(3): 376–388. DOI: 10.1111/j.1474-919X.1964.tb03717.x
- Coles, T. & Williams, N. P. 2004. Sooty Falcon *Falco concolor*: baseline breeding survey, Wadi El Gemal Island and the Qulan Archipelago. – Wadi El Gemal National Park, Red Sea Governorate, Unpublished report EEPP & EEAA, Egypt
- Goodman, S. M. & Meininger, P. 1989. The Birds of Egypt. – Oxford University Press, Oxford
- Grieve, A. & Millington, L. 1999. The breeding birds of the northern Red Sea islands, Egypt. – Unpublished report to the Egyptian Environmental Affairs Agency, Cairo, Egypt
- Habib, M. 2019. Breeding of Sooty Falcon on Egyptian Red Sea islands in 2012–2017. – Dutch Birding 41(1): 29–36.
- Hamrouni, H. 2007. La migration du faucon concolore (*Falco concolor*) et du faucon d'Eléonore (*Falco eleonora*) en Tunisie [The migration of Sooty Falcon (*Falco concolor*) and Eleonora's Falcon (*Falco eleonora*) in Tunisia]. – Ostrich – Journal of African Ornithology 78(2): 333–335. DOI: 10.2989/OSTRICH.2007.78.2.34.114 (in French with English Summary)

- Jennings, M. C. & Sadler, T. A. 2007. Report on the activity of the small birds of prey and owl group held at the conservation workshop of the Fauna of Arabia, Sharjah Desert Wildlife Park, 2006. – *Falco* 29: 17–19.
- Kavanagh, B. & King, H. 2008. Observations from 1998–2006 on the breeding population of Sooty Falcons *Falco concolor* on the Hawar Islands, Kingdom of Bahrain. – *Sandgrouse* 30(1): 70–76.
- Leonardi, G., Lopes, L., Gallo Orsi, U., Javed, S. & McGrady, M. 2024. International Single Species Action Plan for the Sooty Falcon 2024–2036. – CMS Raptors MOU, Abu Dhabi, United Arab Emirates
- McGrady, M., Al Fazari, W., Al Jahdhami, M. H. & Oli, M. K. 2016. Survival of Sooty Falcons (*Falco concolor*) in Oman. – *Journal of Ornithology* 157(2): 427–437. DOI: 10.1007/s10336-015-1302-6
- McGrady, M. J., Al-Fazari, W. A., Al-Jahdhami, M., Nicoll, M. A. C. & Oli, M. K. 2017. Sooty Falcon *Falco concolor* reproduction and population dynamics on the islands in the Sea of Oman. – *Ibis* 159(4): 828–840. DOI: 10.1111/ibi.12502
- Orta, J., Kirwan, G. M., Boesman, P. F. D., Marks, J. S. & Sharpe, C. J. 2020. Sooty Falcon (*Falco concolor*). – In: del Hoyo, J., Elliott, A., Sargatal, J., Christie, D. A. & de Juana, E. (eds.) *Birds of the World*. – Cornell Lab of Ornithology, Ithaca, NY, USA. DOI: 10.2173/bow.soofall1.01
- Parr, S. & McGrady, M. 2023. NEOM Marine Species Recovery. – Unpublished Report, NEOM, Saudi Arabia
- Praveen, J., Jayapal, R., Inskipp, T., Warakagoda, D., Thompson, P. M., Anderson, R. C. & Pittie, A. 2017. Birds of the Indian subcontinent: species not recorded from India. – *Indian Birds* 13(4): 93–101.
- Salama, A., El Aref, M., Saleh, M., Thabet, A. & Gebrel, M. 2020. Geodiversity of karst landforms with high priority conservation areas for Sooty Falcon (*Falco concolor*) in the White Desert National Park, Western Desert, Egypt. – *Parks* 26(1): 37–46. DOI: 10.2305/IUCN.CH.2020.PARKS-26-1AS.en
- Shah, J. N., Khan, S. B., Ahmed, S., Javed, S. & Hammadi, A. 2008. Sooty Falcon in the United Arab Emirates. – *Falco* 32: 16–19.
- Shobrak, M., Alsuhaibany, A. & Al-Segheir, O. 2003. Regional status of breeding seabirds in the Red Sea and the Gulf of Aden. – Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA), Jeddah, Saudi Arabia
- Walsh, P. M., Halley, D. J., Harris, M. P., del Nevo, A., Sim, I. M. W. & Tasker, M. L. 1995. Seabird monitoring handbook for Britain and Ireland: a compilation of methods for survey and monitoring of breeding seabirds. – JNCC/RSPB/ITE Seabird Group, Peterborough

