

Living on the Edge: Diet and Prey Preference of the Sooty Falcon (*Falco concolor*) on the South Egyptian Red Sea Islands



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Introduction :- The Vulnerable Sooty Falcon

- This study is an analysis of a unique breeding strategy adapted to a seasonal food pulse in harsh environment Based on field studies (2024-2025) in the Egyptian Red Sea .
- The Study is self finance and not funded from any entity.
- Species Status: recently classified as Vulnerable on the IUCN Red List.
- Global Population: Estimated at only 1,400 - 2,000 breeding pairs globally.
- Unique Breeding Timing: Unlike other raptors, it breeds in late summer and autumn (July-November).
- Key Question: Why does it breed so late, and what does it eat?

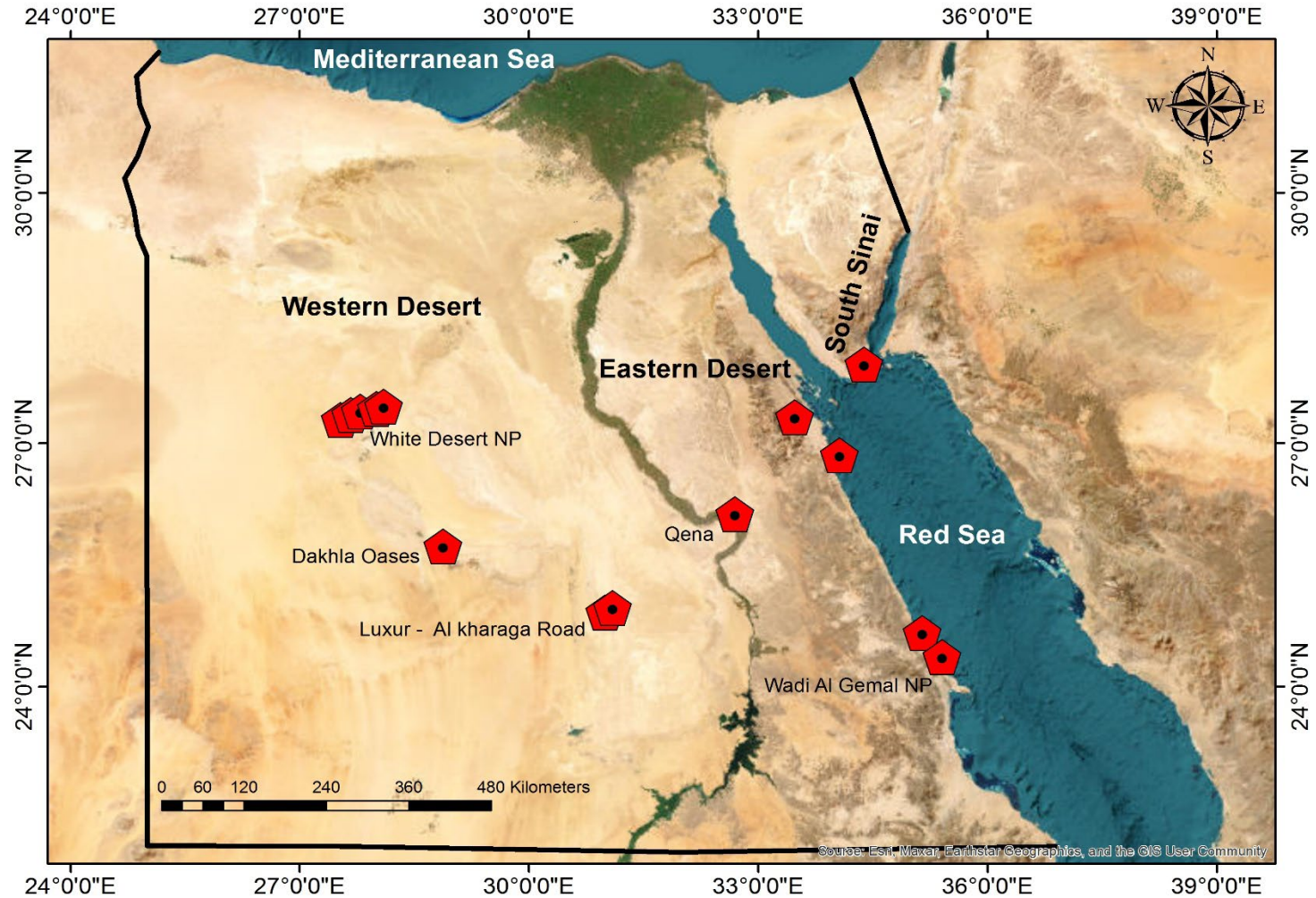
Introduction :- A Specialist's Niche

- • The Hypothesis: The Sooty Falcon's late breeding season is a precise adaptation to exploit a massive, predictable food source.
- • The Food Source:
- • 1- Before breeding and courtship :- From breeding seabirds specially tern and gull
- • 2- after laying eggs and rearing chicks :- From the autumn migration of Palearctic birds across the Red Sea.
- • The Advantage of late breeding :
- 1- Capitalizes on exhausted, easy-to-catch migrants.
- 2- Avoids competition with other raptors that breed in spring (e.g. Lanner falcon).
- 3- Provides a super-abundant, energy-rich resource for chicks in an otherwise arid environment.

Methodology - Study Area & Data Collection

- **Study Area:** Southern Egyptian Red Sea islands (e.g., Wadi El Gemal, Zabargad, Shawareet islands).
- **Survey Period:** Multiple breeding seasons (2024-2025).
- **Data Collection Techniques:**
 - **Prey Remains Analysis:** Collected and identified feathers, bones, and wings from nests and plucking sites ($n > 300$ remains).
 - **Pellet Analysis:** Collected and dissected regurgitated pellets to identify bone and insect content.
 - **Direct Observation:** Observed hunting behavior and prey capture using binoculars and spotting scopes.
- **Minimal Disturbance:** Short, timed visits to prevent stress to breeding birds.

Methods and study area :-



Distributions of breeding colonies

Results - Breeding Phenology:-

- The breeding cycle is perfectly synchronized with the autumn migration:
 - **Courtship:** June - July
 - **Egg-laying:** Late July - End of August (until Sep 2025)
 - **Hatching & Chick-rearing:** September - October
 - **Fledging & Migration:** Late October – November
 - With only one exception where two breeding pairs laying two eggs each in April 2004.

Results - Diet Composition is Overwhelmingly Avian

- **Diet Composition is Overwhelmingly Avian**
- The diet during the breeding season is dominated by migratory birds.
- **Quantitative Findings:**
 - >80% of diet consists of **migratory passerines** (songbirds).
 - 5-15% consists of insects (e.g., moths, locusts).
 - <5% consists of seabird chicks (early season) and other prey.
- **Pellet analysis** from Wadi El Gemal Island confirmed 87.5% - 100% of contents were passerine remains and Dates seeds found at feeding perch stone .

Results - Key Prey Species

- Most Common Prey Species Identified:
- Isabelline Wheatear (*Oenanthe isabellina*)
- Lesser Whitethroat (*Curruca curruca*)
- Eurasian Hoopoe (*Upupa epops*)
- Common Nightingale (*Luscinia megarhynchos*)
- Northern Wheatear (*Oenanthe oenanthe*)
- Prey Size Range: From small warblers (~7 g) to larger birds like terns and gull chicks (~200 g).
- Seasonal Shift: Diet shifts from local seabird chicks early in the season to almost exclusively migratory birds during the critical chick-rearing period.
- And first new record of Basra Reed Warbler for Egypt (2025)

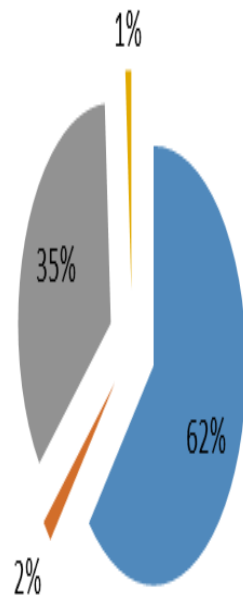
Note:- date palm seeds.



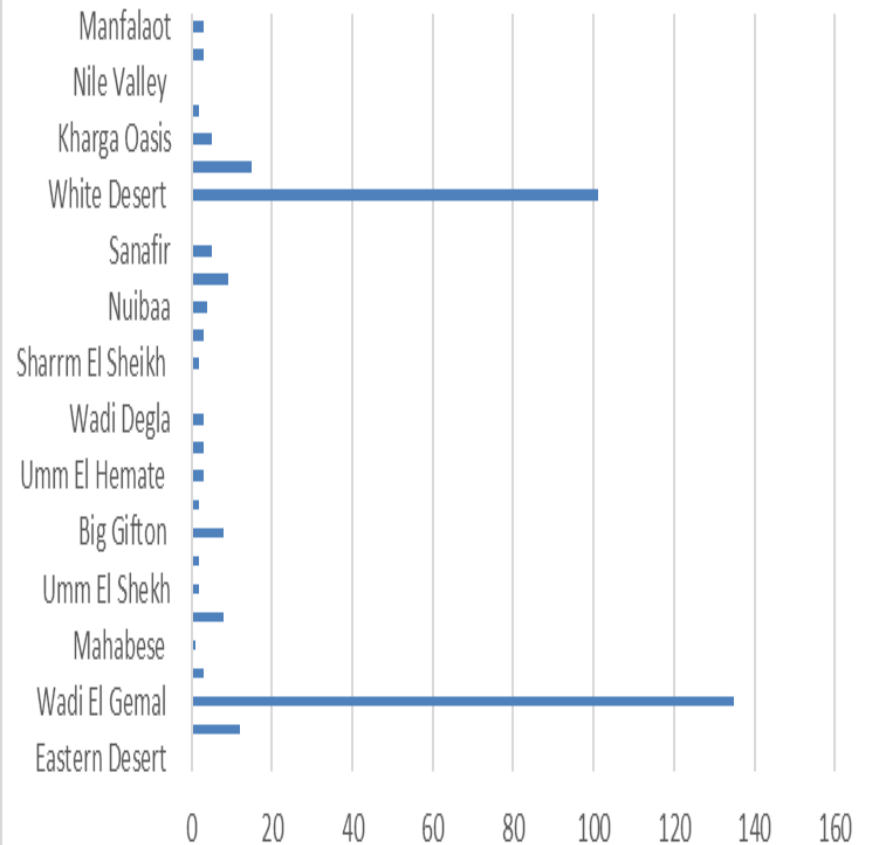
The number of counted Breeding pairs the Egyptian regions (Habib et al., 2025) .

Number of Pairs

■ Red Sea Islands ■ Eastern Dsert ■ white Desert ■ Nile Valley ■ ■ ■ ■ ■



Sooty Falcon Breeding Pairs



Discussion - The Evolutionary Advantage

- The late breeding season is a highly successful evolutionary adaptation.
 - It provides a **predictable, abundant food supply** exactly when needed most.
 - It **minimizes energy expenditure** for hunting by targeting tired migrants.
 - It **reduces competition** with other predators.
- This strategy allows Sooty Falcons to raise chicks successfully in a hyper-arid environment where food is typically scarce, supporting significant breeding populations.
- The Red Sea islands of Egypt are a critical breeding stronghold for the species, hosting one of the world's largest known populations the estimated Egyptian population of four region in Egypt has a total population between 330 -430 breeding pairs (Habib et al., 2025) in print.

Discussion -Conservation Threats & Implications

- This specialization makes the Sooty Falcon highly vulnerable.
- **Key Threats:**
 - **Phenological Mismatch:** Climate change could disrupt the timing of prey migration, leaving falcons without food.
 - **Human Disturbance:** Tourism, fishing, and boating near colonies can cause nest abandonment.
 - **Direct Persecution:** Use of fledglings as decoys by falconers and entanglement in fishing nets.
- **Conservation Recommendations:**
 - **Strict Seasonal Closures** of key breeding islands (June-November).
 - **Long-term monitoring** to track population trends.
 - **Regional cooperation** to protect migratory flyways.

Conclusion & Future Research

- **Summary:** The Sooty Falcon's late breeding is a masterful adaptation to exploit the autumn bird migration, with its diet consisting overwhelmingly of migratory passerines.
- **The Egyptian Red Sea islands are a globally significant stronghold** for this vulnerable species.
- **Future Research Directions:**
 - **Satellite Tracking:** To map Egyptian falcons' migration routes and wintering grounds.
 - **Stable Isotope Analysis:** To further refine and confirm long-term diet composition.
 - **Climate Change Studies:** To model and predict the risks of phenological mismatch.
 - Further surveys in more promising areas are critical, but they require urgent funding. Due to this lack of funds, I have decided to pause all work on the Sooty Falcon project until we can secure the necessary resources.

Thank you

