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Life Cycle Observations of the Palestine Sunbird (*Cinnyris osea*) in Karmiel, Israel

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Abstract

This study documents the breeding cycle of the Palestine Sunbird (*Cinnyris osea*) in Karmiel, Northern Israel. The female built a nest on June 6, laid three eggs and incubated them alone until June 15, when two chicks hatched. Fledging occurred about 13 - 15 days later, which completed a full breeding cycle of 30 - 35 days. Both parents fed the chicks, but only the female incubated. A decline in floral resources during nesting led the birds to shift from nectar to insect feeding. Compared to populations outside Israel, which may begin breeding as early as December (e.g., in Africa), the Israeli breeding season varies by region and starts as early as January in central areas. This study highlights the sunbird's adaptability to different climates and urban habitats.

Keywords

Life Cycle, Palestine Sunbird (*Cinnyris osea*), Karmiel, Israel

1. Introduction

The Palestine Sunbird (*Cinnyris osea*), also known as the Shining Sunbird, is a small nectar-feeding passerine widely distributed in the Middle East and parts of northeast Africa. In Israel, it is a common and conspicuous resident species throughout much of the country, including urban areas [1] [2]. This article reviews the species' taxonomy, morphology, reproductive behavior, nesting biology, and its use of habitats within and beyond human settlements.

1.1. Distribution of the Palestine Sunbird (*Cinnyris osea*) in Israel

The Palestine Sunbird is a resident breeder in many parts of Israel and is considered a common species in suitable habitats. Its distribution is mainly influenced

by the availability of flowering plants, which provide nectar—its primary food source. Northern and Central Israel: Commonly found in the Galilee, Golan Heights, Hula Valley, Mount Carmel, and Judean Hills (Figure 1). In these areas, the sunbird thrives in Mediterranean scrub, gardens, orchards, and open woodlands. Coastal Plain: The bird is frequent in urban areas, parks, and botanical gardens, particularly where ornamental flowering plants are grown. Jerusalem Area: Found in suburban gardens, especially those with Bougainvillea, Aloe, or other nectar-producing flowers. Negev Desert (Southern Israel): Its presence is more localized, but it can be found near oases, agricultural settlements, or urban green zones such as Eilat, Mitzpe Ramon, and Arava Valley, where artificial irrigation supports vegetation. Dead Sea Area: Occasionally observed in gardens and planted groves along the western edge of the Dead Sea. Habitat Preferences are: Prefers warm, sunny areas with abundant flowering vegetation. Occupies both natural scrublands and human-modified environments, including city gardens. Nests in shrubs or small trees, often in acacia, eucalyptus, or even on human structures. If you'd like, I can also provide a map of it.

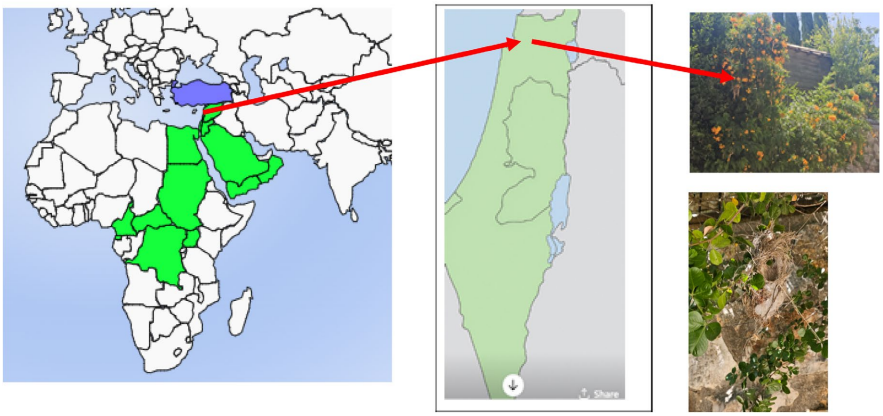


Figure 1. Distribution of the Palestine Sunbird (*Cinnyris osea*) and the location of the study site.

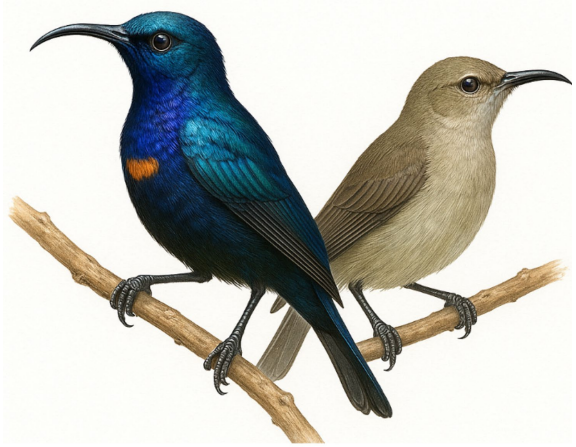
1.2. Systematics and Taxonomy

The Palestine Sunbird belongs to the order Passeriformes, family Nectariniidae, and genus *Cinnyris*. Historically considered a subspecies of the Variable Sunbird (*Cinnyris venustus*), molecular and morphological data now support its recognition as a distinct species (Figure 2) [1].

The species exhibits marked sexual dimorphism.

- Males have glossy metallic blue to purple plumage, most vibrant during the breeding season. A small but distinctive orange tuft appears on the breast, typically displayed during courtship (Perlman & Meyrav, 2009) [3].
- Females are less colorful, with grayish-brown upperparts and pale underparts. Both sexes have long, down-curved bills adapted for nectar feeding (Shirihai, 1996) [2].

Juveniles resemble females but have even duller plumage.



Systematics

Order	: Passériformes
Family	: Nectariniidés
Genus	: Cinnyris
Species	: osea

Figure 2. Morphological and systematics of description palestine sunbird.

1.3. Reproductive and Sexual Behavior

Breeding activity in Israel begins as early as February and may continue into July, depending on the region (Yosef, 2004). Males establish and defend small territories through vocalizations and visual displays, including puffing out their breast tufts and chasing rivals. Monogamous pairs form during the breeding season. Copulation is preceded by brief courtship flights and calling by the male [3].

1.4. Nesting and Egg Laying

The female constructs a hanging, purse-shaped nest from plant fibers, feathers, and spider silk. Nest sites vary widely but are commonly found in trees, ornamental shrubs, electricity lines, and even building structures, especially in gardens and parks (Shirihai, 1996; Yosef, 2004). Clutch size: Usually 1 to 3 eggs per nest (Yosef, 2004). Eggs: White to light blue, sometimes lightly speckled. Incubation: Lasts 13 - 15 days and is performed solely by the female. Fledging: Chicks leave the nest around 14 - 17 days post-hatching. During this time, both parents feed the nestlings, primarily on insects and spiders [4].

1.5. Habitat Preferences

The Palestine Sunbird thrives in both urban and natural habitats. In urban areas, it occupies parks, gardens, cemeteries, and residential neighborhoods with flowering plants like *Hibiscus*, *Bougainvillea*, and *Lantana* [2]. In natural habitats, it is found in semi-arid scrublands, Mediterranean maquis, and acacia woodlands, as long as flowering vegetation is present [2].

This flexibility enables the species to maintain high population densities even in heavily human-modified landscapes.

1.6. Research Objective

A detailed observation of the breeding behavior of the Palestine Sunbird (*Cinnyris osea*) in northern Israel (specifically in the city of Karmiel), and a comparison of the findings with previously published data on this species.

2. Results

The nest appeared to be completed on June 6 (**Figure 3(A)**), and on June 7, the female was observed sitting in the nest (**Figure 3(B)**). On the same day, three eggs were seen. On June 15, two chicks hatched (**Figure 3(D)**).

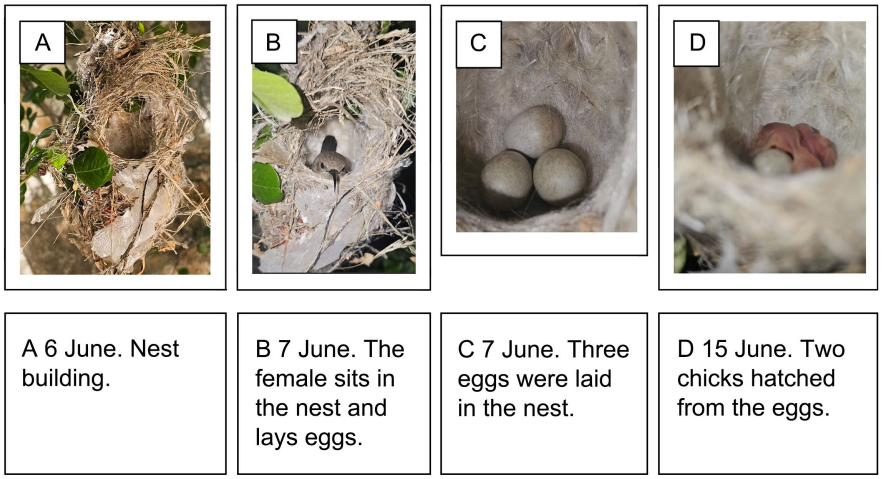


Figure 3. Illustrates the period from the completion of nest building through egg laying, incubation, and the hatching of the chicks.

The chicks remain in the nest for another 13 to 15 days after hatching, during which time they are entirely dependent on their parents for warmth, protection, and food. When the fledglings leave the nest, they are not yet fully independent. For several days following fledging, the parents—especially the female—continue to feed and guard them while they learn to forage on their own. Altogether, the full breeding cycle, from the beginning of nest construction to the fledglings' independence, spans approximately 30 to 35 days. Throughout this period, the female plays the dominant role in nesting and incubation, while the male's contribution becomes more significant during the feeding and protection phases after hatching (**Figure 4**).

The nesting environment has changed significantly, as the number of flowering plants around the nest has markedly declined (see **Figure 1** and **Figure 4**). During this period, floral nectar in the nesting area no longer provides a sufficient food source. Consequently, the Palestine sunbirds (*Cinnyris osea*) shift their diet toward alternative food sources, primarily various types of insects.

Figure 4. Based on field observations of the Palestine sunbird (*Cinnyris osea*) in Karmiel, Israel, the following life cycle events were documented: On June 6th, the female began building the nest using plant fibers and spider webs. From June 7th to June 15th, the female was observed incubating the eggs, with no male involvement in this phase. By June 30th, the young birds had fledged and left the nest, marking the completion of the nesting cycle.

3. Discussion

The breeding and nesting phenology of the Palestine sunbird (*Cinnyris osea*) observed outside of Israel differs from the patterns documented in the present study within Israel (**Table 1**). In continental Africa—specifically Sudan, Ethiopia, and Somalia—observations of individuals in breeding condition near Berbera (Somalia) on December 29 suggest that nesting may commence as early as December or January, with the breeding season extending over a period of three to four months, depending on gonadal development [5]. In the Sinai Peninsula of Egypt, although specific nesting dates are not well documented, the species is reported to reproduce during spring to early summer, which aligns with general Middle Eastern breeding patterns [6]. In the Arabian Peninsula (including Saudi Arabia, Yemen, and Oman), the nominate subspecies is known to breed widely. In southern Saudi Arabia, Yemen, and Oman, nesting activity has been recorded primarily between late March and May, although the species' resident status in these regions may allow for broader or more prolonged breeding seasons [6]. In Jordan and Lebanon, breeding records indicate egg-laying and chick rearing occur from April to May, coinciding with seasonal peaks in flowering and insect availability, which are critical for chick development [6].

The Palestine Sunbird is a nectarivorous passerine widely distributed across Israel, exhibiting regional variation in its breeding phenology influenced by climate, altitude, and the availability of flowering plants [2] [3].

Table 1. Regional breeding periods of *Cinnyris osea* in Israel (with References).

Region	Nest Construction	Egg Laying	Fledging Period	Main References
Upper Galilee (Hula, Naftali)	Late Feb - April	March - June	April - August	[2]
Western Galilee & Haifa	Mid Feb - May	Feb - June	March - July	[2] [3]
Central Israel (Tel Aviv)	Jan - April	Feb - May	March - June	[2]
Ashkelon & Southern Coast	Jan - March	Feb - April	March - June	[7]
Northern Negev	Feb - April	March - May	April - June	[3]
Arava & Eilat	Jan - March	Feb - April	March - May	[5] [8]

3.1. Upper Galilee and Eastern Galilee (Naftali Mountains, Hula Valley)

In this elevated region, breeding starts in March to early August, with nest construction beginning in late February or March, aligned with the blooming of native flora such as *Salvia* and *Echium* [2]. Fledging occurs from April to August, showing adaptation to cooler elevations.

3.2. Western Galilee and Haifa Region

Along the Mediterranean hills, breeding occurs between mid-February and July. Earlier onset is possible due to mild coastal winters and abundant nectar sources, including ornamental plants in gardens [3].

3.3. Central Israel (e.g., Tel Aviv)

In urbanized zones like Tel Aviv, breeding starts as early as January or February due to the urban heat island effect and early-flowering exotic plants. Nesting and egg laying continue through June or July [2].

3.4. Southern Coastal Plain (e.g., Ashkelon)

In Ashkelon, nesting begins in late January to March. Fledging may extend into June, supported by favorable microclimates and early bloom [7].

3.5. Northern Negev (e.g., Be'er Sheva)

Breeding starts in February to April, dependent on annual rainfall and spring blooms. Fledging occurs by May or June [3].

3.6. Arava Valley and Eilat

In arid southern Israel, such as the Arava and Eilat, nesting occurs between February and April, often aligned with flowering of *Acacia* trees. Shorter breeding season due to desert constraints [5] [8].

3.7. Nesting and Parental Behavior

Sunbirds build pouch-like nests made from spider webs, plant fibers, and feathers.

The female lays 1 - 3 eggs, incubates them for about 13 - 15 days, and both parents feed the chicks, which fledge in 15 - 18 days [2].

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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