

Notes on Feeding and Breeding Habits of the Purple Sunbird *Nectarinia asiatica* (*Cinnyris asiaticus*) in Bandar Abbas, Hormozgan, Southern Iran

TAHER GHADIRIAN^{1*}, ALI T. QASHQAEI² & MOHSEN DADRAS³

1. Biodiversity Group, Department of Environment, Islamic Azad University, Science and Research Campus, Tehran, Iran

2. Department of Environment, Islamic Azad University, Bandar Abbas Branch, Iran

3. GIS/RS, Department of Natural Resources of Hormozgan, Bandar Abbas, Iran

* Correspondence Author. Email: Taher_ghadirian@yahoo.com

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Abstract: Some feeding and breeding activities of Purple Sunbird *Nectarinia asiatica brevirostris* have been studied in five localities in Bandar Abbas, southern Iran from June 2002 to June 2004 on monthly bases. According to 507 timed feeding observations, Purple Sunbirds feed on flowers' nectar (97%) and on fruits' nectar (3%). The nectar of the Chinese hibiscus *Hibiscus rosa-chinensis* flowers was the favorite food (56%). Red flowers seem to be attractive. The breeding season is late autumn and early winter, where flowers are abundant and temperate season has begun in the area. Nesting started in November, 2–3 eggs being laid in December and hatching occurring after 15–17 days of incubation. Only the females built nests and incubated eggs, while males assisted in feeding nestlings. Purple Sunbirds used 16 species of plants of which they fed and five species for nesting. The gum acacia tree *Acacia nilotica* is particularly suitable: it provides cover, is a source of food is ideal for nesting, and so it plays an important role in dispersion of this sunbird species in the area. The kandi tree *Prosopis cineraria* is also favoured. Purple Sunbird inhabits parks and green spaces of institutes and residential areas in the city of Bandar Abbas.

Keywords: Purple Sunbird, *Nectarinia asiatica brevirostris*, Bandar Abbas, Iran.

به منظور بررسی بوم‌شناختی پرنده شه‌دخور، در شهر بندرعباس، ۵ ایستگاه تعیین گردید. در این تحقیق تغذیه، تولیدمثل و زیستگاه‌های این پرنده طی مدت دو سال از خرداد ۱۳۸۱ تا خرداد ۱۳۸۳ و به صورت ماهیانه (یکبار در ماه) بررسی شد. از مجموع ۵۰۷ بار مشاهده شه‌دخور در حال تغذیه، ۴۹۵ مورد (۹۷٪) شه‌دخواری و ۱۲ مورد (۳٪) تغذیه از میوه‌ها بوده است. شه‌د گل ختمی چینی با ۲۸۳ مورد (۵۶٪) بیشترین شه‌د مورد تغذیه شه‌دخور بود. این پرنده تمایل زیادی به شه‌د گل‌های قرمز و بی‌بو دارد. فصل تولیدمثل پرنده اواخر پاییز و اوایل زمستان و هم‌زمان با آغاز فصل معتدل منطقه و فراوانی گل‌هاست. لانه‌سازی در آذر و تخم‌گذاری در دیماه انجام می‌شود. شه‌دخور معمولاً ۲ یا ۳ تخم می‌گذارد و مدت تفریح تخم‌ها ۱۵ تا ۱۷ روز است. عمل لانه‌سازی و خوابیدن روی تخم‌ها توسط پرنده ماده انجام می‌شود، اما پرنده نر در تغذیه جوجه‌ها کمک می‌کند. شه‌دخور از ۱۶ گونه گیاهی برای تغذیه و از ۵ گونه گیاهی به عنوان محل آشیانه‌سازی استفاده می‌کند که درخت کرت، هم به عنوان تامین کننده غذا و هم مکان مناسب جهت لانه‌سازی نقش مهمی در پراکنش این گونه در منطقه دارد. زیستگاه‌های شه‌دخور در بندرعباس پارک‌ها و فضاهای سبز شهرک‌ها، موسسات و منازل مسکونی است. به طور کلی این پرنده زیستگاه‌هایی را ترجیح می‌دهد که هم دارای گیاهان تامین کننده شه‌د مانند ختمی چینی و هم دارای درختان مناسب برای لانه‌سازی مانند کرت و کهور ایرانی باشند.

INTRODUCTION

The Purple Sunbird, *Nectarinia asiatica* is one of the smallest birds of Iran and the only species of the family Nectarinidae in the country. This bird is abundant and resident in the south and southeast of Iran (Firouz 2005), in E Bushehr, S Fars, Hormozgan, S Kerman and Seistan & Baluchestan (Mansoori 2001).

Males Purple Sunbirds have two different plumages, breeding or courting being metallic bluish black and an eclipse plumage rather like the female, but with yellower underparts with a dark median line down the centre of throat and breast (Porter *et al.* 1996). It builds pendant nest in bushes or trees. It inhabits woodlands and bushy terrain in arid areas as well as trees and scrub near cultivated lands or gardens,

tamarisk tracts along rivers, thorn shrubs and dry forests (Porter *et al.* 1996, Firouz 2005).

The Purple Sunbird has a large range of distribution, which extends 1,000,000–10,000,000 km² (BirdLife International 2007). It occurs throughout south Asia from the Persian Gulf to Southeast Asia (Firouz 2005). In the Middle East, it is mainly resident in southern Iran, northern UAE and northern Oman, but some segments of the population disperse in the autumn (Porter *et al.* 1996). The subspecies *N. a. brevirostris* (Blanford 1873) occurs in southeast Oman, southern Iran, Baluchistan, Pakistan to western Gujarat and Rajasthan.

Sunbirds mainly feed on nectar. Most species of this family can suck the nectar of flowers by hovering (like hummingbirds) but usually feed on flowers' nectar when perching on branches. Sunbirds feed on nectar as well as juices and insects, especially when feeding chicks in the nest (Bologna 1990). Sunbirds are mostly confined to hot regions of the world. In temperate areas, where flowers are seasonal, the number of species is less and all of them are migratory birds (Klasing 2004).

This study reports on the feeding and breeding behaviour of the Purple Sunbird in Bandar Abbas city of Iran.

MATERIAL AND METHODS

Bandar Abbas city is the capital of Hormozgan province, situated in south of Iran and north of the Straits of Hormoz at 27°13'N, 56°22'E. This coastal city lies in the northeast of the Persian Gulf with about 45 km² area and average elevation of 10 m a.s.l. Average minimum temperature in coldest month (January) is 12.3°C and average maximum temperature in the hottest month (July) is 38.4°C. Totally, it has two seasons; hot and wet conditions between May and October, and temperate season between November and April (Zendedel 1998). Five localities were selected in Bandar Abbas for this study, Shahrak-e Gaz (c. 85 ha), Shahrak-e Hadish (c. 150 ha), Dabbaghian Park (c. 13 ha), green space of Shahid Bahonar Jetty (c. 10 ha) and the campus of Islamic Azad

University (c. 14 ha) (Fig. 1). These sites were considered as suitable habitats of the Purple Sunbirds because they included large tracts of greenery. This study was carried out from June 2002 to June 2004 and each site was monitored monthly. Observations were made using binoculars (8x30).

RESULTS

Feeding

In all, the bird was seen feeding on 507 occasions on flowers nectar and fruit juices, 495 being (97%) flowers' nectar. While feeding, the bird would perch on a branch close to the flowers or hang upside-down. The feeding method was to insert the tongue into the flower, then retract it into the bill. Birds would also call during feeding.

The Purple Sunbird fed on flowers' nectar and fruits' juices of 16 species of plants in Bandar Abbas (Table 1). Among them, flowers of Chinese hibiscus were visited frequently (283 times; 56%), followed by gum arabic tree *Acacia nilotica*, cashew *Prosopis cineraria*, seabeston *Cordia myxa*, and lebbek tree *Albizia lebeck*.

In autumn, winter and early spring, when flowers are abundant, sunbirds fed mainly on nectar. In late spring and summer, flowers of *Acacia nilotica* and *Prosopis cineraria* were frequently used, while in late summer fruits of *Cordia myxa* and *Phoenix dactylifera* were the best sources of food. Small insects and spiders were taken, only in January, for feeding nestlings.

Breeding

In the urban areas of Bandar Abbas, the reproduction season of Purple Sunbird is late autumn (November) and early winter (January), when flowers are abundant. Purple Sunbirds nested in five species of trees (Table 1). Of the 18 nests, six were located in *Acacia nilotica* tree and four each in *Prosopis cineraria* and *Acacia salicina* trees.



Figure 1. Monitored sites in Bandar Abbas city; Green space of Shahid Bahonar Jetty (1), Shahrak-e Hadish (2), Dabbaghian Park (3), Campus of Islamic Azad University (4), Shahrak-e Gaz (5), © M. Dadras.

Table 1. Plant species used by Purple Sunbird for food and nesting.

English name	Scientific name	Flower colour	Parts for food	No. feeding times	Nest numbers
Chinese hibiscus	<i>Hibiscus rosa-chinensis</i>	Red	flowers' nectar	283	-
Gum arabic tree	<i>Acacia nilotica</i>	Yellow	flowers' nectar	36	6
Cashew	<i>Prosopis cineraria</i>	Yellow	Flowers' nectar	26	4
Sebesten	<i>Cordia myxa</i>	White	flowers' (& fruit's) nectar	24 (11)	-
Lebbek tree	<i>Albizzia lebeck</i>	Yellow	flowers' nectar	21	-
Bindweed	<i>Convolvulus</i> sp.	Violet	flowers' nectar	20	-
Medicinal aloe	<i>Aloe vera</i>	Yellow	flowers' nectar	18	-
Bougainvillea	<i>Bougainvillea glabra</i>	Pink	flowers' nectar	18	-
Lemon	<i>Citrus limon</i>	White	flowers' nectar	15	-
Sour orange	<i>Citrus aurantium</i>	White	flowers' nectar	12	2
Yellow elder	<i>Tecoma stans</i>	Yellow	flower's' nectar	9	-
Sweet orange	<i>Citrus sinensis</i>	White	flowers' nectar	8	-
French cotton	<i>Calotropis procera</i>	Violet-White	flowers' nectar	6	-
Eucalyptus	<i>Eucalyptus camaldulensis</i>	Yellow	flowers' nectar	4	2
Margosa	<i>Melia indica</i>	Yellow	flowers' nectar	3	-
Date palm	<i>Phoenix dactylifera</i>	-	(fruits' nectar)	(1)	-
Broughton willow	<i>Acacia salicina</i>	-	-	-	4



Figure 2. Male Purple Sunbird, **Left**) in breeding season, **Right**) pre-breeding plumage, © T. Ghadirian.

In Iran, the male plumage lacks any shiny black appearance in autumn. In November after the mating season, it has a light yellow breast and belly, a dark brown back and a dark line on the chin, throat and belly: this plumage remains through the winter season. After this plumage has moulted completely, in spring the male develops a shiny black appearance, but with violet and green to blue reflections around its head and neck (Fig. 2).

At only three sites, namely Shahrak-e Gaz (10 nests) Shahrak-e Hadish (5 nests) and Dabaghian park (3 nests), did we find Purple Sunbird nests. The average distance of 18 studied nests above the ground was 328 cm (290–350 cm) the ground surface. The females constructed hanging nests at the distal ends of tree branches in December, using plant materials (leaves, branches of trees and grasses), plastics and synthetic fibres. At first, the nests are elliptical in shape, but they became pear-shaped as the chicks grow. The nest entrances are near the top of the nest, facing north (15 nests), east (two nests), and south (one nest).

Of 12 nests surveyed in two breeding seasons, seven had three nestlings each and five had two nestlings each. The period of incubation was estimated to be of 15 to 17 days. The eggs hatch in January (5–15 January) and from this time, both male and female feed chicks with insects.

DISCUSSION

Feeding

Flowers produce nectar to attract pollinators. The Purple Sunbird is attracted to red flowers

(our observations, Table 1) which may have no smell (Klasing 2004). In the present study, Purple Sunbirds visited the Chinese hibiscus in over half of the total visits (Table 1). This ornamental plant is available for about eight months of the year. It was present in at all stations in relatively in good numbers. In the study area, flowers' nectar appeared to comprise over 90% of the bird's food (based on feeding duration). As no sunbird is entirely nectivorous, and nectar alone can not supplement amino-acids requirements, a nectivorous bird may also feed on fruits' juice and insects (Klasing 2004).

Altricial nestlings of Purple Sunbirds need protein during their rapid development (Klasing 2004). Therefore, adults feed their nestlings with small insects (our observations). In Indian subcontinent they feed on insects and spiders, but very largely on flower nectar (Ali 2002). In Oman and UAE they feed often on insects and at flowers of the invasive non-native tree *Prosopis juliflora* (I. Harrison *in litt.* to Editor).

Breeding

Several sunbird and sugarbird species breed in winter when most flowers are out, but when it is colder (Jackson 1999). The Purple Sunbirds of our study area synchronized their breeding activities with the time when the largest number of flowers are available. The sunbird in our study area bred from November to January, which is during the period when most of plants are in bloom. In Oman and UAE they breed from January to April/May and the males are in pre-breeding plumage from late November/December onwards. They also use

Bougainvillea sp. bushes for nesting (I. Harrison *in litt.* to Editor). In India and Pakistan the Purple Sunbird breeds mostly in March to May (Roberts 1992, Ali 2002). The clutch size of 2–3 eggs and an incubation period of 15–17 days have been described by these workers. It seems that the reproduction season depends on climate in different regions but the number of eggs and hatching period is fixed. The nest entrances of the Purple Sunbirds are so constructed that they are rarely towards south or west. Seemingly, this is done to avoid direct radiation of the sun. Many sunbirds are known to defend feeding and breeding territories (Cheke *et al.* 2001); males will sing from prominent perch and chase intruders, including those of other species.

The moulting regimes of sunbirds are complex, being different in different species (Cheke *et al.* 2001). According to Chapin (1959), sunbirds of the African lowland rain forest have no eclipse plumage, and may nest at any time of the year. However, in the savanna bordering equatorial forest, some species do show duller plumage in the off-season. In the dry months of June–August, male Copper Sunbirds *Cinnyris cupreus* and Variable Sunbirds *C. venustus* lose much of their metallic sheen (Chapin 1959). Post-mating loss of breeding plumage in male Purple Sunbirds in our study is probably the only moult strategy that would allow the species to exploit the November–January period by breeding when most plants are in bloom, the period beforehand being concerned with display and courtship, when breeding plumage is essential to attract a mate. The energetics of the Iranian population clearly favour the males undergoing a partial moult while the females alone build nests and incubate eggs.

Conservation

Global population trends of the Purple Sunbird have not yet been quantified, and the species has been designated to Least Concern Category by the BirdLife International (2007). The

distribution and population status of Purple Sunbird has not been studied in Iran. Some established populations may be outside its previously known distribution: escapes are known from the Tehran area (Mansoori 2001). It seems that there is no threat to the species in Iran. The main threat to the species in our study area is destruction of suitable nesting trees. More studies would benefit this issue.

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