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A Review on the State Bird of West Bengal "White-Breasted Kingfisher" (Halcyon Smyrnensis)

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ABSTRACT

White-breasted kingfishers are the generalist carnivore and opportunistic feeders. Hence, they are also known as 'sit-and-wait' predators. This extremely vocal birds are widely found in Turkey, Northern and Central Israel, Egypt, Iraq, Afghanistan, and north-western India**.** They are adopted to the perch-plunge technique; however, they excavate long tunnels at the sandy river banks for nesting. Despite its ecological impact on agro-ecosystems as biological pest control agents, several reasons create nestling mortality. The white-breasted kingfisher is listed as the least concerned species on THE IUCN Red List of Threatened Species. Hence, the present review studies the distribution, life span, habitat, behavior, communication and its conservation status, in order to keep the importance of the white-breasted kingfisher in the ecosystem. This review has documented breeding biology as well as behavioral biology in different time blocks, seasons, and habitats. The paramount aim of this review is to ensure the overall development of coherent conservation strategies for native species in an urban ecosystem.

White-breasted Kingfishers (Halcyon smyrnensis) were first formally described by the Swedish naturalist Carl Linnaeus in 1758 in the tenth edition of his Systema Naturae.[17,18] He coined the binomial

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name Alcedo smyrnensis. The present genus Halcyon was introduced by the English naturalist and artist William John Swainson in 1821.[19]

They have a variety of habitats, mostly open country in plains with trees, electric wires and other perches. [1] Data on food habits is typically helpful in improving our comprehension of how prey uses different types of habitat in the area, keep monitoring of potential contaminant exposure in populations that have been restored, and creating management and conservation plans for the future.[2]. "Khandya, Dheesa, and Dheewar" are its Marathi names. This bird has reduced reliance on water in comparison to other Alcedinidae members. [11] However, there are limited information known regarding the presence, diet, and reproduction of White-breasted Kingfishers in India as well as Asia. [7,10]



Image 1: White-breasted kingfisher photographed in a natural habitat in West Bengal, India.

(Note: Original Photograph)

Systematic Position

- Kingdom : Animalia
- Phylum : Chordata
- Class : Aves
- Order : Coraciiformes
- Family : Alcedinidae
- Subfamily : Halcyoninae
- Genus : *Halcyon*

- Species : *smyrnensis*
- **Binomial name** : *Halcyon smyrnensis* [Linnaeus,1758]

Conservation status

The IUCN Red List of Threatened Species has the white-breasted kingfisher classified as Least Concern. Nonetheless, is safeguarded by the Indian Wildlife (Protection) Act, 1972's Schedule IV, which penalizes any sort of legal infraction.[6]



Image 2: Least concern (IUCN 3.1) [a]

Distribution

White-breasted kingfisher ranges from Turkey in the west to Philippines in the east. They are commonly found in Afghanistan, Bangladesh, Bhutan, Cambodia, China, Egypt, India, Indonesia, Iran, Iraq, Israel, Jordan, Kuwait, Laos, Lebanon, Malaysia, Myanmar, Nepal, Pakistan, Saudi Arabia, Singapore, Sri Lanka, Syria, Taiwan, Thailand, and Vietnam. [3,4,5]

Habitat and diet

White-breasted kingfishers are found in forests, farmlands, coastal regions, marshes, swampy areas, mangrove swamps, and areas of urbanization as their natural habitat.[6] They feed mainly on a variety of agriculturally-damaging insect pests.[7] As an opportunistic feeder and generalist predator, the species mostly consumes arthropod insects [7] as well as vertebrates such as fish, frogs, crabs, earthworms, rodents, and snakes. It has also been reported that the bird feeds on smaller birds.[1,8,9] Their diet may be impacted by the land usage next to where it breeds.[2] White-breasted Kingfishers were more common along riverbanks because of favourable conditions including higher vegetation densities and good soils.[15]



Image 3: White breasted kingfisher holding its prey [b]

Physical characteristics

The large, reddish-orange bills, crimson legs, and dark chocolate-coloured heads, bellies, and shoulders are characteristics of the white-breasted kingfisher. The throat and occasionally the breast have a beautiful white patch. The vivid blue wings and tail have black distal ends and white spots on the primaries. The two genders seem alike. Younger birds typically have less dazzling colour, duskier beak, and lighter-coloured wings. Young individuals may also have a shoulder mark with a lot of blue around it. The only kingfisher species in South Asia that has a different coloration below and above is the white-breasted kingfisher. Birds that are adults weigh between 65.5 and 81 grams. The measured basal metabolic rate is absent. [1,3]

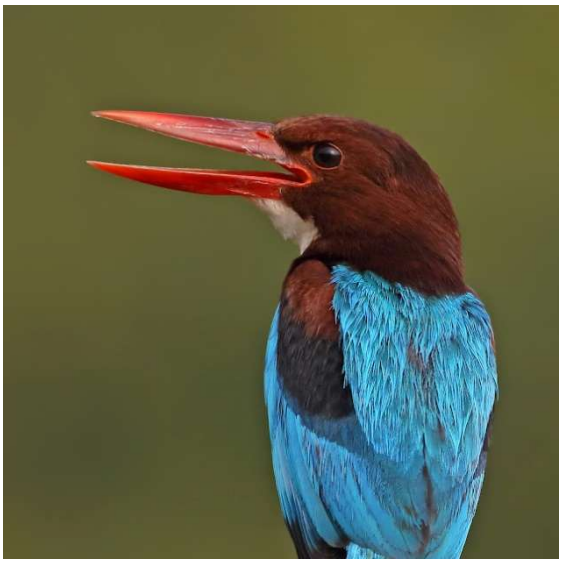

Image 4: Reddish orange bills of White Breasted kingfisher [c]

Morphologically, juveniles are a duller version of the adult. The adult has a bright blue back with spotted wings and tail. The short and rounded wings provide a rapid and direct flight. The white coloured breast and throat adds the beauty to it. [12]



Image 5: *Halcyon smyrnensis (front view)* Cursive display of white coloured patch on the throat and breast region. [c]

White breasted kingfisher are categorized into several sub-species:

One of the two bigger subspecies, ***Halcyon smyrnensis smyrnensis***, is found from Saudi Arabia westward to the Gulf of Khambhat in India. The underparts of this subspecies are pale brown, while its upperparts are vivid blue-green.

The species ***Halcyon smyrnensis fusca*** inhabits all over India, with some populations being found in Sikkim and Nepal. Similar to *H. smyrnensis smyrnensis*, this subspecies has a vivid blue-green back, but it has a smaller, darker chocolate-colored belly.

Southeast China, northeastern India, Bangladesh, Myanmar, Thailand, Malaysia, and Taiwan are among the regions where ***Halcyon smyrnensis perpulchra*** is found. Compared to the previous two subspecies, this one is smaller and has a purplish-blue hue above.

In the Andaman Islands, ***Halcyon smyrnensis saturatior*** are found. Although it is larger than *H. smyrnensis perpulchra* and has a darker brown belly, this subspecies is likewise purplish-blue in colour. [1,3,16]



Image 6: Prominent blue wings of White breasted kingfisher [c]

Behavior

The White-breasted Kingfisher breeds from March to July. The courtship phase begins in March. During this time, birds become extremely chatty and will frequently call out "kili-kili" from a treetop for prolonged periods of time. [14] Kingfishers with white breasts either live alone or in couples. Birds can be separated by as little as 100 meters in areas with the highest density. [1,16]

White-breasted Kingfisher has a bimodal feeding pattern, one during morning (06:00-09:00 hrs) and another directly correlated with availability of prey, during evening (15:00-18:00 hrs).[12]

According to a study at Sarania Reserve forest, on July 10th, 2012, a white breasted kingfisher lunged towards a thatched hut and grabbed a gecko. After returning to an electric cable, it began to jerk its' head violently to beat the gecko's head. This was repeated for 6 times and lasted for about 4 minutes. The incident reportedly took place at around 17:30 hours. The gecko's tongue was seen to be protruding, indicating that it was either unconscious or dead. The bird then extended its neck, opened its mouth, and swallowed the entire gecko.[13]



Image 7: White-breasted Kingfisher *Halcyon smyrnensis* predating on *Hemidactylus aquilonius* (gecko) at Sarania hills of Guwahati, Assam, India (Photo: Jayaditya Purkayastha). [e]

Communication and perception

The vocalizations of White-breasted Kingfishers are described as "a loud defiant rattling laugh." These birds are highly vocal. Male breeding animals are primarily recognized by their calls. During their calls, high pitched KRICH-KRICH tones between 2-4 kHz are sharply repeated at a pace of 2-4 notes per second. The

White-breasted Kingfisher's unique song is a loud, diminishing trill (2–3 kHz) made up of distinct notes (10–11 per second) that fade in volume and pitch.

Male White-breasted Kingfishers expose their white wing patches briefly to frighten potential rivals during the mating season, in addition to their nearly continual singing. The male will make his characteristic call when sitting on a tree, fencepost, or other conspicuous station. He will then quickly flap his wings several times in a direction parallel to the horizon.

During the breeding season, the female White-breasted Kingfisher also uses her wings to communicate. The female kingfisher approaches the male, raises her wings partially, and shivers while making a repeating clicking call to indicate that she is open to receiving. [1,3]

Reproduction

Monogamous pairs breed seasonally in *Halcyon smyrnensis*. The literature claims that pair formation has not been well investigated, however it is evident that a male and a female develop a cooperative partnership in order to nurture the young. It's unclear if this is a seasonal or enduring relationship.[1]

Every year, couples of white-breasted kingfisher mate, though it's uncertain if the wedded pair will stick together for more than one season. The months of January through August are when breeding takes place, with April through July seeing the maximum activity. The earliest breeding seasons are in India and Sri Lanka. A 50 cm to 1 m deep tunnel is dug by mating birds into a wall or embankment that is vertical. Typically, the tunnel slopes upward and ends in a more expansive nesting chamber. This chamber's floor is not lined, thus food and waste debris frequently ends up strewn all over it. For an ephemeral period of time, both parents co-incubate their three to seven eggs. Babies are born blind and altricial. Both parents assist with feeding and caring for the young after they have hatched. Fledging lasts for eighteen to twenty days.

Reproductive behavior of Asian Halcyon species has not been studied so much. Uncertainties surround its age at sexual maturity, number of clutches raised in each pair, time to independence, and hatching time. [1,16]



Image 8: Newly hatched nestlings of white-breasted kingfishers [d]

Life Span

It is unknown how long white-breasted kingfishers typically live in captivity. The greatest period between initial bands and recapture is five years and six months, although few white-breasted kingfishers have been banded.[16]

Ecosystem roles

Medium-sized generalist predators, white-breasted kingfishers regulate different populations by feeding on a broad range of tiny animals. There is no specific list of Halcyon smyrnensis parasites or other creatures that have unique mutualistic connections with this species in the literature. Protists belonging to the genus Plasmodium may parasitize white-breasted kingfishers, and *Haemoproteus halcyonis*, a blood parasite that infects other Halcyon species, most likely uses white-breasted kingfishers as its host. [1]

Economic Importance for Humans :Positive

Pests in the home and farm, including insect and animal species, are consumed by white-breasted kingfishers. These birds contribute to the management of small vertebrate and invertebrate populations, which, like those of many other generalists, might cause significant harm to human infrastructure and food supplies. [1]

Economic Importance for Humans :Negative

White-breasted kingfishers can be a nuisance in both commercial hatcheries and ornamental fish ponds. They are often seen around fish drying racks. They might be regarded as aquaculture pests even if they also aid in the management of agricultural pests. [1]

Conclusion

Although studies on White breasted Kingfisher are limited, we can conclude that this species has a variety of morphological features, habitat distribution and several behavioral diversity along with adaptation. The grouping into few subspecies gives us the opportunity to study them more thoroughly.

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