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## Journal of Threatened Taxa

Building evidence for conservation globally

[www.threatenedtaxa.org](http://www.threatenedtaxa.org)

ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

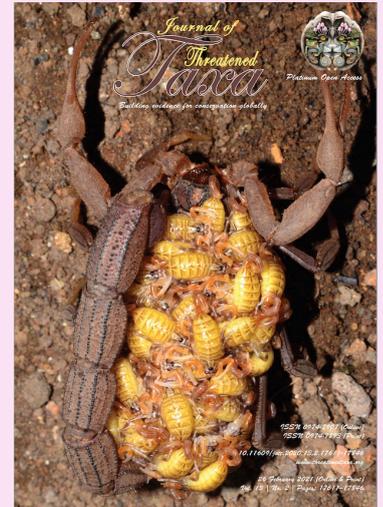
### NOTE

#### **TAWNY FISH-OWL *KETUPA FLAVIPES* HODGSON, 1836 (AVES: STRIGIFORMES: STRIGIDAE): RECENT RECORD FROM ARUNACHAL PRADESH, INDIA**

Malyasri Bhattacharya, Bhupendra S. Adhikari & G.V. Gopi

26 February 2021 | Vol. 13 | No. 2 | Pages: 17837–17840

DOI: [10.11609/jott.5382.13.2.17837-17840](https://doi.org/10.11609/jott.5382.13.2.17837-17840)



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## Tawny Fish-owl *Ketupa flavipes* Hodgson, 1836 (Aves: Strigiformes: Strigidae): recent record from Arunachal Pradesh, India

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Fish-owls are important for indicating balanced stream ecology as they are the top predators in freshwater ecosystems (Duncan 2003; Wu et al. 2006). The Tawny Fish-owl *Ketupa flavipes* is commonly found in the Himalaya, eastern Indo-China, southern China as well as Taiwan (Voous 1988; Marks et al. 1999). The size of the owl can be up to 58cm, which is among the largest owls found in India (Sun 1996; König et al. 2008). But it is so infrequently observed in the wild that it is assumed rare over most of its range (Marks et al. 1999). It is currently listed under Schedule-IV of Wildlife Protection Act, 1972 (WPA) and in CITES Appendix II.

Tawny Fish-owls are generally piscivorous, but also eat small mammals, crabs, reptiles, birds, and insects (Fogden 1973; Sun & Wang 2004; Hong et al. 2013; Schauensee 1984; Ali 1986; Voous 1988; Mark et al. 1999). They mainly depend on streams for prey (Sun 1996; Wu et al. 2006) and their higher altitudinal range is decided by the distribution of stream fishes (Voous 1988; Marks et al. 1999). Other than its breeding biology and circadian rhythm (Sun et al. 1997), very little is known about this rare and secretive Tawny Fish-owl (Voous 1988).

The sacred groves are an integral part of the local community, as they perform rituals and ceremonies to please the deity for wellbeing, prosperity and provide refuge to rare and threatened species (Adhikari & Adhikari 2008). They play a significant role in traditional resource conservation system in many regions of India (Malhotra et al. 2001). They can be considered as parts of forest conserved by the local indigenous community because of their religious views and rituals that run through several generations (Gadgil 1975; Meena & Singh 2012).

The fading respect towards traditional knowledge among youngsters and rapid socio-economic advancement has led to the deterioration of sacred groves (Adhikari & Adhikari 2008). In total, 101 sacred groves have been established in Arunachal Pradesh with 36 in Tawang District (Krishna & Amirthalingam 2014).

Zemithang Village (27.718N & 91.726E) is located at an elevation of 2,439m on the bank of Nyamjang Chu (Chu stands for river; Figure 1). It encompasses montane sub-tropical, temperate, and sub-alpine zones. This river is one of the vital perennial rivers in the entire Tawang River basin. Zemithang-Nelya area has been

**Editor:** Hem Sagar Baral, Charles Sturt University, Albury, Australia.

**Date of publication:** 26 February 2021 (online & print)

**Citation:** Bhattacharya, M., B.S. Adhikari & G.V. Gopi (2021). Tawny Fish-owl *Ketupa flavipes* Hodgson, 1836 (Aves: Strigiformes: Strigidae): recent record from Arunachal Pradesh, India. *Journal of Threatened Taxa* 13(2): 17837–17840. <https://doi.org/10.11609/jott.5382.13.2.17837-17840>

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**Funding:** Ministry of Environment, Forest and Climate Change, Government of India.

**Competing interests:** The authors declare no competing interests.

**Acknowledgements:** We acknowledge the support and guidance received from Director and Dean, Wildlife Institute of India, Dehradun. We are grateful to the Ministry of Environment, Forest and Climate Change for funding the project and officials of Arunachal Pradesh Forest Department for permission, Indian Army, and ITBP for extending their support. We extend our gratitude to all the people of Zemithang Valley, especially Mr. Degin Dorjee, T-Gompa Government School & consultant WWF for his help during the surveys and also to our field assistant Pemba Tsering Romo for his support in the field.



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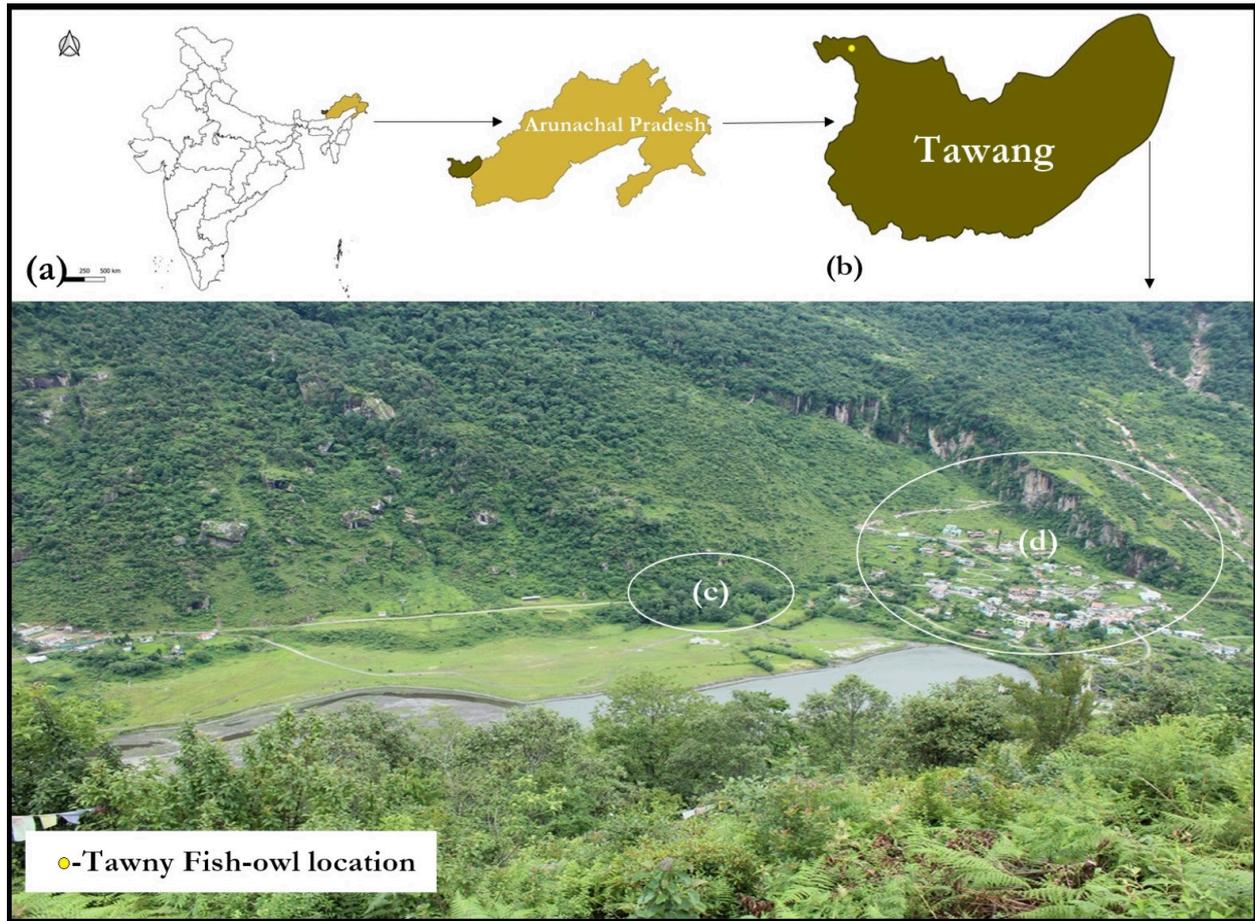


Image 2. The location of the state of Arunachal Pradesh: a—study site within the state of Arunachal Pradesh | b—location of Zemithang Village (encircled) | c—sacred grove | d—Zemithang Village in Tawang District.

identified as an important bird area (IBA code: INAR-28) with several bird species listed as Vulnerable and Near Threatened by the IUCN (Rahmani & Islam 2004).

This large-sized predatory bird was observed on 31 July 2017 inside a sacred grove. Due to a sudden and sharp alarm call from other birds, it was confirmed that some large predator was sitting on the branches of Alder tree *Alnus nepalensis* near the Zemithang to Brokenthang road. While observing through binoculars, it was found that the owl had pale orange upperparts with distinct black streaking, bold orange buff on wing coverts and flight feathers. There was also a whitish patch on the forehead and a prominent black streaking on pale rufous orange underparts. Based on morphological characteristics and a distinct call like a deep whoo-who, it turned out to be the Tawny Fish-owl. A few photographs (Image 1) were also taken to reconfirm the identification of the species because of the misidentification possibility of the Tawny Fish-owl with the Brown Fish-owl. The sacred grove in Zemithang

is located in a small area with the dominance of *Alnus nepalensis* trees in a waterlogged area. The other major plant species (trees, shrubs, herbs, and grasses) found in the sacred grove are, *Salix* sp., *Celtis* sp., *Elaeagnus* sp., *Rubus* sp., *Girardinia macrophylla*, *Artemisia nilagirica*, *Kummerowia striata*, *Paspalum paspaloides*, *Vernonia cinerea*, *Geranium nepalense*, *Selaginella* sp., *Galinsoga parviflora*, *Drymaria cordata*, *Plantago ovata*, *Arthraxon* sp., *Erianthus sikkimensis*, *Sporobolus africanus*, *Pennisetum clandestinum*, *Equisetum* sp., and *Cyperus compressus*.

Local people of Arunachal Pradesh symbolizes the sacred groves under Buddhist monasteries called as Gompa Forest Areas. The sacred groves are managed by local Lamas and Monpa tribes. Arunachal Pradesh has 58 Gompa Forest Areas, distributed mainly in Tawang and West Kameng districts (Higgins et al. 2005).

This particular sacred grove is believed to be rare and associated with high cultural significance in Monpa values (Barbhuiya et al. 2008).



Image 1. Tawny Fish-owl *Ketupa flavipes* in Zemithang. © Malyasri Bhattacharya

After the first sighting of Tawny Fish-owl, it was continuously observed from August–November 2017 and January–February 2018 (Bhattacharya 2018). On 10 January 2018, we observed a pair of Tawny Fish-owl sitting on a branch of alder tree. The species has its range in low elevation ranges up to 1,500m for the Indian Himalayas (Ali & Ripley 1987; Grimmett et al. 1998; Rasmussen & Anderton 2005; BirdLife International 2018) along with Bhutan, China, Laos, Cambodia, Taiwan, and Myanmar (Koker 2019; Holt et al. 2020). The species has also been reported earlier from Pakke Wildlife Sanctuary (WS), Arunachal Pradesh (Ritschard & Marques 2007) and Dibang Valley (preserved specimen, Choudhury 1998). There are many observational records from Assam, Mizoram, Nagaland, and Uttar Pradesh (Barua & Sharma 1999; Praveen et al. 2018; Purkayastha 2018), and from Jim Corbett National Park and the Sattal region of Uttarakhand (Koker 2019). The Tawny Fish-owl was not reported from Tawang District, hence, it is the first report. It is observed that the loss of natural forests due to road and dam construction is very high in the valleys. This might have led to the decrease of the Tawny Fish-owl population since riparian natural forests are the main habitat type used by fish owls (Hayashi 1997; Sun et al. 2000). Therefore, the conservation of such lesser-known species signifies the necessity to protect these small sacred groves. The developmental projects such as roads, dams, and highways, as well as encroachment to forest areas are the major causes of concern for the conservation of these sacred groves

(Adhikari & Adhikari 2008). Hunting is completely absent in this region due to the religious belief of the Monpa tribes inhabiting the area (Gopi et al. 2018) however, a proposed hydroelectric project, as well as sand mining practices in the area act as a major threat to the species. We recommend specific research to be carried out to understand the status, distribution, and habitat use of the species in the region.

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ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

February 2021 | Vol. 13 | No. 2 | Pages: 17611–17846

Date of Publication: 26 February 2021 (Online & Print)

DOI: 10.11609/jott.2021.13.2.17611-17846

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