A distribution survey of the Forest Owlet
Heteroglaux blewitii in north-western Maharashtra

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Abstract
A systematic grid-wise survey of Forest Owlet Heteroglaux blewitii was carried out over an area of 434 sq km as well as a road survey of along 101 km, to assess its distribution in Nandurbar District, Yawal Wildlife Sanctuary, and Tansa Wildlife Sanctuary in north-western Maharashtra. We recorded 13 detections of Forest Owlets from Nandurbar District, 12 from Tansa Wildlife Sanctuary and none from Yawal Wildlife Sanctuary. Our survey reports the presence of the Forest Owlet in Navapur- and Chinchpada Reserved Forests in Nandurbar District, making three distinct populations in the district that require conservation attention. The Forest Owlet was found to be well distributed in Tansa Sanctuary. Encroachment on forest land, tree cutting, large scale fires, and hunting for the pot are potential threats for the Forest Owlet population in north-western Maharashtra.

Introduction
The Forest Owlet Heteroglaux blewitii [140] is a small diurnal owl endemic to India (BirdLife International 2017). Until 1884 there were only five confirmed records of the Forest Owlet from the central Indian highlands (Rasmussen & Collar 1998). The lack of authentic records after 1884 led to the belief that it was possibly extinct (Ripley 1952, 1976). In 1997 the Forest Owlet was rediscovered in the Shahada forests in northern Maharashtra (King & Rasmussen 1998). It is currently listed as Critically Endangered under the IUCN Red List of Threatened Species (BirdLife International 2017).

In 1997, surveys focussing on the distribution of the Forest Owlet were initiated by several researchers, resulting in several new sites being identified in Madhya Pradesh (Ishtiaq & Rahmani 2000; Mehta et al. 2008, 2015), Maharashtra (Ishtiaq & Rahmani 2000; Mehta et al. 2007, 2014; Chavan & Rithe 2009; Laad & Dagale 2015; Raha et al. 2017), and Gujrat (Patel et al. 2015, 2017). These surveys could not detect the Forest Owlet in Odisha and Chhattisgarh (Ishtiaq & Rahmani 2000; Mehta et al. 2008).

In the case of rare species, with isolated populations, the identification of individual populations is essential for the species’ conservation. Studies have been carried out on the status and ecology of the Forest Owlet in Toranmal- and Taloda forests in Nandurbar District (Ishtiaq & Rahmani 2000; Jathar & Rahmani 2004; Jathar & Patil 2011). However, apart from these forests, other areas of the district have not been surveyed for the Forest Owlet. There was therefore a possibility that some populations of the Forest Owlet may not have been discovered. The single breeding record of Forest Owlet (Chavan & Rithe 2009) from Yawal Wildlife Sanctuary (henceforth, Yawal WLS) needed reconfirmation since previous (Ishtiaq & Rahmani 2000), and subsequent (Jathar & Rahmani 2004; Mehta et al. 2008), surveys could not detect the Forest Owlet there. Recently the Forest Owlet was discovered in Tansa Wildlife Sanctuary (Laad & Dagale 2015) but its distribution within the sanctuary was not known. Since the Forest Owlet is surviving in isolated populations it was considered imperative to carry out a systematic survey of the Forest Owlet’s distribution in north-western Maharashtra with the aim of understanding its exact distribution in Tansa Sanctuary, verifying its presence in Yawal WLS, and discovering new populations in Nandurbar District.

Study area
Forests of north-western Maharashtra are located at the junction where the Sahyadris transition into the forests of central India. The details of the three study sites are given below.
Nandurbar District

Nandurbar District (21.00°N–22.05°N, 73.51°E–74.53°E; 5,035 sq km; 300–1200 m asl) is located in the north-western region of Maharashtra state. It is bound on the south and south-east by Dhule District, on the west and north-west by Gujarat state, and on the north and north-east by Madhya Pradesh state. The Satpura Hill Ranges are towards the northern side, and the Sahyadri Ranges towards the western side of the district. The terrain is generally hilly with steep slopes at some places. The climate is hot and dry with average annual rainfall of 872 mm (Dayal 2015). The basaltic soil on the eastern side of the district supports dry teak-bearing deciduous forests consisting of tall trees of teak Tectona grandis, Adina cordifolia, Dalbergia paniculata, Anogeissus latifolia, and Lagerstroemia parvifolia. Reddish, gravelly soil is found on the western side, and supports poor tree growth dominated by species such as Lannea coromandelica, Boswellia serrata, and A. latifolia with fewer teak trees (Dayal 2015). All over the district the forests are in an advanced state of degradation due to tree cutting and encroachment (Jathar & Patil 2011; 142). Forest pockets are small and are interspersed with large expanses of scrub and crop fields. In a few parts of Toranmal Range there are forest blocks that are relatively well preserved. In Navapur Range, the rainfall is higher (1200 mm) and there is fairly undisturbed forest along the border with Gujarat. This survey was carried out in eleven forest ranges, namely Toranmal, Akrani, Bilgaon, Navapur, Taloda, Akkalkuwa (East), Akkalkuwa (West), Kathi, Molgi, and Manibeli.

Yawal Wildlife Sanctuary

Yawal WLS (21.25°N–21.06°N, 75.55°–70.09°E, 177.52 sq km; 400-1074m asl) is located in Jalgaon District at the southern border of Satpura Hills along the northern border of Maharashtra and Madhya Pradesh. Dense bamboo thickets are found in the upper and middle slopes of the hills. Thick undergrowth of Strobilanthes callosa is seen in this area. Along with teak, B. serrata, Acacia catechu, A. latifolia, and Zizyphus mauritiana are found throughout the range. In Yawal WLS, we surveyed Jamnya- and Pal forest ranges. Jamnya Range has mainly teak dominated forests. Pal Range has open forests and grassy undercover. There is preponderance of anjan Hardwickia binata in the region (Shedke & Khairnar 2013). We also surveyed Compartment 166 in Deoziri Range, which is located to the western side of Yawal WLS, as an earlier sighting of Forest Owlet (Chavan & Rithe 2009) was reported from this region. This area also had teak-dominated forests with sparse undergrowth.

Tansa Wildlife Sanctuary

Tansa Wildlife Sanctuary (henceforth, Tansa WLS; 19.42°–19.77°N, 73.16°–73.40°E; 320 sq km; 300–762 m asl) is located in the Thane District of Maharashtra at the edge of the Western Ghats [143]. It includes forests in the catchment area of Tansa Dam on Tansa River, and Modak Sagam Dam on Vaitarna River. The terrain is hilly and slopes generally from an eastern to western direction. Hill tops have grassy plateaux while slopes and plains have moderately dense tree cover. The average annual rainfall is 3200 mm. Tansa WLS supports moist teak-bearing forest and moist mixed-deciduous forests with species such as teak, Terminalia tomentosa, T. bellerica, Pterocarpus marsupium, and Aegle marmelos (Gujar & Seth 2012). The survey in Tansa WLS was carried out in Tansa, Khared, Vaitarna, and Parali forest ranges.

Methodology

Digital maps of Nandurbar District, Yawal WLS, and Tansa WLS, in a geographical information system (GIS), were obtained from the Forest Department. We overlaid the maps with 2x2 km grids in the GIS software Q-GIS (version 1.8). Each grid was further sub-divided into sixteen sub-grids of 500x500 m. The sub-grids were superimposed on Google Earth images of the study area. We selected only those sub-grids that contained forest cover at their centres. Alternate sub-grids were selected for sampling, which amounted to 25% sampling. Each sampled sub-grid was visited once during the survey period, following the protocol recommended by Johnson et al. (2009).

A systematic distribution survey of the Forest Owlet in Nandurbar District and Yawal WLS was carried out from August to December 2016. The survey in Tansa WLS was carried out from April to June 2016 (Fig. 1). The survey was carried out from 0600 to 1100 hrs, and 1500 to 1800 hrs by two teams, each team comprising one field biologist and one local field assistant. Each team visited a different sub-grid ensuring greater coverage of area. We used call broadcast technique for the survey, which has been used successfully for other owl species (Füller & Mosher 1981; Forsman 1983; Conway & Simon 2003; Hausleitner 2006; Johnson et al. 2009). To avoid disturbing
the birds, the duration of the call-broadcast was kept to a
minimum. For detecting the Forest Owlet, its contact call was
broadcast from the centre of the sub-grid (known as the calling
station), from a portable speaker, for two minutes followed by
three minutes silence to listen for a response by the species.
If no response was forthcoming this procedure was repeated
once again (Johnson et al. 2009). This gave a maximum search
time of ten minutes at each survey station, in which the actual
broadcast time was a maximum of four minutes. If a response
was received, we searched for the bird to locate it and confirm
the species. If the Forest Owlet was detected in one of the sub-
grids then all the sub-grids surrounding that were surveyed in
an endeavour to locate additional birds. This sampling protocol
is known as ‘adaptive cluster sampling’ (Thompson 1989), and
has been used successfully in previous surveys (Mehta et al.

At each survey station, we made a visual estimate within a 50
m radius from the calling station, of the percentage landuse
for forest, agriculture, and habitation, within the sub-grid. We
recorded signs of tree cutting, encroachment, and forest fires.
Threats, such as bird-hunting, and trapping were recorded by
direct observations and also by informal discussions with field
staff and local people. In regions where the terrain was very
steep, and the survey grids inaccessible, we carried out survey
along main roads and access roads at intervals of approximately
one kilometer. The range-wise effort for grid- and road survey
is shown in Table 1.

Results

The survey recorded 25 detections of Forest Owlets, each
detection consisting either of a single bird, or a pair (Table 2). Of
these, 13 detections were in Nandurbar District at 11 locations
(Fig. 2), and 12 were in Tansa WLS at 12 locations (Fig. 3). No
Forest Owlets were detected in Yawal WLS (Fig. 4). The survey
was successful in detecting the Forest Owlet in the Navapur- and
Chinchpada ranges, which are new sites for the species.
Rasmussen 1998). Subsequent surveys, up till 2011, confirmed the presence of the Forest Owlet at Toranmal and Taloda (Jathar & Patil 2011), indicating that the Forest Owlet had managed to survive at this locality for over a century.

The Forest Owlet population in Navapur Range occurs at a distance of 80 km from the population in the Taloda Range, and 100 km from the population in the Toranmal Range. The Navapur Range lies at the edge of the Western Ghats. There have been recent reports of Forest Owlets from Tansa WLS and Nashik District, both of which are located near the Western Ghats. The Forest Owlet has also been reported from Purna WLS in Gujarat (Patel et al. 2015), whose boundary is located at a distance of less than 100 m from the Navapur Range in the Western Ghats. Nandurbar District therefore seems to be a junction where the Western Ghats and the Satpura populations meet (Fig. 2).

In Nandurbar District, agricultural expansion and encroachment on forest land are possible threats and causes of concern for the conservation of the species (Jathar & Rahmani 2004; Jathar & Patil 2011). During our survey, we observed old encroachments, as well as new ones around the Forest Owlet habitat in Toranmal, Navapur, and Taloda ranges. Disturbingly, vast stretches of land that are marked ‘forest’ on the Forest Department maps were found to be agricultural land and degraded scrub interspersed with small forest patches. In Taloda Range most forest blocks were barely 100–200 m in extent. Local forest officers reported that these forests were decimated during large scale encroachment by the local tribal population in the 1970s–1980s.

The impact of forest degradation on Forest Owlet populations has not been studied. However, considering that the Forest Owlet is a forest-dwelling species, it is likely that deforestation will have a deleterious impact on its survival.

Though the Forest Owlet continues to survive in Nandurbar District, its occurrence is highly localised, with small populations, and is restricted to just three sites that have forest patches with large trees. Locals capture small owls using wire traps placed outside the entrances of their nest cavities [144]. The impact of these threats should also be closely monitored for any adverse impacts on the Forest Owlet’s population.

**Yawal Wildlife Sanctuary**

In 1999 and 2002, Forest Owlet surveys were carried out in Yawal WLS but the bird was not detected there (Ishtiaq & Rahmani 2000).
2000; Jathar & Rahmani 2004). In 2003, Chavan & Rithe (2009) reported a pair of Forest Owlets in Compartment 166 of the Deoziri Range, just outside the sanctuary. However a subsequent survey could not locate the species (Mehta et al. 2008). During the present study we surveyed the entire sanctuary through our grids, and specifically the Deoziri Range, but could not locate the bird. Discussions with local villagers, birders, and forest department staff also did not reveal confirmatory information about the existence of the species in the sanctuary.

**Tansa Wildlife Sanctuary**

The Forest Owlet was found to be well distributed in Tansa WLS, occuring in all four forest ranges with a total of 14 detections (Fig. 3). These forests are fragmented into a patchwork of dense forest, open forest, scrub, agricultural fields, and human habitation. Tree-cutting and largescale forest fires are potential threats to the Forest Owlet’s habitat here. As Tansa WLS is located close to Mumbai, pressures from urbanisation are another potential threat. There is a plywood factory in Aghai Village, adjacent to the sanctuary, and an engineering college has also been established in the same village. Hunting for wild animals and birds, including owls, for meat, is fairly common in the sanctuary. Local children use catapults to hunt birds, including small owls, for the pot [145].

**Conclusion**

At present there are twelve confirmed populations of the Forest Owlet in the country, of which six sites are in Maharashtra, three are in Madhya Pradesh, and three are in Gujarat (Fig. 5). It is important to garner government and public support for its conservation at each of the sites. This survey identified several potential threats such as deforestation, tree-cutting, and fire, but the response of Forest Owlet populations to these factors has not been studied. It is important to study the impact of these factors in order to formulate a conservation plan for the species. All populations should be monitored regularly to assess the gravity of the threats, and to identify new threats, and conservation actions framed to mitigate them.

**Acknowledgements**

We gratefully acknowledge financial support of the Maharashtra Forest Department for this survey. We thank the forest officers of Maharashtra Forest Department Sanjay Bhagat, Vinay Sinha, U. G. Asvak, S. T. Jagtap, V. M. Pingle, and M. M. Kulkarni for their support during the survey. We sincerely thank the officers and the field staff of the Forest Department in all the surveyed areas for their co-operation during the survey.

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Corvallis, Oregon, USA.


Fig. 5. Confirmed locations of Forest Owlet from central- and western India.

145. Owl meat cooked for Pot. Owl feathers are also visible.
Whinchat *Saxicola rubetra* in Sri Lanka in February 2015: First record for the island and the Indian Subcontinent

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On 08 February 2015, on a birding trip to Sri Lanka, while watching birds and mammals in Udawalawe National Park (at 6.445261°N, 80.889268°E; Fig. 1) KS found a bird, which he identified spontaneously as a Whinchat *Saxicola rubetra*. The other German birders (WP, MP, WM, and MZ) immediately confirmed this ID, since they were all familiar with that species. A quick look at Warakagoda *et al.* (2012), and Grimmett *et al.* (2011) showed that Whinchat was not mentioned in those field guides for Sri Lanka, nor for the Indian Subcontinent. Therefore it was obvious, that we had seen a very rare bird for the region.

Interestingly, some 20–40 m away, on the same track, was a Siberian Stonechat *S. maurus*, which is considered a vagrant to Sri Lanka (Warakagoda *et al.* 2012)

The first identification of the Whinchat was based on the following field marks: The jizz of the bird was that of a typical chat—thickset, sitting upright, with a rather short tail, and a large dark eye. The most obvious pattern was the broad and long supercilium, which was buff in front of the eye and almost whitish behind. The upperparts were dark brown with dark centers to feathers and buff fringes, giving a scaly and streaky impression. The underparts were buff on the breast and breast sides, and whitish on the belly. The primary projection was about three-fourths the length of the tertials. The short bill and the legs were blackish.

After some local phone calls it was clear that Whinchat was a ‘first’ for Sri Lanka and, presumably, for the Indian Subcontinent.