**New Report and Conservation Challenges for Critically Endangered Forest Owlet (*Heteroglaux blewitti*) in Melghat Tiger Reserve, India**

**ABSTRACT**

During a birding trip permitted by the Department of Forest and arranged by Pakshimitra NGO possible predicted siting of a critically endangered forest owlet (*Heteroglaux blewitti*) was reported first time in Gullarghat-Dhargad forest range of Melghat Tiger Reserve for, Maharashtra state. In the review of 17 research reports on this species from 1872 to 2014 out of 17 reports, only 07 researchers have mentioned the exact geolocation of occurrence of this owlet. total 40 bird species were found in the micro-niche of the owlet habitat that belongs to 15 orders and 31 families Among these the species under order Passeriformes (35%) were 14 and 01 species each found in 7 different orders. Out of six identified conservation threats the highest level of ecological and habitat threat was tourist vehicle movement in core zone, similarly, forest department settlement and activities were also one of the lowest threats identified. Continuous monitoring on occurrence, habitat status, reproduction, and nesting are suggested under special conservation programs as one of the top carnivores in the forest ecosystem.

**Keywords**:Forest Owlet, Melghat tiger reserve, Avifauna, Conservation status, Diversity

**INTRODUCTION**

*Heteroglaux blewitti* the forest owlet, one of the recently declared endangered C2a (i) (2018) has a severely fragmented population, non-migratory owlet. It is the only range-restricted rare owlets among Indian owlets. It is from the west-central parts of India. This is endemic to India only. It has been reported from Melghat-Satpura mountain ranges and forest resources in Maharashtra State (Chavan and Rithe, 2008; Jathar and Rahmani, 2004; Narsimmarajan and Mahato, 2013). The owlet is found in these specific habitats as its main range of distribution. However, it was also reported from Thane district in the eastern part of western Ghats Forest (Laad and Dagale, 2015) and parts of Odisha state in India (Hume, 1873). The forest owlet is one of the small species with typical red-gray plumage on the back and head region. It has a typical eyebrow plumage pattern as a terminal curve line, eyes yellowish-black, yellowish-buff beak (Ripley, 1952). It prefers daytime especially afternoon for its routine movement hence it may be called a diurnal owlet of India. This is a special and typical behaviour of diurnal movements. Therefore, it may be accidentally sighted during the day-time for many birders. The same type of sighting occurred in the present study also during the bird survey in Melghat Tiger Reserve, henceforth MTR on 2ne January 2024. The MTR lies in northern parts of Amravati District of Maharashtra on the Madhya Pradesh State Border, on the southern offshoots of Satpura mountain range. As earlier birders and Ornithologists were eager to spot the occurrence of this owlet and to note its activities, we also planned to observe it during a specially organized bird survey in parts of MTR. During bird survey organized by the Department of Forest and Wildlife in collaboration with a nature NGO named ‘Maharashtra Pakshimitra’ we were allotted Dhargad and Gullarghat forest range (Fig.1) for the bird survey. We recorded the avian diversity in a given area but as we spotted the forest owlet (*H. blewitti*) in Gullarghat, we focussed on the activities of this diurnal owlet species. It was an accidental sighting because in many plant surveys, it was not possible to survey in the birding trips. It was reported by Blewitt in 1872 in eastern Madhya Pradesh of then British India. Later on, about 17 different ornithologists from 1872 to 2020 reported the occurrence of this owlet species in fragmented, dry, and deciduous forest from Gujrat, parts of Maharashtra (Including biodiversity hotspot of the world, north-west of western Ghats then to the Odisha state of India. In all their tracking all these naturalists Report the type of plant diversity, the interaction of his owlet with other forest Birds (Rasmussen and Ishtiaq, 1999), and its behaviour during roosting and local flight movements. Therefore, we think these are only observations, but there are no reports on the concrete suggestion plans for its conservation. Hence in the present investigation the past, the present and the future of conservation issues are reviewed and urgent needs are on the conservational measures of this owlet species. There is a need to protect this owlet to maintain the forest bird diversity, forest food chain, and forest ecosystem-conservation, to prevent human intervention alteration in forest cover. And most important is to protect this top carnivore bird from the Tiger Conservation Program.

**MATERIALS AND METHODS**

***Study area***

Melghat means where the ghats meet, it is about 36,128 ha. Area and part of Gogamal National Park, buffer zone area of this forest reserve is 78, 824 ha. Melghat was declared as Melghat Tiger Reserve (MTR) by Govt. of Maharashtra in 1994. The vegetation is mainly southern tropical, dry, deciduous forest. There are grassy meadows throughout the reserve. It has hills and valleys. There are patches of semi-evergreen and moist deciduous forest (30-70 %) in the region. Some rare orchid species are also found in the region. The MTR is an important bird area (IBA).

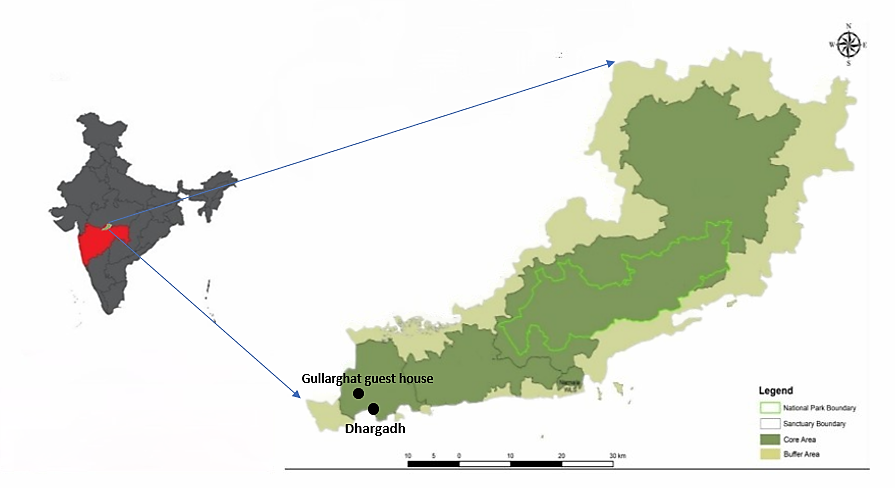


Figure.1. study area: Melghat Tiger Reserve, Maharashtra.

***Survey of Forest Owlet***

It has remained a long-time discussion since the year 1873 when an Ornithologist Hume (1873) reported the rare occurrence of forest owlet in India during his first survey in central India. Later on, Rasmussen (1998) rediscovered the occurrence of this owlet in Melghat and extensively studied the behavior to correlate the type of call with various interactions of bird species around it. Later on, from the year 1952 to 2015, there are reports on the sporadic occurrence of this owlet in Purna sanctuary, Gujrat, in the Melghat area, near Thane in the Western Ghats of Maharashtra State. Then also in parts of Odisha state. But Melghat has remained a confirmed site for its occurrence. Considering this species endangered strategy, the survey is essential to determine its current population, its dependence on the habitat for food and inter-intra-specific interactions. Except for conservation programs on vulture species by the Department of Forest Govt. of Haryana, captive breeding of Great Indian Bustard (GIB) I Rajasthan there are no concrete and consolidated reports on some major substantial planned specific conservation programs for the forest owlet (*H. blewitti*). In recent after the year 2015, a gap of 9 years special survey was arranged in the Year 2024. It was arranged in January as a routine birding experience for the photographers and trekkers in Maharashtra. An NGO named ‘Maharashtra Pakshimitra’ always works in collaboration with the Department of Forest, Govt. of Maharashtra to organize avian diversity surveys in MTR. In the present study about 50 wildlife, photographers were selected to participate in a day survey program in MTR and deployed these people at various locations under the facilitation and control center from the Department of Forest, headquarters at Shahanoor (Akot, Akola, Maharashtra). The results of this investigation are based on the data from two locations in the MTR. One of these locations was at the Gullarghat Forest range (Lat. 21.26, 29 66 and Lon. 76.97, 75 90). This place is about 4 km from another adjacent forest range named Dhargad (Lat. 21.26, 40.18 and Lon. 77.02.65.02). A small size pond of 03 ha. the area is remote and pollution-free water source free from Agriculture and for the forest birds and water birds.

***Observation Method***

On 30th December, 2023 evening we reached Gullarghat and walked for general observations on the type of landscape of the forest region; on the next day 31st December at 6.00 a.m. first birding trip was arranged by a walk of approximately 02 km. It was on irregular turns and trails to some extent on vehicle runways of Forest Safari tourist vehicles. The avifaunal diversity was recorded (Table 1) using a Nikon- 52 camera with 200-500 Lance for photography and video recording of forest birds. The recorded birds were identified (Grimmett et al., 2020, Chavan et al., 2014). The routes and trails were selected for the survey based on the safety experience of forest guards and forest laborers. The survey was planned to be limited to 02-time slots of 5.00 a.m. to 11.00 a.m. and 2.00 p.m. to 5.30 p.m. The area with thick, tall, and dry grass patches and thick forest cover was avoided in this survey due to safety reasons to avoid possible attacks from wild black bears, wild boar and tigers. To confirm the conservation threat levels of various factors in the forest owlet habitat digit 10 is considered as the highest limit equal to 100% based on observations during the studies.

**RESULTS AND DISCUSSION**

***Birds at minor pond and occurrence of Forest owlet***

In Gullarghat range and Dhargad range of MTR, 40 species of birds including the forest owlet (*H. blewitti*) were recorded that belong to 15 orders and 31 families (Table. 2.). It is the first report on the occurrence of avian diversity from the minor pond of the core zone of this forest. Amongst the observed bird species, a flock of Yellow-footed green pigeon (*Treron phoenicopterus*) is a state bird of Maharashtra state, India having 7-8 individuals in a flock found at 05 different locations within three days of survey in the area. The roosting period of this pigeon species was 3-4 minutes only, usually, it was a tree-top branch rooster. The waders, water birds, and shorebird groups were located on the pond. During the evening birding trip by walking in the front area of the guest house at Gullarghat on 31st December, 2023 at 4.30 p.m. we spotted one individual Forest owlet (*H. blewitti*). It was difficult to spot it due to no voice calls and due to its small size. We could spot it as our random but watchful observations for its possible occurrence on the trees, bushes, and grasslands. It was accidentally spotted (Fig.5 a to d) on a tree. The owlet roosted on the same tree and the same branch for about 8 minutes and 22 seconds, it was just watching around by its 1800 neck movement, and in between it was observing our movement too. During these counterpart observations we were at 8-10 ft. away from the tree trunk, motionless stayed on the road, and clicked several photos, the forest owlet flew away and reached on the top of top of Tamarind tree 300 meters away from the first spotted site. It stayed on the tamarind tree's top branches for 10 minutes and 40 seconds. During this stay sing Red Vented Bulbul (*Picnonotus caffer*) approached the owlet and created disturbance by short flights around it. Then the owlet reached the mid-canopy marginal area of the neem tree (*Azadirachta indica*). It was on the neem tree for 12 minutes. At last, it filed away and disappeared from our range of observation.

***Current status of habitat***

The forest owlet is found in the marginal region of thick forest. The area had dry grass, and patches with shrubs. In the habitat of the owlet, there is the settlement of forest department personnel residential quarters, a guest house, an auditorium, a communication phone tower, electric wires, and poles. All these buildings and infrastructures are in a line and connected by a jungle trail type of non-constructed road. The aim is to watch the wildlife such as tiger, wild boar, Chital, Deer, and blue bull (Locally named Rohi). The forest safari vehicles (Mainly four-wheel jeeps) visited the area on an average of six rounds a day. Each vehicle carries 2-3 tourists. Nearly every tourist on safari has having camera for wildlife photography. In these forest ranges, 10-12 forest guard personnel were having regular monitor rounds on the motorcycle. On average 01 observation round per hr. was frequency. Another notable human activity in the habitat was 100-150 forest laborers deployed for uprooting the invasive plant species *Lantana americana* distributed as weed plant in 33 % forest area of the entire Melghat. This indicated about 200 humans intervened in the habitat of forest owlets for various purposes. It is one of the disturbances in the forest ecosystem. The forest owlet is an important bird and has been declared as critically endangered, Scheduled 1. Category species. It is globally threatened. The occurrence of this species in the core zone area of Melghat and it is facing the problem of human interference in and around its habitat. The forest owlet is a diurnal bird means it needs to search the food, and disturbance-free movement in its habitat. Currently, it is facing human activity disturbance. It remains active During this time, but its behaviour during the early morning and night-time is unclear. At night time also the forest people are found in fishing and crab capture from the streams and natural or man-made ponds. This should be completely banned because many water birds and small Mammals are dependent on crabs and fish as their natural food. The exact food chain of this kind in the Gullarghat and Dhargad forest range of Melghat Tiger Reserve has been investigated. There are no reports on the dependence of forest owlets on which food animals are for its food, what kind of tree species it uses for egg laying is unclear. Therefore, more studies targeting these issues are essential to make conservation measures possible. Like Tiger, it is time to tag the forest owlet and note its various activities such as local migration range, food, feeding, breeding, activities, especially electronic antenna tag and micro camera need to fit in its back.

***Conservation challenges identified***

The forest department officials and personnel need to move into Melghat tiger reserve for patrolling activities, to monitor the wildlife. The forest labor deployment to uproot the *Lantana sp.* planthas no alternative still today.Hencethese people are still moving in the core zone and owlet habitat for this work. Several places including Gullarghat and Dhargad in the Melghat tiger reserve are facing encroachment movement of forest labour for the work purpose. To conduct the night patrolling for forest management. The vehicle headlight focus and the vehicle movement noise create disturbance for the nocturnal animals. Always the wildlife should get its natural healthy life the food and water are not sufficient and also need undisturbed habitat. Normal, natural behaviour is also an important aspect of life. Hence there should not be movement of tourist safari vehicles, the forest people, or grazing animals for any purpose there should not be permission for entry of people (aimless vagrant tourists, etc. of such kind) in the core zone of the forest. The number of forest laborers and workers from the owlet habitat should be reduced. Along with the uprooting method to control *Lantana* weedthere should be some effective scientific methods to reduce the number of humans involved as laborers in controlling it. Already several villages from the Gullarghat and Dhargad range have been relocated from the core area. But the electric wires and light bulbs and tube lights from this habitat should be removed. For the officials and guards' headquarters area in the core zone of the forest, the light should be off at night. There should not be forest tourism and tourist visits in the identified habitat of forest owlets.

After critical observation, it was found that there are no effective and serious efforts found on the key issues of conservation of this critically endangered owlet. Therefore, some important suggested measures include geo-tag mapping of the owlet in its distributional range, regular nest survey to determine nest success and breeding success, its food preference except long back noted by Ishtiaq and Rahamani (2005). Now the stage has reached its extreme need for this owlet conservation.

Table 1. Places of occurrence of Forest owlet in deciduous forests of Central India including present

record in the Year 2024.

|  |  |  |  |
| --- | --- | --- | --- |
| Sr. No. | Site of occurrence | GPS coordinates | Observer and year |
|  | Eastern Madhya Pradesh of the British period | - | Blewitt, (1872) |
|  | Madhya Pradesh | - | Hume, (1873) |
|  | West Odisha | - | Ball, (1877) |
|  | Odisha | - | Ball, (1877) |
|  | Taloda, Khandesh, Maharashtra | - | Davidson, (1880 and 1884) |
|  | Sahada Toranmal Taloda, Khandesh, Maharashtra | 21.49° N, 74.28° E | King and Rasmussen, (1998) |
|  | Taloda, Khandesh, Maharashtra | - | Ishtiaq and Rahmani, (2000) |
|  | Raipur Village | 21.34° N, 77.07° E | Ishtiaq and Rahmani, (1999) |
|  | Khankar Forest Reserve, Madhya Pradesh | - | Jathar and Rahmani, (2004) |
|  | Akrani, Navapur | 21.49° N, 74.28° E | Ishtiaq and Rahmani, (2005) |
|  | Melghat Tiger reserve | - | Mehta et al., (2007) |
|  | Northern Maharashtra | - | Yosef et al., (2010) |
|  | Melghat Tiger reserve | - | Pande et al., (2011) |
|  | Gurgipatti beat,  Melghat Tiger reserve | 21.19° N, 76.59° E | Kannadasan and Mahto, (2013) |
|  | Near Amravati, Maharashtra | 20.55° N, 77.59° E | Kannadasan and Mahto, (2013) |
|  | Dang district, Purna Wildlife Sanctuary, Gujrat | 20.51° N, 21.31° E and  73.32° N, 73.48° E | Patel et al., (2014) |
|  | Akrani Bilgaon,  Navapur range, Nandurbar District, Maharashtra | 20.98° N, 73.57° E | Kulkarni and Mehta, (2000) |
|  | Narnala Wildlife Sanctuary, Dhargad  Range: Gullarghat (MTR) | 21.26° N, 76.97° E | Present Record (2024) |

Figure 2. % Distribution of avian species under various Orders in MTR

Figure. 3. Number of species under various Families in MTR.

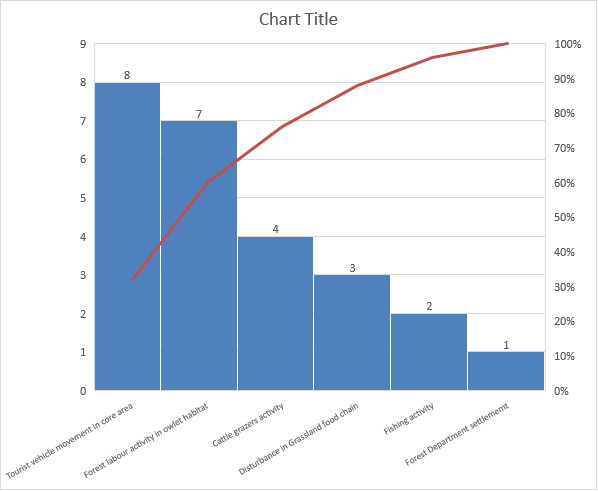


Figure. 4. Threat levels out of 10, of various activities in the habitat of Forest owlet in the MTR.

Table. 2. Avifaunal diversity associated with Forest Owlet in MTR

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sr. No. | Name of the species | Common name | Order | Family | IUCN Status |
|  | *Circaetus gallicus* | Short-toed snake eagle | Accipitriformes | Accipitridae | LC |
|  | *Butastur teesa* | White-eyed Buzzard | Accipitriformes | Accipitridae | LC |
|  | *Elanus axillaris* | Black shoulder kite | [Accipitriformes](https://en.wikipedia.org/wiki/Accipitriformes) | [Accipitridae](https://en.wikipedia.org/wiki/Accipitridae) | LC |
|  | *Tadorna ferruginea* | Ruddy shelduck | Anseriformes | Anatidae | LC |
|  | *Anas arcuata* | Whistling ducks or tree ducks | [Anseriformes](https://en.wikipedia.org/wiki/Anseriformes) | [Anatidae](https://en.wikipedia.org/wiki/Anatidae) | LC |
|  | *Anas acuta* | Northern pintail | [Anseriformes](https://en.wikipedia.org/wiki/Anseriformes) | Anatidae | LC |
|  | *Ocyceros birostris* | Indian Gray hornbill | [Bucerotiformes](https://en.wikipedia.org/wiki/Bucerotiformes) | [Bucerotidae](https://en.wikipedia.org/wiki/Hornbill) | LC |
|  | *Vanellus indicus* | Red-wattled lapwing | [Charadriiformes](https://en.wikipedia.org/wiki/Charadriiformes) | [Charadriidae](https://en.wikipedia.org/wiki/Charadriidae) | LC |
|  | *Sterna aurantia* | Indian river tern | [Charadriiformes](https://en.wikipedia.org/wiki/Charadriiformes) | [Laridae](https://en.wikipedia.org/wiki/Laridae) | VU |
|  | *Ciconia episcopus* | Asian woolly neck | [Ciconiiformes](https://en.wikipedia.org/wiki/Stork) | [Ciconiidae](https://en.wikipedia.org/wiki/Stork) | NT |
|  | *Treron phoenicopterus* | Yellow-footed green pigeon | Columbiformes | [Columbidae](https://en.wikipedia.org/wiki/Columbidae) | LC |
|  | *Alcedo atthis* | Common Kingfisher | Coraciiformes | Alcedinidae | LC |
|  | *Merops orientalis* | Asian green bee-eater | Coraciiformes | [Meropidae](https://en.wikipedia.org/wiki/Bee-eater) | LC |
|  | *Coracias benghalensis* | Indian roller | Coraciiformes | Coraciidae | LC |
|  | *Ceryle rudis* | Pied Kingfisher | [Coraciiformes](https://en.wikipedia.org/wiki/Coraciiformes) | [Alcedinidae](https://en.wikipedia.org/wiki/Kingfisher) | LC |
|  | Halcyon smyrnensis | white-throated kingfisher | [Coraciiformes](https://en.wikipedia.org/wiki/Coraciiformes) | [Alcedinidae](https://en.wikipedia.org/wiki/Kingfisher) | LC |
|  | *Pavo cristatus* | Indian Peafowl | [Galliformes](https://en.wikipedia.org/wiki/Galliformes) | [Phasianidae](https://en.wikipedia.org/wiki/Phasianidae) | LC |
|  | *Pericrocotus cinnamomeus* | Small minivet | [Passeriformes](https://en.wikipedia.org/wiki/Passerine) | [Campephagidae](https://en.wikipedia.org/wiki/Cuckooshrike) | LC |
|  | *Muscicapa dauurica* | Asian brown flycatcher | [Passeriformes](https://en.wikipedia.org/wiki/Passerine) | [Muscicapidae](https://en.wikipedia.org/wiki/Old_World_flycatcher) | LC |
|  | *Delichon urbicum* | Western house martin | [Passeriformes](https://en.wikipedia.org/wiki/Passerine) | [Hirundinidae](https://en.wikipedia.org/wiki/Swallow) | LC |
|  | *Dicrurus leucophaeus* | Ashy Drongo | [Passeriformes](https://en.wikipedia.org/wiki/Passerine) | [Dicruridae](https://en.wikipedia.org/wiki/Drongo) | LC |
|  | *Dendrocitta vagabunda* | Rufous treepie | [Passeriformes](https://en.wikipedia.org/wiki/Passerine) | Corvidae | LC |
|  | *Corvus culminatus* | Indian jungle crow | Passeriformes | [Corvidae](https://en.wikipedia.org/wiki/Corvidae) | LC |
|  | *Pycnonotus cafer* | Red-vented bulbul | [Passeriformes](https://en.wikipedia.org/wiki/Passerine) | Pycnonotidae | LC |
|  | *Argya striata* | Jungle babbler | [Passeriformes](https://en.wikipedia.org/wiki/Passerine) | Leiothrichidae | LC |
|  | *Motacilla flava* | Western yellow wagtail | Passeriformes | Motacillidae | LC |
|  | *Lanius schach* | Long-tailed Shrike | Passeriformes | Laniidae | LC |
|  | *Saxicola maurus* | Siberian stonechat or Asian stonechat | [Passeriformes](https://en.wikipedia.org/wiki/Passerine) | [Muscicapidae](https://en.wikipedia.org/wiki/Old_World_flycatcher) | LC |
|  | *Copsychus saulari* | Oriental magpie-robin | [Passeriformes](https://en.wikipedia.org/wiki/Passerine) | [Muscicapidae](https://en.wikipedia.org/wiki/Old_World_flycatcher) | LC |
|  | *Turdoides striata* | Jungle Babbler | [Passeriformes](https://en.wikipedia.org/wiki/Passerine) | [Leiothrichidae](https://en.wikipedia.org/wiki/Laughingthrushes) | LC |
|  | *Chrysomma sinense* | yellow-eyed babbler | [Passeriformes](https://en.wikipedia.org/wiki/Passerine) | [Paradoxornithidae](https://en.wikipedia.org/wiki/Parrotbill) | LC |
|  | *Egretta garzetta* | Little Egret | Pelecaniformes | Ardeidae | LC |
|  | *Ardeola grayii* | Indian pond heron or paddy bird | Pelecaniformes | Ardeidae | LC |
|  | *Ardea alba* | Great Egret | Pelecaniformes | Ardeidae | LC |
|  | *Dinopium benghalense* | Lesser golden-backed woodpecker or lesser golden back | Piciformes | Picidae | LC |
|  | *Psilopogon haemacephalus* | Coppersmith Barbet | Piciformes | Megalaimidae | LC |
|  | *Tachybaptus ruficollis* | Little Greb | Podicipediformes | [Podicipedidae](https://en.wikipedia.org/wiki/Grebe) | LC |
|  | *Psittacula eupatria* | Alexandrine parakeet | Psittaciformes | Psittaculidae | NT |
|  | *Heteroglaux blewitti* | Jungle owlet | Strigiformes | Strigidae | EN |
|  | *Microcarbo niger* | Little cormorant | Suliformes | [Phalacrocoracidae](https://en.wikipedia.org/wiki/Cormorant) | LC |

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| Fig.5 (a). *Heteroglaux blewitti* - Body-back and front-head view | Fig. 5 (b). *Heteroglaux blewitti* front view | Fig. 5 (c). *Heteroglaux blewitti* back of the head. |
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| Fig.5 (d). *Heteroglaux blewitti* roosting at top branches. | Fig. 6. *Saxicola maurus* | Fig. 7. *Chrysomma sinense* |
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| Fig. 8. *Muscicapa dauurica* | Fig. 9. *Psilopogon haemacephalus* | Fig. 10. *Ciconia episcopus* |
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| Fig. 11. *Microcarbo niger* | Fig. 12. Ashy Drongo | Fig. 13. *Dinopium benghalense* |
|  |  |  |
| Fig. 14. *Copsychus saulari* | Fig. 15. *Merops orientalis* | Fig. 16. *Pavo cristatus* |
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| Fig. 17. *Turdoides striata* | Fig. 18. *Halcyon smyrnensis* | Fig. 19. *Anas acuta* |
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| Fig. 20. *Ceryle rudis* | Fig. 21. *Ardeola grayii* | Fig. 22. *Lanius schach* |
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| Fig. 23. *Tadorna ferruginea* | Fig. 24. *Dendrocitta vagabunda* | Fig. 25. *Treron phoenicopterus* |
|  |  |  |
| Fig. 26. *Pericrocotus cinnamomeus* | Fig. 27 (a). *Circaetus gallicus* | Fig. 27 (b). *Circaetus gallicus* |

**CONCLUSION**

The Forest Owlet *Heteroglaux blewitti* has been reported for the first time to its new location at theGullarghat region of the Dhargad forest range of the MTR with its specific geo-location. The avifaunal diversity in the habitat of this owlet was also reported. Red-vented Bulbul was the most closely interacting bird found with the owlet at roosting places on the tamarind and neem trees. It was a rare unplanned and accidental sighting of the forest owlet during a birding and avian survey in MTR. However, the Forest officials informed us about possible sightings of this owlet in the selected study area. Forest safari tourist vehicle movements, which are frequent activities during the day, are the most threatened disturbance to the owlet habitat due to the diurnal habit of the forest owlet. Continuous monitoring of the activities and survival requirements is needed urgently to conserve this threatened owlet species.

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