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Aims & Objectives

- To publish a newsletter that will provide a platform to birdwatchers for publishing notes and observations primarily on birds of South Asia.
- To promote awareness of birdwatching amongst the general public.
- To establish and maintain links/liaison with other associations or organized bodies in India or abroad whose objectives are in keeping with the objectives of the Trust (i.e. to support amateur birdwatchers with cash / kind for projects in ornithology).

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When and how to study the nesting biology of Indian birds: Research needs, ethical considerations, and best practices

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Abstract

The nesting biology of a bird species is likely the most important component of its life history and it is affected by several ecological and environmental factors. Various components of avian nesting biology have proved to be important traits for testing fundamental ecological and evolutionary hypotheses, and for monitoring the efficacy of biological conservation programs. Despite its significance, the nesting biology of most Indian bird species is still poorly understood. The past few years have, however, seen a significant increase in the number of submissions to *Indian BIRDS*, of observational studies of avian nesting biology, which promises an exciting new wave of ornithological natural history research in India. Although there is great need for such research, there are several biological, legal, and ethical aspects to consider before studying bird nests through direct observation or by using new technological and digital monitoring techniques. Here, we outline the merit and need for studying the nesting biology of birds in India, but also suggest best practices, specific to the Indian context, which will help to ensure that the research is done legally, ethically, and in a way that can provide important new information to advance Indian ornithology without compromising the welfare of birds.

Introduction

For a wide array of bird species, ornithologists and birdwatchers have studied and documented many aspects related to nesting biology such as: pair formation, courtship, copulation, nest availability, nest site selection, nest building, nest maintenance, clutch size, incubation period, hatching success, fledgling survival and growth; parental care and parent – offspring behaviour; moult, nest re-use, and population dynamics (Birkhead et. al. 2014). Nesting biology is a highly significant aspect of a bird's life-history and is directly related to ecological aspects such as habitat selection and survival, as well as evolutionary aspects such as reproductive success and sexual selection. The nests that birds make are extremely varied, from swiftlets nesting in caves, grebes and jacanas nesting on open waterbodies or marshes, babblers nesting in tall grass, mound-nesting megapodes, primary or secondary cavity- or hole-nesting birds such as woodpeckers, kingfishers, owls, bee-eaters, and hornbills, ground nesters like lapwings and larks, birds that breed on cliffs, in houses, and on rooftops, to brood-parasites like many cuckoos that do not build nests but lay their eggs in other birds' nests (Lovette & Fitzpatrick 2016).

The nesting season is a particularly vulnerable time for birds as their eggs and young are nearly defenceless against predators, although parent birds may go to substantial lengths to protect nests and young through defensive, or evasive, behaviours and by careful selection of nest sites in secure or hidden locations. It is also an energetically demanding and sensitive period as adults provision the nestlings, revisit the same location multiple times, and spend considerable time incubating eggs, and feeding young. During this crucial nesting period, when birdwatchers and researchers observe birds to study and document their nesting ecology or behaviour, it is possible that the presence of human observers and their methods of observation may affect birds in different ways. Scientific and ethical concerns have been raised that human observer-related disturbances may compromise the accuracy of research findings or the welfare of the birds concerned (Götmark 1992; Farnsworth & Rosovsky 1993; Crozier & Schulte-Hostedde 2015). In the case of nesting birds, field research or disturbances due to human observers, such as ecotourists and birdwatchers, may lead to changes in nesting habitat, nest site availability and safety, increase exposure and stress, compromise the survival of chicks and adults, cause nest desertion, or modify predator behaviour and predation rates, all of which may affect nesting birds in ways that are negative, neutral, or even positive (Götmark 1992; Müllner et al. 2004; Weidinger 2008; Ibáñez-Álamo et al. 2012). The unscrupulous or insensitive behaviour of human observers, such as disturbing nest sites and nesting birds for the purpose of bird photography, which is unethical and detrimental to birds, has been criticized and conservationists have called for the adoption of better guidelines (Dattatri & Sreenivasan 2016; Podduwage 2016). The excessive use of call playback to attract birds has also been a matter of concern as there could be possible effects on bird breeding, stress, and survival, especially in the breeding season (Sen 2009; Kannan & Santharam 2015). Organisations concerned with birdwatching and bird conservation have provided guidelines for birdwatchers, including a code of behaviour (ABA 2012; RSPB 2019), and measures to minimise disturbance during nest observations (BTO 2019). Birdwatchers who are aware and sensitive to these concerns are more likely to change their behaviour to benefit birds (Weston et al. 2015).

Within India, professional ornithologists and birdwatchers continue to carry out field research and natural history observations on the nesting habits of many bird species to build our knowledge of nesting birds. There has been an increase in the number of natural history and anecdotal notes on nesting biology submitted to *Indian BIRDS* journal in the last few years (over 30 manuscripts since September 2015). The need for scientific and natural history journals to consider ethical aspects related to the research or observations they publish has been widely highlighted (Marsh & Eros 1999; Kannan & Santharam 2015; Costello et al. 2016). Most journals that publish research on animals now require that authors adhere to international standards and best practices, with due attention to ethical considerations in their work before it can be considered for publication (e.g., Animal Behaviour 2020). In India, as an increasing number of amateur birdwatchers, citizen scientists, students, and scientists carry out studies on bird nests, it is important to bring into consideration, from the planning stage through observation and publication, aspects such as: ethics, appropriateness and repeatability of the research methods, permits and training, and the trade-off between new information generated *versus* potential negative impacts on nesting birds. In this paper, we briefly outline the need for nesting biology studies, discuss how studies at bird nests may affect birds negatively or positively, and provide some guidelines and resources that may help researchers make decisions about when and how to study the nesting ecology of Indian birds.

Nesting biology studies

Some basic aspects of nesting biology have been described for a majority of the Indian bird species (Ali & Ripley 1983), but there is much to learn, particularly in relation to variation within and across species, and across different habitats and regions. Many aspects of bird reproductive ecology are similar across closely-related species (phylogenetically conserved) and have been described in the ornithological literature. For example, all woodpecker species around the world excavate cavity nests and all lapwings nest on the ground (del Hoyo et al. 1992), so observations that merely provide additional site or photographic records or descriptions of such woodpecker or lapwing nests may not add significantly to existing knowledge. On the other hand, studies that yield information on what kinds of trees a woodpecker species uses to nest in, say, urban parks *versus* forests, or on lapwings nesting on rooftops of buildings, may add interesting new knowledge and improve our understanding of how species adapt to different habitats.

In contrast to phylogenetically conserved traits, other aspects such as clutch size and incubation period may be highly variable across closely related species (Barve & Mason 2015). Moreover, while there are some well-known macroecological patterns in avian reproductive biology (such as the increase in clutch size with latitude, across bird species; Jetz et al. 2008), there are other aspects such as, variation in relation to elevation (Boyce et al. 2015), which are less well documented. Additional documentation and studies on these aspects will help build our corpus of knowledge on Indian birds and improve our understanding of the ecological correlates of breeding patterns.

Aspects of the reproductive biology of individual birds (e.g., nest placement, clutch size, and reproductive success) may be influenced by a variety of proximate mechanisms such as, social system (Barve et al. 2019), population density (Dhondt et al. 1992), food availability (Aranzamendi et al. 2019), predator density (Fontaine & Martin 2006), body condition (Crossin et al. 2017), habitat alteration, such as due to logging (Srinivasan et al. 2015), environmental fluctuations (Pinaud & Weimerskirch 2002), and environmental pollution (Marzluff 2001). Research on the breeding biology of birds has provided empirical evidence for many ecological and evolutionary theories and may also illuminate how bird life history attributes relate to their vulnerability to extinction and their conservation needs (Birkhead et al. 2014; Xiao et al. 2017). Nest monitoring studies have been instrumental in revealing important insights in natural selection (Grant & Grant 2019), intra- and inter-specific ecological interactions (Samplonius & Both 2019), population ecology (Clutton-Brock & Sheldon 2010), social behaviour (Koenig et al. 2016), and conservation actions (Rane & Datta 2015). However, despite its significance for ecology, evolutionary biology, and conservation science, the nesting ecology of many birds, especially tropical forest species, is poorly known (Xiao et al. 2017). For Indian birds, gaps in knowledge vary from no information on the nesting ecology of some species (e.g., Marsh Babbler *Pellorneum palustre,* Black-headed Shrike-Babbler *Pteruthius rufiventer,* and Ward's Trogon *Harpactes wardi*), to a dearth of information on the spatial and temporal variation in nest placement, clutch size, phenology, provisioning of nest inmates, and fledging success for many widespread species (Padmanabhan & Yom-Tov 2000). Lastly, the effects of environmental and ecological factors such as habitat degradation, predator density, or nest site availability, on the reproductive ecology of most species remain virtually unknown.

Effects of nest studies on birds: need for care, caution, and ethical guidelines

While there are significant opportunities to study the nesting biology of birds, there are also concerns on how observations may impinge on the birds themselves. It is therefore important that concerns for the welfare of birds, and the best practices that address these concerns, are kept in the forefront as one embarks on bird nesting studies. In an early review, Götmark (1992) highlighted a number of potential effects of observer-related disturbance on birds including increased exposure to predation and extreme temperatures, effects on nest-site selection and breeding density, and altered behaviour of parents and young. Götmark (1992) particularly highlighted negative effects on nesting birds due to increase in nest predation. This prompted many observers and researchers to take care to minimise disturbance and harm to nesting birds by using appropriate field methods and less intrusive methods. Since Götmark's 1992 paper, there have been numerous studies on the nesting ecology of birds, including many that specifically compared the nesting success of birds under close, or regular, observation with that of nests that were not similarly observed. However, a recent review of this literature, analysing data from 18 experimental studies involving 25 bird species from six avian orders, came to a contrasting conclusion (Ibáñez-Álamo et al. 2012). Ibáñez-Álamo et al. (2012) found that researcher activities did not generally affect the incidence of nest predation and, surprisingly, nest survival of passerines increased weakly with researcher activities. They also found significant positive effects of researcher activity on nest survival for species breeding on coastal areas and for species

nesting on the ground. While their patterns were inconsistent among avian orders and are based on a limited set of species, they highlight that careful observation (carried out using proper protocols) has the potential to increase our knowledge of nesting ecology without harming the birds being observed.

New technology is also increasingly being deployed to study birds at nests through photography or videography (Franzreb & Hanula 1995; Boom & Fuller 2003; Margalida et al. 2006; Robinson et al. 2015), such as by using remote cameras mounted near nests, specially designed video cameras, unmanned aerial vehicles (drones), and remote-operated vehicles (rovers). It is known that disruptive and intrusive nest photography or videography by unscrupulous observers can harm birds and should be strictly avoided (Podduwage 2016; Dattatri & Sreenivasan 2016). However, cameras, drones, and rovers deployed with proper care, to minimise disturbance to birds, can be valuable assets in bird research (e.g., Palkar 2016; Mori et al. 2017). The use of such technology in bird studies is relatively new to India. Species such as the White-bellied Sea-eagle *Haliaeetus leucogaster* (Bhau Katdare, *verbally*, dated 15 December 2013), Brown Fish Owl *Ketupa zeylonensis* (Vyas et al. 2013), White-rumped Vulture *Gyps benghalensis,* Indian Vulture *G. indicus* (Prakash et al. 2012; Pande et al. 2015), Indian Pitta *Pitta brachyura* (Solanki et al. 2018), Indian Grey Hornbill *Ocyceros birostris* (Gadikar 2017; Kasambe 2020), and Malabar Pied Hornbill *Anthracoceros coronatus* (Mandar Sawant, *verbally*, dated 15 December 2013) are some notable examples. So far, closed-circuit television (CCTV) cameras, web cameras with television or computer monitors, digital single-lens reflex (DSLR) cameras, and infra-red cameras with motion sensors have been used in these studies.

The breeding biology of White-bellied Sea-eagles was studied using CCTV units in 2000 (Bhau Katdare, *verbally*, dated 15 December 2013). Since then, CCTV technology has also been used to study Oriental Dwarf Kingfisher *Ceyx erithaca* nests (Palkar et al. 2009). Vyas et al. (2013) used infra-red video camera traps to reveal the nesting behaviour of the nocturnal Brown Fish Owl. Similar studies have been done for the Indian Grey Hornbill (Gadikar 2017, Kasambe 2020) and the Indian Pitta (Solanki et al. 2018).

There is little information, or experimental studies, on how cameras affect nesting birds, particularly for tropical and forest bird species. For a small set of temperate bird species in North America, Richardson et al. (2009) reviewed studies and concluded that on average, the use of camera equipment may reduce nest predation rates, but the differences they observed varied according to region, study duration, and vegetation type, and were not always significant. They cautioned that researchers using camera surveillance to monitor nests must be aware that the equipment may affect rates of predation and possibly bias data collected on predator identity. Similarly, Ibáñez-Álamo et al. (2012) suggested that nest predators may be more sensitive to the human observer-related disturbance, implying the need for caution in interpreting studies of predation at nests as well as the need for research on effects of observer-disturbance on nest predators. Recent research on the use of drones and rovers to study nesting birds such as gulls, ducks, waders, and penguins has highlighted that such technology can potentially be deployed in ways that cause less disturbance to nesting birds than direct observations that involve handling birds or imply greater proximity of human observers to nests (Sardà-Palomera et al. 2012; Le Maho et al. 2014; Vas et al. 2015). As research on this aspect is still nascent and the effects of the use of such technology on a majority of bird species, particularly forest birds, remains unknown, it is better to take a precautionary approach and maintain high standards of care, ethics, and sensitivity while deploying these methods to study nesting birds.

Questions to ask before one begins a nesting study

Given the above context and the need for studies of nesting biology as well as the need for care in how such studies are conducted, we would like to suggest a set of questions that one could answer prior to launching such studies. These questions are not meant to be comprehensive, nor do they address all possible issues that may arise in the context of studies of any particular species. The researchers or observers should ideally adopt a practice of critical and continuous self-questioning and sensitivity to understand and address the various issues related to their study species. The questions we provide here are more in the nature of broad guidelines for observers to help identify relevant information and adopt best practices in preparation for studying birds at their nests.

Questions

1. Have I made a comprehensive review of the available literature on the species to assess what additional contributions my research will add to existing information?

Although limited in comparison to the information available for European or North American birds, there is much information that can be found on many Indian bird species. An essential starting point in any research is a survey of the available literature on the species or question. Ali & Ripley (1983) is, to this day, the most comprehensive resource on Indian ornithology and may be a 'go-to' resource for most species. This publication comprehensively collates data from various important sources such as Hume (1873, 1874, 1875), and Baker (1895, 1896), and the series on nidification of Indian birds by Lamba (e.g., Lamba 1963). Most academic papers published on Indian birds, over the last thirty years, are also available in online repositories and can be searched using appropriate keywords on academic literature search engines like Google Scholar (**http://scholar.google.com**), or the Searchable Ornithological Research Archive, SORA (**https://sora.unm.edu/**). A comprehensive bibliography of scientific literature on Indian avifauna can also be found at **http://www.southasiaornith.in/** (Pittie 2019). Less than 10% of Indian bird species are endemic to the country (Jathar & Rahmani 2007); species more widely distributed may have been studied in other range countries. Therefore, it is also important to refer to more global databases such as the *Handbook to the Birds of the World* Series (del Hoyo et al. 1992), Ebird.org (Sullivan et al. 2014), AviBase (Lepage et al. 2014), the *IUCN Red List* (IUCN 2017), and other sources for information, including regions outside India where the species may have been already studied. Gaps in knowledge about a species, and the justification for its study, should be decided only after completing a thorough literature review. A good literature review on the species of interest may highlight that your observations are significant as they represent a breeding record for the species in a new region, habitat, or elevation. It may reveal an unknown nest placement type, or nest

type for the species, or highlight behavioural differences such as the presence of non-parent "helpers" at the nest. In many cases, literature reviews reveal that some observations are not novel. Undertaking such studies may not be worthwhile, particularly if they are associated with some level of disturbance to birds. Focussing your observations on the novelty of your finding may also streamline your research methods and the effort involved in data collection.

However, the novelty of an observation or the validity of a particular academic question may not be the only criterion to decide on whether a nest observation study should be undertaken. Long-term nest monitoring is increasingly critical for biodiversity conservation, and to identify trends, changes, and threats that may be affecting the breeding of a species. For example, long-term studies are being carried out on five hornbill species in Arunachal Pradesh, India, since 1997, led by one of us (AD). While these species had already been studied in Thailand, and at least one species in southern India earlier (Kannan & James 1997; Poonswad et al. 2005), nothing was known of their breeding biology from north-eastern India. Studies involving nest observations were carried out to document hornbill breeding biology in Arunachal Pradesh (Datta 2001; Datta & Rawat 2004). One could argue that the incremental knowledge, or the small differences one sees between sites or regions, does not warrant more studies, but there is a need for, and value in, studies of the same species in different sites or across its range as they may reveal interesting differences that yield new ecological insights. They also provide a more comprehensive knowledge of the biology of a species across its range: for instance, we know from these studies that the breeding season of hornbills is different across these three regions, possibly due to differences in climate and phenology (fruit availability). Additionally, long-term studies are important for conservation: determining changing threats to species status in specific areas, and trends in breeding activity or timing in relation to ecological variables such as food availability and climate. For example, the peak ripe fruit availability in north-eastern India occurs in the middle of the breeding season, while in Thailand it peaks after chicks fledge. Two sites in Thailand have had arguably the longest-running hornbill projects in Asia, studying the breeding of several sympatric hornbill species (Poonswad et al. 2005). These long-term studies in Thailand and India have yielded insights into the interspecific competition for nest sites between hornbill species, nest turnover and re-use/longevity of nest trees, variation in timing of breeding, nesting success, and duration. Long-term monitoring has shown the shortage of nest sites and resulted in repair of limiting nest cavities along with nest box provisioning (Poonswad et al. 2005; Datta et al. unpubl. data). Pioneering efforts in Thailand on hornbill research and conservation with the help of communities outside Protected Areas have now been replicated in India in the Western Ghats (Bachan et al. 2011), north-east India (Datta et al. 2012; Rane & Datta 2015), Malaysia (Yeap 2019), and the Philippines (Alabado et al. 2009).

Another example of research involving hornbills is the study of Indian Grey Hornbills by an amateur ornithologist in Indore city for 12 years. It has revealing unusual breeding sites (Gadikar 2017), and changes in their breeding pattern and timing thanks to the long-term observations of nests (A. Gadikar, unpubl. data). For the last two to three years, it has been noted that the Indian Grey Hornbill is initiating nesting 15 days earlier than in the past (A. Gadikar, unpubl. data). In north-eastern India, the median nest entry date of Great and Wreathed Hornbills was 29 days earlier than what was recorded in the previous 16 years (A. Datta, unpubl. data). A third example is of a study of nesting colonies of the Finn's Weaver (*Ploceus megarhynchus*), over a period of 21 years, which helped in monitoring the population decline at a landscape level, as well suggesting a revision of the IUCN status of the species from Vulnerable to Critically Endangered or Endangered (Bhargava 2017).

2. What do I want to study and how generalizable are my results given my sample size (number of nests being observed)?

Given the vulnerability of nesting individuals, studying nesting biology requires understanding the trade-offs between any new information a study may generate and the disturbance it may cause for the birds in question. For example, when nothing is known about the reproductive ecology of a species, careful and continuous observation and monitoring of a single nest may provide valuable new information. However, for species whose basic biology is well known, information on an additional one, or a few nests, may not be of sufficient scientific rigour to add new or useful knowledge, while carrying the risk of such a study being intrusive and potentially deleterious for the birds. Similarly, if the motive is to study the effect of an ecological mechanism, a robust sample size is required to reach ecological conclusions with adequate statistical support and significance. Take for instance a familiar species, the Baya Weaver *Ploceus philippinus*, for which basic aspects of nesting and breeding have been described by multiple earlier observers (Ali 1931; Ambedkar 1964; Crook 1964; Davis 1971). Nevertheless, many ecological and behavioural aspects of their breeding—for instance, the influence of nest height, location, or orientation of nest-openings on reproductive success—remained unknown or inconclusive. To answer such questions, Quader (2003, 2006) studied a sample of 1,445 nests of the Baya Weaver using both observations and experimental manipulations (sample size of nests for specific comparisons and hypotheses testing ranged from 9 to 864 nests). Such careful studies with adequate sample size, appropriate methods, and experimental manipulations may be necessary to answer behavioural-ecological and evolutionary questions, but on occasion even these may be insufficient, as Quader (2006) observed:

> "...Behavioural ecologists and evolutionary biologists are often hesitant to carry out extreme manipulations. Nevertheless, such manipulations may be necessary to reveal certain natural and sexual selection pressures that would otherwise be hidden from scrutiny. If manipulating nest traits is impossible, large sample sizes and careful analyses will often be required (but might still not be sufficient) to detect selection on nest attributes."

Having clear objectives when studying breeding birds is critical to ensure that the nesting individuals are not disturbed unnecessarily. Hence, observers should avoid 'fishing expeditions' where data is collected first, and then the study is designed around it to be described in a manuscript form. To make your research comparable to others, and reliable enough to add new knowledge to the literature on the species, it is important to have clear *a priori* objectives, assess what sample sizes you plan to

get or are feasible, and use appropriate methods of observation, analysis, and inference.

In certain cases, nest monitoring is done for species conservation, to ensure nesting individuals are not hunted or that their nest sites are not disturbed, to ensure nesting success. It is especially important in such scenarios that researchers or field staff are trained to cause minimal disturbance during their monitoring visits.

3. Am I using the right research methods and those that are least intrusive for the purpose?

It is important to choose a research methodology that is (1) repeatable, (2) reliable and appropriate for the question or objective of the study, (3) provides the most information while minimizing the impact on the nesting birds, and (4) ensures the welfare and safety of birds and researchers. An exhaustive review of the best methods to study birds, particularly at their nests, is beyond the scope of this manuscript. Besides textbooks and handbooks on bird biology (e.g., Lovette & Fitzpatrick 2016), a number of handbooks of techniques and research methods are available, which can be consulted as starting points (Ralph et al. 1993; Sutherland et al. 2004; Ferguson-Lees et al. 2011).

Several 'public' protocols have been published to involve citizen scientists in amassing information on the nesting ecology of common birds across huge spatial scales, such as over the whole of North America (Neighborhood NestWatch: https://nationalzoo.si.edu/migratory-birds/neighborhood-nestwatch). Online certification programs have also been established to provide guidelines for nest monitoring (The Cornell Lab of Ornithology's NestWatch, https://nestwatch.org/). Such programs strongly discourage unethical practices such as clearing of vegetation around the nest, repeated visits to the nest, and playing bird song near the nest as such methods alter the natural behaviour of birds and thus render the research unreliable and not comparable to other studies.

4. What is the legal status of the bird species, and do I have the required permits and experience to carry out the observations?

Another basic question to ask is whether there are specific permits and expertise (or training) that you require before you embark on a study of nesting birds. Within India, if your observations are being carried out in any wildlife reserve (Wildlife Sanctuary, National Park, Tiger Reserve, or Community or Conservation Reserves), according to the Wild Life (Protection) Act, 1972, you will need to apply for and secure relevant entry and research permits from the Chief Wildlife Warden of the State where the reserve is located. If the study site is located in a Reserved Forest or Protected Forest, permits from the respective wing of the Forest Department will need to be obtained. Note that it is not just permits from government authorities that may be required. If your work is on private or community land, you will need to inform and secure permits from the corresponding owners or community institutions (such as Village Council or Panchayat) before working in the area.

The legal status and conservation status of the study species also matters. This includes the international status under the *IUCN Red List of Threatened Species* (www.iucnredlist.org), and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (henceforth, CITES; www.cites.org), and the national status under the Wild Life (Protection) Act, 1972. Birdwatchers and researchers should adopt procedures of due care when studying species that are Critically Endangered, Endangered, Vulnerable, or Near Threatened (Rahmani 2012). CITES regulates trade in live birds and specimens (including parts of a bird such as feathers, eggs, or bones) with prohibitions or strict regulations for species listed in Appendices I to III.

Under India's Wild Life (Protection) Act, 1972, endangered species are listed in Schedule I, while other protected species or taxonomic groups are listed in Schedules II to IV (WLPA 1972). Under this Act, the capture or handling of birds, even for the purpose of research, is categorised under 'hunting', which is generally prohibited under Section 9. However, under Section 12, birds can be 'hunted' (meaning captured/collected) under a special permit from the Chief Wildlife Warden for the purposes of education, research, or collection of specimens for recognised zoos and museums. Permission shall be granted to foreigners or non-resident Indians or institutions owned by foreigners or non-resident Indians only if the project has been sanctioned, and permission issued by the Government of India, Ministry of Environment, Forests and Climate Change (henceforth, MoEFCC), Ministry of External Affairs, Ministry of Home, and by the National Biodiversity Authority, as referred to in Section 3 of the Biological Diversity Act, 2002. In case of research that involves the capture, and handling of, or the collection of biological samples from any species listed in Schedule I, the award of approval would lie with the Director (Wildlife Preservation), Government of India (Additional Director General (Wildlife) and Director, Wildlife & Preservation, MoEFCC). In all cases, the proposal should be submitted to the Chief Wildlife Warden, and a copy to the Additional Director General (Wildlife), MoEFCC, Government of India. For studies requiring the capture and handling of bird species in Tiger Reserves, a no-objection letter is also required from the National Tiger Conservation Authority.

In the specific case of observations of birds at nests, another legal aspect applies. In India's Wildlife (Protection) Act, 1972, the definition of 'hunting' under Section 2(16-c) of the Act states that 'hunting' includes "injuring or destroying or taking any part of the body of any such animal, *or in the case of wild birds or reptiles, damaging the eggs of such birds or reptiles, or disturbing the eggs or nests of such birds or reptiles*" (emphasis ours). Damaging or disturbing the eggs or nests of birds can thus be construed as 'hunting' under the Act and therefore liable for prosecution. Because of these legal provisions, it is very important that nest observers and researchers obtain required legal permits and exert due care in how they conduct their work.

Besides the required legal permits, observers may need to gain necessary training and experience in nest and bird observations and research techniques. This is particularly important for studies that involve (a) the capture and handling of birds by mist-netting and ringing, morphometric measurements, radio-telemetry, and geo-locator tagging studies, (b) experimental protocols and manipulation such as collection of blood or regurgitates, plumage alteration, nest modification, and egg or nestling experiments. Many institutions train birdwatchers and ornithologists in best practices and standard research methodologies (e.g., observation of animals, taking blood samples, mist-netting, bird ringing) and observers who plan to use these methods should seek out appropriate training and develop their credentials and expertise.

The Bombay Natural History Society undertakes bird ringing and trapping courses (www.bnhsenvis.nic.in) under the Green Skill Development Programme of MoEFCC, Govt. of India. In most cases, besides hands-on training and practice, researchers may have to pass a test following the training and may be provided certificates upon its successful completion. When writing reports or manuscripts based on observations and studies, it is important to indicate, in appropriate places, the following details: legal permits obtained, community consent, and training experience or expertise in capture and handling or experimental protocols used in the study.

5. Does my work conform to international standards and guidelines for the ethical conduct of research?

An additional, and overarching, aspect that is very important in bird nesting biology research, is ethics. Even if an observer has chosen appropriate objectives and observation methods, secured relevant legal permits, and acquired any relevant training or experience, there may be ethical considerations that apply. For instance, an observer may choose to carry out experimental manipulation of nests or use call-playback experiments to study aspects of breeding behaviour. The repeated manipulation of nests, or call-playbacks within the territories of nesting birds may, however, negatively affect birds if they become stressed, or are forced to expend extra energy, or take time away from other activities to respond to playback (Harris & Haskell 2013; Kannan & Santharam 2015). Ethical considerations may then dictate restrictions on the use of such methods or identify limited use such as a single manipulation or playback experiment per pair per breeding season (Sen 2009; Sibley 2011).

Most bird research, and long-term studies around the world follow international standards and methods as well as institutionally-approved ethical guidelines for research. Although such guidelines may be available, studies that involve potential harm or disturbance to birds would generally require to be considered on a case-by-case basis by relevant Institutional Review Boards or Research Ethics Committees. Institutions such as the Nature Conservation Foundation (henceforth, NCF), Ashoka Trust for Research in Ecology and the Environment, Indian Institute of Science Education and Research, National Centre for Biological Science, Bombay Natural History Society (henceforth, BNHS), and others have ethics committees that screen research proposals before the work is carried out. In BNHS, the Research Subcommittee reviews all prerequisites for projects that involve conservation breeding, bird handling, and bird ringing, including aspects such as permissions, necessary compliance, and training of people involved. The institutions also sensitise and train researchers in broad aspects of research ethics, and in the specific application of ethical considerations to research that may involve animal or human subjects, experiments, or manipulations. Institutional ethics guidelines are based on the synthesis of a large and growing body of global research on the effect of scientific research on animals, researchers, and human subjects who may be involved in the work. The NCF research ethics guidelines, for instance, take a 4Rs approach to ethical research (NCF Research Ethics Committee 2015), stating that: Researchers in NCF will carry out their research on animals, plants, and habitats, with care, compassion, and concern, by adopting methods and approaches that will, to the extent possible:

- **Replace** animal subjects by other alternatives when available and appropriate (e.g., including choice of non-invasive sample collection, modelling studies, etc.).
- **Reduce** the number of animals, specimens, or research samples (e.g., using improved techniques, existing specimens or data, and optimising experimental/study design).
- **Refine** methods to minimise harm and suffering, and advance animal welfare (e.g., by modifying capture and handling techniques, methods to minimise disturbance).
- **Refuse** to carry out research that violates fundamental ethical considerations (e.g., inhumane and unethical treatment of animals, use of force on local communities).

Above all else, if adhered to closely, ethical research practices ensure that both researchers and research subjects remain unharmed and endure the least amount of stress during the research period. Thus, it is important for researchers at an institution that neither have such committees nor requires compliance with institutional ethics guidelines, or amateur ornithologists who are not associated with research institutions, to take the time to read up on research ethics and guidelines (such as those listed in Table 1) and apply them to their work. This will help ascertain, and ensure, that as far as possible their observations do not unwittingly disturb or harm their research subjects.

When observers report their research or submit manuscripts for publication, their manuscript should detail, in the Methods section, how ethical issues were considered and how the adopted methods were modified or refined to address them. Authors should include a statement about what ethical guidelines were followed, citing relevant publications or documents such as general institutional guidelines or specific internationally accepted protocols or guidelines for the kind of work undertaken. While some researchers insert a line in the Acknowledgements section of their paper, that the work was carried out with ethics approval, some journals carry a separate section, 'Ethics statement', after Acknowledgements, for authors to provide such a statement, or information on ethical aspects.

Concluding comments

Indian ornithology and bird conservation face the dual challenges of widespread habitat loss and associated population declines of many Indian bird species along with a lack of understanding of even the basic biology and life history of many of these species. Data on the breeding biology of bird species are fundamental not only for academic research in behavioural ecology or evolutionary biology, but also to understand the impacts on birds of environmental changes from the local scale (e.g., pollution, habitat alteration) to regional (e.g., habitat fragmentation), and global scales (e.g., climate change). There is a need for studying the breeding and nesting biology of birds for a better understanding of their ecology, behaviour, and conservation needs. There is also, simultaneously, a need to carry out observations in a manner that is sensitive to the welfare of the birds because breeding birds are often vulnerable to disturbances associated with human observers. This dual need is the inspiration behind this manuscript.

Observers must ensure that they are well informed and aware of any potential detrimental aspects of making observations on birds, particularly at their nests, and implement measures to

Table 1. Resources, birdwatching codes, guidelines, and research ethics

Publisher (accession date)	Title	Website URL
American Birding Association, 2012 (accessed 06 Dec 2019)	Code of Birding Ethics	https://www.aba.org/aba-code-of-birding-ethics/
BirdLife Australia (accessed 22 Apr 2020)	Ethical Birding Guidelines	http://www.birdlife.org.au/documents/POL-Ethical-Birding-Guidelines.pdf
BirdLife Photography (accessed 22 Apr 2020)	BirdLife Photography Policy for Nesting Bird Photography and the use of Call Playback to Observe and/or Photograph Native Birds - Code of Ethics	https://www.birdlifephotography.org.au/index.php/about-us/our-policies
British Trust for Ornithology, UK (accessed 06 Dec 2019)	Legislation and good practice	https://www.bto.org/sites/default/files/u15/downloads/publications/legislation_and_good_practice.pdf
British Trust for Ornithology, UK (accessed 22 Nov 2019)	Nest Record Scheme (NRS) Code of Conduct	https://www.bto.org/our-science/projects/nrs/coc
Conservation India (accessed 22 Apr 2020)	Stop! Don't Shoot Like that – A Guide to Ethical Wildlife Photography	https://www.conservationindia.org/resources/ethics
Illinois Institute of Technology, USA (accessed 22 Apr 2020)	Ethics Education Library	https://ethics.iit.edu/eelibrary/
Mindful Birding (accessed 06 Dec 2019)	The Complete List of Ethical Birding Guidelines	http://mindfulbirding.org/images/mindful/pdfs/complete.pdf
NCF Research Ethics Committee, 2015 (accessed 19 Jan 2019)	NCF Wildlife Research Ethics Guidelines (Version 1, Feb 2015). Nature Conservation Foundation, Mysore	https://www.ncf-india.org/publications/ncf-wildlife-research-ethics-guidelines
Royal Society for the Protection of Birds, UK (accessed 22 Apr 2020)	The birdwatchers code	https://www.rspb.org.uk/birds-and-wildlife/wildlife-guides/birdwatching/the-birdwatchers-code/
Sen, S.K., 2009 (accessed 06 Dec 2019)	Birdcall playback ethics and science: what do we know about it?	http://www.kolkatabirds.com/callplayback.html
Sibley, D.A., 2011 (accessed 06 Dec 2019)	The proper use of playback in birding.	http://www.sibleyguides.com/2011/04/the-proper-use-of-playback-in-birding/

avoid, or minimise, disturbance for scientific, legal, and ethical reasons. Additionally, observers must balance the potential gains in new knowledge against possible harm to birds, with adequate preparation, choice of proper research methods, and justification, before embarking on such studies. We have outlined points to consider before studying the nesting biology of birds that will ensure their well-being, and likely increase the scope, reliability, and utility of the study. We fully understand that researchers will have to weigh trade-offs over the five questions outlined in this manuscript, when designing their own study. Such trade-offs and considerations are common in virtually all research, so it is important to be aware of them and to give them due attention during your research, from planning to execution to publication. We hope this article serves as a springboard for further discussion and the evolution of best practice protocols and guidelines for the study of Indian birds. We also hope that it enables further research and observations on birds that builds our knowledge of Indian birds in a manner that places the welfare of the birds at the forefront.

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Guidelines for conducting research on the nesting biology of Indian birds

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This document presents suggested guidelines for studying the nesting biology of Indian birds for professional or amateur bird researchers. They have been modified from, and adapted for, the Indian context from similar resources developed by the British Trust for Ornithology (BTO 2019) and the Cornell Lab of Ornithology (CLO 2019). This first version of these guidelines is being published here accompanying the Barve et al. (2020) paper in *Indian BIRDS* to solicit comments from birdwatchers, researchers, conservationists, and others interested in bird research and conservation. We especially encourage scientists that study raptors, wetland birds, ground-nesting birds and colony-nesting birds to contribute specifics related to those taxa. Please send your comments to the Editor, *Indian BIRDS* (editor.indianbirds@gmail.com) within three months from the publication of this version.

Guiding principle

Minimizing disturbance caused by the observer at nests is paramount. The observer should always put the safety and welfare of the bird(s) before the success of their research. Utmost care should be taken to make sure that research methods do not jeopardize the nest(s) or the birds in any way.

Recording the location of the nest

You may become aware of a nest when you see a bird with nesting material in its beak, or one carrying food in its beak (birds rarely fly around with food in their beaks except when they are feeding nestlings. An obvious exception is raptors, or birds that are engaged in courtship feeding, or carrying food items that are too large to swallow whole). If you are going to search for the nest, it is highly recommended to first try and learn the nesting habits of the species, to get a sense of where you should look for the nest. Always be very careful when walking through habitats like dense undergrowth or grassland so that you do not disturb, step upon, or dislodge nests of other birds.

When you find a nest that you want to follow, make detailed notes on the location of the nest. Nests, especially open cups, are notoriously good at hiding in plain sight and re-finding a nest can be surprisingly and annoyingly tricky. If possible, take a photograph or video of the nest's location. Taking a GPS location and flagging the nest with an artificial marker, e.g., a tape on a tree or branch, at a considerable distance away from the nest, can act as a reminder for you. Natural markers, such as a heap of stones pointing in the direction, may also be used. Draw a diagram detailing the tree or plant species the nest is in, the height of the nest, and approximate location on the tree. Good notes on nest location also include details of nest such as branch orientation, any specific marks (e.g., the nest is *c.*2 m from the main stem, on a dead branch pointing north, *c.*6 m off the ground in a *Mangifera indica* tree). In essence, the notes on the location of the nest should be detailed enough to enable you, or anyone on your research team, to easily find the nest without walking around the nest location for too long.

Number of nest visits

The number of nest visits you need to make depends on the goal of the study but this should be planned well to minimize impact (Götmark 1992; Mayer-Cross et al. 1997). Some studies may require frequent visits at a certain nesting stage of interest; e.g., to ascertain fledging dates accurately. If the aim is to simply monitor the nest to follow its progress, then it should not be visited more than once every three to four days to minimize impact. Before visiting a nest, make sure you are well prepared with all the necessary equipment (e.g., data sheet, clipboard, research equipment, cameras, stopwatch, etc.), and that it is easily accessible so as to spend as little time as possible once you reach the nest site, or while you set up your observation post. Elevated platforms work well for nests high up in the trees. Concealing yourself in a portable hide, or wearing the same, or similar clothing during every visit, minimizes the stress you cause the nesting birds. Hole-nesting birds tend to have lower predation rates than open nesting species. Yet, observations at the nest, regardless of whether the species is hole-nesting or not, should be done from at least 12–15 m away.

Appropriate time for visiting nests

Optimal times for visiting nests vary according to the bird species in question. As far as possible, do not visit nests early in the morning. Many passerines lay eggs in the morning and may be disturbed while doing so. Most birds lay one egg every day so if you are interested in knowing the final clutch size of the nest, plan your next nest visit depending on how many eggs are in the nest already and how many eggs are typically laid

by the species according to literature. For example, if you visit the nest on 11 March and see one egg in it, and the species is known to lay five eggs on average, going to the nest on 17 March and finding five eggs will give you the first egg's laying date, and that of the last one (in this case 15 March), and the size of the final clutch. Parents also tend to feed nestlings more actively in the morning since they have not been fed since the previous evening. It is also not advisable to check nests late in the evening when parents may be returning to the nest to brood the eggs, or the nestlings, for the night. It is a good practice to visit nests in the late morning or afternoon. Avoid nest visits for open-cup nesting species on rainy days or when it is cold. Parents will often sit over nestlings to keep them dry and warm but will flee on your arrival, leaving the nestlings exposed to the elements, or even to predation. Food, especially insects, may be harder to find on cold/rainy days, and so nestlings may be more stressed during inclement weather. For most birds, including ground-nesting birds, open-cup nesters, cavity nesters, and water birds nesting in colonies, observe the nest(s) in question from far to make sure that a parent is not sitting on the nest, and only approach it when the bird leaves on its own. Approaching the nest when the nestlings are close to fledging, but not fully ready to fledge, can cause 'forced-fledging', or young leaving the nest prematurely, which significantly increases the risk of predation for the young. When young are close to fledging, observe from a safe distance to avoid premature fledging behaviour. Ground-nesting birds are particularly vulnerable to predators, and hence nest visits should be made when predators are least active.

Avoiding revealing the location of the nest to predators

Avoid leaving tracks that can lead predators to the nest (Ibáñez-Álamo et al. 2012). Avoid trampling the vegetation around the nest, which may make the nest more visible. Nest predators are everywhere. These include, avian predators such as members of the crow family (Corvidae), coucals (*Centropus* spp.), and raptors (Accipitridae) to name a few; mammalian predators such as mongooses (Herpestidae), civets (Viverridae), cats (Felidae), rodents such as rats (Muridae) and squirrels (Sciuridae), and several species of snakes. Especially if visiting the nest often, avoid visiting it at the same time on each visit; do a 'walk-by' of the nest rather than approaching it in a straight line and retreating on the same path. Choose a track that generally disturbs the vegetation as little as possible. In general, keep nest visits to a minimum and do your best to ascertain that you are not being watched by a predator. When visiting nests that are in water or on an island, do not create a path of rocks, or a bridge that leads to the nest, as it may make it easy for a land predator to get to the nest(s).

Measurements of nests and nestlings

Any physical measurements of nests (size, or nesting materials used) should be done after the nestlings have fledged from the nest. Removing nests for study requires appropriate permits. Many birds, especially tropical species, nest multiple times in a year, and many species (e.g., drongos, Dicruridae) reuse old nests, or nesting materials, so care should be taken when studying nests such that they are not harmed in any way. Hole-nesting birds show very high fidelity to nest sites, especially where they have successfully fledged young in previous nesting attempts, and will reuse these sites multiple times. The dimensions of the nest cavity entrance that is selected or made by the bird reduces the chances of a predator entering the cavity, or a larger, more dominant species, usurping the cavity. When studying hole nests, the entrance of the cavity should not be modified in any way. A flex-metal tape or bamboo strip can be used to measure the inner dimensions of a nest. Nestlings should not be handled without the appropriate permits. Care should be taken to use appropriate methods and obtain training in their correct use. Although the number of times the nestlings are handled or measured will depend on the research question, getting the research methods approved by a research ethics committee can help ensure that maximal information can be gathered with the least amount of handling. Many birds, especially large, group-living or colony nesting birds are known to mob predators. Mobbing may involve alarm calls and defecation, but may also include flying close to and/or pecking predators. Researchers visiting the nests of such birds may elicit a similar behavioral response and should wear proper clothing (hard hats or helmets) to protect themselves from injury.

What to do when you find an abandoned nest

If you find a nest with eggs or nestlings and no parents, verify that the nest is in fact abandoned. Birds may leave eggs abandoned for several minutes or even hours, especially before incubation. Nestlings may also be left for several hours by their parents. Birds may be hesitant to return to the nest for several minutes or hours after your visit. Frequent visits to the nest may also cause nest desertion, especially among birds breeding for the first time.

1. Do not assume the nest is abandoned just because you don't see the parent birds in the vicinity for several minutes or even hours.

2. Do not touch the eggs or nestlings. This is most likely illegal without the right permits.

3. Do not try to raise nestlings on your own. Other than it being illegal, wild birds are very difficult to take care of. Bring them to a local wildlife rehabilitator who may have the right permit to temporarily house them and the knowledge of caring for them.

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Taxonomic updates to the checklists of birds of India, and the South Asian region—2020

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Introduction

The first definitive checklist of the birds of India (Praveen et al. 2016), now in its twelfth version (Praveen et al. 2020a), and later that of the Indian Subcontinent, now in its eighth version (Praveen et al. 2020b), and South Asia (Praveen et al. 2020c), were all drawn from a master database built upon a putative list of birds of the South Asian region (Praveen et al. 2019a). All these checklists, and their online updates, periodically incorporating additions to the region's avifauna (available at www.indianbirds.in), initially followed the taxonomy from Howard & Moore World Checklist 4th edition (henceforth, H&M4) (Dickinson & Remsen 2013; Dickinson & Christidis 2014). In 2018 (Praveen et al. 2018), we took a decision to deviate from H&M4 as there were no subsequent updates to H&M4 and, meanwhile, an increasing number of studies on avian phylogeny and systematics had major ramifications for classification of, particularly, Indian birds. We adopted a consensus-based approach of incorporating taxonomic changes that were unanimously accepted by the other three extant global authorities, namely, Handbook of Birds of the World & BirdLife International (2019; henceforth, HBW/BLI), eBird/Clements (Clements et al. 2019), and the International Ornithological Congress (henceforth, IOC; Gill et al. 2020).

To begin with, we evaluated consensus among the three taxonomies, only with regard to species and generic limits as a conservative proposition, even as retaining the H&M4 as the base for higher order taxonomy and species sequence. Now that the global authorities are fast converging on higher order avian taxonomy, which seems to have largely stabilized for at least the major groups of bird taxa, we believe that our taxonomic policy also needs to be reviewed to keep our Checklist taxonomically updated. We, therefore, intend to revise our approach in this update by scaling up the consensus model to all taxonomic categories and adopting a contemporary taxonomic sequence as base, thereby marking our severance from H&M4 complete.

Rationale

In the last two taxonomic updates to our Checklist (Praveen *et al.* 2018; Praveen *et al.* 2019b), we followed the limited consensus-model, based upon the data in HBW/BLI, eBird/Clements, and IOC. However, since 2016, periodic updates of *HBW/BLI* have been rather muted, with many taxonomic revisions that concern South Asian avifauna not being included in their annual updates. This, effectively, curtailed our choice of global reference works to just eBird/Clements and IOC, prompting us to review the taxonomic policy of our *India Checklist*, in 2020 and beyond. In September 2019 we circulated a concept note, on alternative taxonomic approaches, along with our internal assessment of costs and benefits of each proposition, to stakeholders of major global taxonomies, inviting feedback. There was a general support to our first proposal, to restrict the consensus criteria to only eBird/Clements and IOC, and also to expand the scope to all the taxonomic categories, from orders down to species limits. Considering the close alignment between these two taxonomies, we feel the time is now ripe to take this significant step towards updating and mainstreaming the taxonomy of South Asian avifauna. This decision was further simplified when *HBW Alive* moved to Cornell in January 2020, integrating with other Cornell products, to launch 'Birds of the World' (www.birdsoftheworld.org) based on eBird/Clements taxonomy. We understand that BLI, the taxonomic basis for IUCN conservation assessment, will continue to be an independent entity.

Arguably, the most straightforward option for *Indian BIRDS* is to adopt a single global taxonomy in its entirety. In fact, that's precisely what we set out to do in 2016 when we embraced H&M4. But H&M4's failure to deliver promised updates, and a general paucity of agreement among other global authorities, forced us to turn to a consensus-based approach. Among the other global lists, HBW/BLI was clearly out of our favour due to the general lag in recent times, in keeping up with global taxonomic revisions. The single factor that prevents our adopting the IOC taxonomy as our backbone (though British Ornithologists' Union already did) is their lack of institutional backing, though IOC, with eminent systematists on its advisory panel, is reportedly working on a mechanism to sustain its future updates. While this is not an issue with eBird/Clements list, a product of the Cornell Laboratory of Ornithology, their taxonomy lacks species authorship information, which is one of the main fields in the India Checklist. In addition, the subspecies list of our regional birds in eBird/Clements diverges most from other taxonomies, and would hamper our progress towards a regional subspecies checklist. However, we have an assurance from eBird/Clements that the author field will be fixed soon and issues of discordance with regard to subspecies listing will also be looked into. In the meantime, both, IOC, and eBird/Clements have expressed willingness to work closely with each other in bridging the gaps in the treatment of their taxonomies. We will continue with our new consensus approach until a convergence, as much as it is possible, is achieved between these two global authorities, or any further change in the global scenario.

Even with this reduced scope for maintaining consensus, delays in adopting certain taxonomic decisions by either of the taxonomy could create discordance in our list. Hence, in a marked deviation from our earlier position, we will also independently review taxonomic literature, to ascertain cases of taxonomic updates that warrant adoption by virtue of strong evidence in terms of phylogeny or other signals.

Methodology

With this background and rationale regarding our taxonomic policy, we list below the taxonomic rules that will henceforth guide the India Checklist updates.

1. We shall adopt changes at any of the supra-specific taxonomic ranks (Genus, Family, or Order), only if there is consensus between both the global taxonomies (eBird/Clements and IOC) in their treatment of higher-order taxa.
2. We shall adopt changes in species limits (either splits or lumps) if both the taxonomies (eBird/Clements and IOC) accept the splits/lumps consistently for all the subspecies of the parent taxon occurring in South Asia. Any additional extralimital split/lump within the clade, by any taxonomy, does not invalidate the decision, so long as the consistency of species groups, within the regional taxa, is maintained by both the lists. However, if we are made aware of a review by either eBird/Clements or IOC that may impact our consensus model, we maintain status quo (e.g. Bean Goose).
3. In parallel, we shall also adopt changes at any of the taxonomic ranks (Species, Genus, Family, Order) if our independent review of emerging taxonomic literature (before the updates to global lists are affected) warrants, with strong and unambiguous supporting data. However, these changes may be retracted if both the taxonomies (eBird/Clements and IOC) do not reach consensus in their subsequent updates.
4. We shall move away from the H&M4 taxonomic sequence (sort order) and use eBird/Clements sort order in its place.
5. We shall continue to use the species authority as specified in H&M4 by mapping the subspecies to the species, wherever applicable. We shall also follow the ICZN rules of priority for picking the right authority from subspecies groups that are promoted as species in consultation with experts in taxonomic nomenclature.
6. We shall continue to follow the same framework of rules and guidelines governing English names as elucidated in Praveen *et al.* (2016).
7. We shall also continue to review the English names of birds, independent of taxonomic revisions, based on global prevalence and feedback from user community from the region.
8. We mark a species as endemic to a biogeographical region when the species is wholly restricted to the biogeographical region (as defined in Praveen et al. 2019b), even if it has small isolated populations outside the endemic area so long as the latter do not constitute distinct subspecies.

Results & discussion

With this taxonomic update, the total number of species reliably recorded from the South Asian region [comprising Afghanistan, Pakistan, India, Nepal, Bhutan, Bangladesh, Sri Lanka, the Maldives, and the Chagos Archipelago] now stands at 1428, representing 26 orders, 116 families, and 503 genera. [See Table 1 for an annotated list of taxonomic updates and nomenclatural changes to the checklists of the birds of India, and the South Asian region]. Revised species limits yield an addition of 14 species endemic to the Indian Subcontinent region, with six to India.

This update includes three family-level splits (Cettiidae from Scotocercidae, Paradoxornithidae from Sylviidae, and Tichodromidae from Sittidae), one family-level shift (Indian Spotted Creeper *Salpornis spilonotus*, from Sittidae to Certhiidae), 46 species with changes to genera, 22 species splits including seven extralimital cases, two species lumps, and two cases with changes to specific epithets. For 11 species, the species splits did not result in a change of specific name or English name. In addition, this update involves 45 changes to English names, including three cases that are taxonomy dependent.

While the total number of bird species from the Indian Subcontinent (as limited by the political boundaries of India, Pakistan, Nepal, Bhutan, Bangladesh, Sri Lanka, and the Maldives) is 1408, that from within the geographical boundaries of India (as recognized by the Government of India) is 1332. Taxonomically, the Indian avifauna covers 26 orders, 113 families, and 485 genera. Of these, 78 species of birds are endemic to India, constituting about 6% of the country's bird diversity. [The updated checklists of South Asia (v. 6.0 including old serial numbers), the Indian Subcontinent (v. 4.0), and India (v. 4.0), are available for download at http://www.indianbirds.in.]

Conclusion

We believe that our 'consensus model' of this taxonomic update is driven, primarily, by pragmatism and utility value. At this juncture we do not wish to subscribe to any single authority, preferring to wait for further developments in global efforts towards aligning the world lists. We are closely watching all global alignments, and regional adoptions, in this space and contemplating the best long-term strategy for South Asian ornithology.

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Table 1. Annotated list of taxonomic updates and nomenclatural changes to the checklist of the birds of India and the South Asian region.

S. No.	English name / Group name	Scientific name / Higher order taxonomic name	Notes on taxonomy / nomenclature	Type of change
1	Knob-billed Duck	*Sarkidiornis melanotos* (Pennant, 1769)	English name changed from Comb Duck.	English name-Independent change
2	Eastern Spot-billed Duck	*Anas zonorhyncha* Swinhoe, 1866	English name changed from Chinese Spot-billed Duck.	English name-Independent change
3	Hill Partridge	*Arborophila torqueola* (Valenciennes, 1825)	English name changed with the dropping of qualifier 'Common'.	English name-Independent change
4	Chestnut-breasted Partridge	*Arborophila mandellii* Hume, 1874	English name changed with the dropping of qualifier 'Hill'.	English name-Independent change
5	Rufous-throated Partridge	*Arborophila rufogularis* (Blyth, 1849)	English name changed with the dropping of qualifier 'Hill'.	English name-Independent change
6	White-cheeked Partridge	*Arborophila atrogularis* (Blyth, 1849)	English name changed with the dropping of qualifier 'Hill'.	English name-Independent change
7	Yellow-footed Green Pigeon	*Treron phoenicopterus* (Latham, 1790)	English name changed from Yellow-legged Green Pigeon.	English name-Independent change
8	Green Imperial Pigeon	*Ducula aenea* (Linnaeus, 1766)	See below.	No change
9	Nicobar Imperial Pigeon	*Ducula nicobarica* (von Pelzeln, 1865)	Treated by H&M4 as conspecific with *Ducula aenea*. Given species rank here, following consensus between eBird/Clements and IOC.	Species split
10	Horsfield's Bronze Cuckoo	*Chrysococcyx basalis* (Horsfield, 1821)	Assigned by H&M4 to the genus *Chalcites*. Placed in *Chrysococcyx* here, following consensus between eBird/Clements and IOC.	Genus change
11	Plume-toed Swiftlet	*Collocalia affinis* Beavan, 1867	Treated by H&M4 as conspecific with *Collocalia esculenta* EL. Given species rank here, following consensus between eBird/Clements and IOC.	Species split (EL)
12	Pacific Swift	*Apus pacificus* (Latham, 1801)	See below.	No change
13	Blyth's Swift	*Apus leuconyx* (Blyth, 1845)	Treated by H&M4 as conspecific with *Apus pacificus*. Given species rank here, following consensus between eBird/Clements and IOC.	Species split
14	Grey-headed Swamphen	*Porphyrio poliocephalus* (Latham, 1801)	Treated by H&M4 as conspecific with *Porphyrio porphyrio* EL. Given species rank here, following consensus between eBird/Clements and IOC.	Species split (EL)
15	Eurasian Dotterel	*Charadrius morinellus* Linnaeus, 1758	Assigned by H&M4 to the genus *Eudromias*. Placed in *Charadrius* here, following consensus between eBird/Clements and IOC.	Genus change
16	Small Pratincole	*Glareola lactea* Temminck, 1820	English name changed from Little Pratincole.	English name-Independent change
17	Swinhoe's Storm Petrel	*Oceanodroma monorhis* (Swinhoe, 1867)	Assigned by H&M4 to the genus *Hydrobates*. Placed in *Oceanodroma* here, following consensus between eBird/Clements and IOC.	Genus change
18	Band-rumped Storm Petrel	*Oceanodroma castro* (Harcourt, 1851)	Assigned by H&M4 to the genus *Hydrobates*. Placed in *Oceanodroma* here, following consensus between eBird/Clements and IOC.	Genus change
19	Matsudaira's Storm Petrel	*Oceanodroma matsudairae* N. Kuroda, Sr., 1922	Assigned by H&M4 to the genus *Hydrobates*. Placed in *Oceanodroma* here, following consensus between eBird/Clements and IOC.	Genus change
20	Great Bittern	*Botaurus stellaris* (Linnaeus, 1758)	English name changed from Eurasian Bittern.	English name-Independent change
21	Red-naped Ibis	*Pseudibis papillosa* (Temminck, 1824)	English name changed from Indian Black Ibis.	English name-Independent change
22	Mountain Hawk Eagle	*Nisaetus nipalensis* Hodgson, 1836	See below.	No change
23	Legge's Hawk Eagle	*Nisaetus kelaarti* (Legge, 1878)	Treated by H&M4 as conspecific with *Nisaetus nipalensis*. Given species rank here, following consensus between eBird/Clements and IOC.	Species split
24	Lesser Fish Eagle	*Haliaeetus humilis* (S. Müller & Schlegel, 1841)	Assigned by H&M4 to the genus *Icthyophaga*. Placed in *Haliaeetus* here, following consensus between eBird/Clements and IOC.	Genus change
25	Grey-headed Fish Eagle	*Haliaeetus ichthyaetus* (Horsfield, 1821)	Assigned by H&M4 to the genus *Icthyophaga*. Placed in *Haliaeetus* here, following consensus between eBird/Clements and IOC.	Genus change
26	Forest Owlet	*Athene blewitti* (Hume, 1873)	Assigned by H&M4 to the genus *Heteroglaux*. Placed in *Athene* here, following consensus between eBird/Clements and IOC.	Genus change

Table 1. Annotated list of taxonomic updates and nomenclatural changes to the checklist of the birds of India and the South Asian region.

S. No.	English name / Group name	Scientific name / Higher order taxonomic name	Notes on taxonomy / nomenclature	Type of change
27	Indian Roller	*Coracias benghalensis* (Linnaeus, 1758)	See below.	No change
28	Indochinese Roller	*Coracias affinis* Horsfield, 1840	Treated by H&M4 as conspecific with *Coracias benghalensis*. Given species rank here, following consensus between eBird/Clements and IOC.	Species split
29	Brown-capped Pygmy Woodpecker	*Yungipicus nanus* (Vigors, 1832)	Assigned by H&M4 (as a subspecies of *moluccensis* EL) to the genus *Dendrocopos*. Placed in *Yungipicus* here, following consensus between eBird/Clements and IOC.	Genus change
30	Grey-capped Pygmy Woodpecker	*Yungipicus canicapillus* (Blyth, 1845)	Assigned by H&M4 to the genus *Dendrocopos*. Placed in *Yungipicus* here, following consensus between eBird/Clements and IOC.	Genus change
31	Yellow-fronted Woodpecker	*Leiopicus mahrattensis* (Latham, 1801)	English name changed with the dropping of qualifier 'Pied'.	English name-Independent change
32	Brown-fronted Woodpecker	*Dendrocoptes auriceps* (Vigors, 1831)	Assigned by H&M4 to the genus *Dendrocopos*. Placed in *Dendrocoptes* here, following consensus between eBird/Clements and IOC. English name changed with the dropping of qualifier 'Pied'.	Genus change & English name-Independent change
33	Fulvous-breasted Woodpecker	*Dendrocopos macei* (Vieillot, 1818)	English name changed with the dropping of qualifier 'Pied'.	English name-Independent change
34	Spot-breasted Woodpecker	*Dendrocopos analis* (Bonaparte, 1850)	English name changed with the dropping of qualifier 'Pied'.	English name-Independent change
35	Stripe-breasted Woodpecker	*Dendrocopos atratus* (Blyth, 1849)	English name changed with the dropping of qualifier 'Pied'.	English name-Independent change
36	Darjeeling Woodpecker	*Dendrocopos darjellensis* (Blyth, 1845)	English name changed with the dropping of qualifier 'Pied'.	English name-Independent change
37	White-winged Woodpecker	*Dendrocopos leucopterus* (Salvadori, 1871)	English name changed with the dropping of qualifier 'Pied'.	English name-Independent change
38	Himalayan Woodpecker	*Dendrocopos himalayensis* (Jardine & Selby, 1831)	English name changed with the dropping of qualifier 'Pied'.	English name-Independent change
39	Sind Woodpecker	*Dendrocopos assimilis* (Blyth, 1849)	English name changed with the dropping of qualifier 'Pied'.	English name-Independent change
40	Crimson-breasted Woodpecker	*Dryobates cathpharius* (Blyth, 1843)	Assigned by H&M4 to the genus *Dendrocopos*. Placed in *Dryobates* here, following consensus between eBird/Clements and IOC. English name changed with the dropping of qualifier 'Pied'.	Genus change & English name-Independent change
41	Greater Flameback	*Chrysocolaptes guttacristatus* (Tickell, 1833)	English name changed with the replacement of substantive name 'Golden-backed Woodpecker'.	English name-Independent change
42	Crimson-backed Flameback	*Chrysocolaptes stricklandi* (E. L. Layard, 1854)	English name changed with the replacement of substantive name 'Golden-backed Woodpecker'.	English name-Independent change
43	Himalayan Flameback	*Dinopium shorii* (Vigors, 1831)	English name changed with the replacement of substantive name 'Golden-backed Woodpecker'.	English name-Independent change
44	Common Flameback	*Dinopium javanense* (Ljungh, 1797)	English name changed with the replacement of substantive name 'Golden-backed Woodpecker'.	English name-Independent change
45	Black-rumped Flameback	*Dinopium benghalense* (Linnaeus, 1758)	English name changed with the replacement of substantive name 'Golden-backed Woodpecker'. Also see below.	English name-Independent change
46	Red-backed Flameback	*Dinopium psarodes* (A. A. H. Lichtenstein, 1793)	Treated by H&M4 as conspecific with *Dinopium benghalense*. Given species rank here, following consensus between eBird/Clements and IOC.	Species split
47	Lesser Yellownape	*Picus chlorolophus* Vieillot, 1818	English name changed with the replacement of substantive name 'Yellow-naped Woodpecker'.	English name-Independent change
48	Greater Yellownape	*Chrysophlegma flavinucha* (Gould, 1834)	English name changed with the replacement of substantive name 'Yellow-naped Woodpecker'.	English name-Independent change
49	White-bellied Minivet	*Pericrocotus erythropygius* (Jerdon, 1840)	Treated by H&M4 as conspecific with *Pericrocotus albifrons* EL. Given species rank here, following consensus between eBird/Clements and IOC.	Species split (EL)
50	Orange Minivet	*Pericrocotus flammeus* (J. R. Forster, 1781)	English name changed from Scarlet Minivet as the latter is assigned to *Pericrocotus speciosus* subsequent to its split. Also see below.	English name-Taxonomy dependent
51	Scarlet Minivet	*Pericrocotus speciosus* (Latham, 1790)	Treated by H&M4 as conspecific with *Pericrocotus flammeus*. Given species rank here, following consensus between eBird/Clements and IOC.	Species split

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S. No.	English name / Group name	Scientific name / Higher order taxonomic name	Notes on taxonomy / nomenclature	Type of change
52	Large Cuckooshrike	*Coracina macei* (R. Lesson, 1831)	Treated by H&M4 as conspecific with *Coracina javensis* EL. Given species rank here, following consensus between eBird/Clements and IOC.	Species split (EL)
53	White-breasted Woodswallow	*Artamus leucorynchus* (Linnaeus, 1771)	Species epithet leucoryn, as adopted in H&M4, is emended to *leucorynchus* here, following consensus between eBird/Clements and IOC.	Species epithet change
54	Spot-breasted Fantail	*Rhipidura albogularis* (Lesson, 1832)	English name changed from White-spotted Fantail.	English name-Independent change
55	Black-rumped Magpie	*Pica bottanensis* Delessert, 1840	Treated by H&M4 as conspecific with *Pica pica*. Given species rank here, following consensus between eBird/Clements and IOC.	Species split
56	Eurasian Magpie	*Pica pica* (Linnaeus, 1758)	See above.	No change
57	Carrion Crow	*Corvus corone* Linnaeus, 1758	See below.	No change
58	Hooded Crow	*Corvus cornix* Linnaeus, 1758	Treated by H&M4 as conspecific with *Corvus corone*. Given species rank here, following consensus between eBird/Clements and IOC.	Species split
59	Yellow-bellied Fantail	*Chelidorhynx hypoxanthus* (Blyth, 1843)	English name changed from Yellow-bellied Fairy-fantail.	English name-Independent change
60	Great [Turkestan] Tit	*Parus major* Linnaeus, 1758	Treated by H&M4 as a distinct species Turkestan Tit *Parus bokharensis*. Lumped with *Parus major* here, following consensus between eBird/Clements and IOC.	Species lump (EL)
61	Himalayan Black-lored Tit	*Machlolophus xanthogenys* (Vigors, 1831)	English name changed with the addition of qualifier 'Himalayan'. Also see below.	English name-Taxonomy dependent
62	Indian Black-lored Tit	*Machlolophus aplonotus* (Blyth, 1847)	Treated by H&M4 as conspecific with *Machlolophus xanthogenys*. Given species rank here, following consensus between eBird/Clements and IOC.	Species split
63	Rusty-rumped Warbler	*Helopsaltes certhiola* (Pallas, 1811)	Assigned by H&M4 to the genus *Locustella*. Placed in *Helopsaltes* here, following the recommendation of Alström et al. (2018).	Genus change
64	Bristled Grassbird	*Schoenicola striatus* (Jerdon, 1841)	Assigned by H&M4 to the genus *Chaetornis*. Placed in Schoenicola here, following the recommendation of Alström et al. (2018).	Genus change
65	Hill Swallow	*Hirundo domicola* Jerdon, 1841	Treated by H&M4 as conspecific with *Hirundo tahitica*. Given species rank here, following consensus between eBird/Clements and IOC.	Species split
66	Pacific Swallow	*Hirundo tahitica* J. F. Gmelin, 1789	See above.	No change
67	Black-crested Bulbul	*Rubigula flaviventris* (Tickell, 1833)	Assigned by H&M4 to the genus *Pycnonotus*. Placed in *Rubigula* here, following the recommendations of Shakya & Sheldon (2017), and Fuchs et al. (2018).	Genus change
68	Flame-throated Bulbul	*Rubigula gularis* (Gould, 1836)	Assigned by H&M4 to the genus *Pycnonotus*. Placed in *Rubigula* here, following the recommendations of Shakya & Sheldon (2017), and Fuchs et al. (2018).	Genus change
69	Black-capped Bulbul	*Rubigula melanictera* (J. F. Gmelin, 1789)	Assigned by H&M4 to the genus *Pycnonotus*. Placed in *Rubigula* here, following the recommendations of Shakya & Sheldon (2017), and Fuchs et al. (2018).	Genus change
70	Cachar Bulbul	*Iole cacharensis* (Deignan, 1948)	Treated by H&M4 as conspecific with *Iole viridescens* EL. Given species rank here, following consensus between eBird/Clements and IOC.	Species split (EL)
71	Hume's Warbler	*Phylloscopus humei* (W. E. Brooks, 1878)	English name changed with the dropping of qualifier 'Leaf'.	English name-Independent change
72	Mountain Chiffchaff	*Phylloscopus sindianus* W. E. Brooks, 1880	English name changed from Kashmir Chiffchaff.	English name-Independent change
73	Green Warbler	*Phylloscopus nitidus* Blyth, 1843	English name changed with the dropping of qualifier 'Leaf'.	English name-Independent change
74	Greenish Warbler	*Phylloscopus trochiloides* (Sundevall, 1837)	English name changed with the dropping of qualifier 'Leaf'.	English name-Independent change
75	Two-barred Warbler	*Phylloscopus plumbeitarsus* Swinhoe, 1861	English name changed with the dropping of qualifier 'Leaf'.	English name-Independent change
76	Yellow-vented Warbler	*Phylloscopus cantator* (Tickell, 1833)	English name changed with the dropping of qualifier 'Leaf'.	English name-Independent change

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77	Western Crowned Warbler	*Phylloscopus occipitalis* (Blyth, 1845)	English name changed with the dropping of qualifier 'Leaf'.	English name-Independent change
78	Grey-hooded Warbler	*Phylloscopus xanthoschistos* (J. E. & G. R. Gray, 1847)	English name changed with the dropping of qualifier 'Leaf'.	English name-Independent change
79	Streaked Scrub Warbler	Scotocercidae	See below.	No change
80	Cettiid warblers	Cettiidae	Treated by H&M4 as part of the family Scotocercidae. Separated here as a distinct family (with members other than *Scotocerca inquieta*), following the recommendation of Alström et al. (2011).	Family split
81	Pale-footed Bush Warbler	*Urosphena pallidipes (Blanford, 1872)*	Assigned by H&M4 to the genus *Hemitesia*. Placed in *Urosphena* here, following the recommendation of Alström et al. (2011), and consensus between eBird/Clements and IOC.	Genus change
82	Sylviid warblers	Sylviidae	See below.	No change
83	Parrotbills, Fulvettas, & Myzornis	Paradoxornithidae	Treated by H&M4 as part of the family Sylviidae. Separated here as a distinct family (with members other than *Sylvia* warblers) following the recommendation of Cai et al. (2019).	Family split
84	Brown-throated Fulvetta	*Fulvetta ludlowi* Kinnear, 1935	English name changed from Ludlow's Fulvetta.	English name-Independent change
85	Indian White-eye	*Zosterops palpebrosus* (Temminck, 1824)	English name of regional taxa changed from Oriental White-eye, subsequent to taxonomic revision of *Zosterops palpebrosus* complex and following consensus between eBird/Clements and IOC.	English name-Taxonomy dependent
86	Buff-breasted Babbler	*Pellorneum tickelli* Blyth, 1859	Assigned by H&M4 to the genus *Trichastoma*. Placed in *Pellorneum* here, following consensus between eBird/Clements and IOC.	Genus change
87	Streaked Wren Babbler	*Gypsophila brevicaudata* (Blyth, 1855)	Assigned by H&M4 to the genus *Turdinus*. Placed in *Gypsophila* here, following the recommendation of Cai et al. (2019).	Genus change
88	Brown-cheeked Fulvetta	*Alcippe poioicephala* (Jerdon, 1841)	English name changed from Quaker Tit Babbler.	English name-Independent change
89	Nepal Fulvetta	*Alcippe nipalensis* (Hodgson, 1837)	English name changed from Nepal Tit Babbler.	English name-Independent change
90	Spiny Babbler	*Turdoides nipalensis* (Hodgson, 1836)	Assigned by H&M4 to the genus *Acanthoptila*. Placed in *Turdoides* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019), and consensus between eBird/Clements and IOC.	Genus change
91	Jungle Babbler	*Argya striata* (Dumont, 1823)	Assigned by H&M4 to the genus *Turdoides*. Placed in *Argya* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019).	Genus change
92	Orange-billed Babbler	*Argya rufescens* (Blyth, 1847)	Assigned by H&M4 to the genus *Turdoides*. Placed in *Argya* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019).	Genus change
93	Yellow-billed Babbler	*Argya affinis* (Jerdon, 1845)	Assigned by H&M4 to the genus *Turdoides*. Placed in *Argya* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019).	Genus change
94	Afghan Babbler	*Argya huttoni* (Blyth, 1847)	Treated by H&M4 as conspecific with *Argya caudata*. Given species rank here, following consensus between eBird/Clements and IOC.	Species split
95	Common Babbler	*Argya caudata* (Dumont, 1823)	See above.	No change
96	Slender-billed Babbler	*Argya longirostris* (F. Moore, 1854)	Assigned by H&M4 to the genus *Chatarrhaea*. Placed in *Argya* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019).	Genus change
97	Ashy-headed Laughingthrush	*Argya cinereifrons* (Blyth, 1851)	Assigned by H&M4 to the genus *Garrulax*. Placed in *Argya* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019).	Genus change
98	Greater Necklaced Laughingthrush	*Pterorhinus pectoralis* (Gould, 1836)	Assigned by H&M4 to the genus *Garrulax*. Placed in *Pterorhinus* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019).	Genus change

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99	White-throated Laughingthrush	*Pterorhinus albogularis* (Gould, 1836)	Assigned by H&M4 to the genus *Garrulax*. Placed in *Pterorhinus* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019).	Genus change
100	Rufous-necked Laughingthrush	*Pterorhinus ruficollis* (Jardine & Selby, 1838)	Assigned by H&M4 to the genus *Garrulax*. Placed in *Pterorhinus* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019).	Genus change
101	Chestnut-backed Laughingthrush	*Pterorhinus nuchalis* (Godwin-Austen, 1876)	Assigned by H&M4 to the genus *Garrulax*. Placed in *Pterorhinus* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019).	Genus change
102	Yellow-throated Laughingthrush	*Pterorhinus galbanus* (Godwin-Austen, 1874)	Assigned by H&M4 to the genus *Garrulax*. Placed in *Pterorhinus* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019).	Genus change
103	Wayanad Laughingthrush	*Pterorhinus delesserti* (Jerdon, 1839)	Assigned by H&M4 to the genus *Garrulax*. Placed in *Pterorhinus* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019).	Genus change
104	Rufous-vented Laughingthrush	*Pterorhinus gularis* (McClelland, 1840)	Assigned by H&M4 to the genus *Garrulax*. Placed in *Pterorhinus* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019).	Genus change
105	Grey-sided Laughingthrush	*Pterorhinus caerulatus* (Hodgson, 1836)	Assigned by H&M4 to the genus *Garrulax*. Placed in *Pterorhinus* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019).	Genus change
106	White-browed Laughingthrush	*Pterorhinus sannio* (Swinhoe, 1867)	Assigned by H&M4 to the genus *Garrulax*. Placed in *Pterorhinus* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019).	Genus change
107	Mount Victoria Babax	*Pterorhinus woodi* (Finn, 1902)	Treated by H&M4 as conspecific with *Garrulax lanceolatus* EL. Given species rank here, following consensus between eBird/Clements and IOC, and placed in the genus *Pterorhinus*, following the recommendations of Cibois et al. (2018), and Cai et al. (2019).	Species split (EL) & Genus change
108	Moustached Laughingthrush	*Ianthocincla cineracea* (Godwin-Austen, 1874)	Assigned by H&M4 to the genus *Garrulax*. Placed in *Ianthocincla* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019), and consensus between eBird/Clements and IOC.	Genus change
109	Rufous-chinned Laughingthrush	*Ianthocincla rufogularis* Gould, 1835	Assigned by H&M4 to the genus *Garrulax*. Placed in *Ianthocincla* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019), and consensus between eBird/Clements and IOC.	Genus change
110	Spotted Laughingthrush	*Ianthocincla ocellata* (Vigors, 1831)	Assigned by H&M4 to the genus *Garrulax*. Placed in *Ianthocincla* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019), and consensus between eBird/Clements and IOC.	Genus change
111	Hoary-throated Barwing	*Actinodura nipalensis* (Hodgson, 1836)	Assigned by H&M4 to the genus *Sibia*. Placed in *Actinodura* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019), and consensus between eBird/Clements and IOC.	Genus change
112	Streak-throated Barwing	*Actinodura waldeni* Godwin-Austen, 1874	Assigned by H&M4 to the genus *Sibia*. Placed in *Actinodura* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019), and consensus between eBird/Clements and IOC.	Genus change
113	Blue-winged Minla	*Actinodura cyanouroptera* (Hodgson, 1837)	Assigned by H&M4 to the genus *Sibia*. Placed in *Actinodura* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019), and consensus between eBird/Clements and IOC.	Genus change
114	Chestnut-tailed Minla	*Actinodura strigula* (Hodgson, 1837)	Assigned by H&M4 to the genus *Chrysominla*. Placed in *Actinodura* here, following the recommendations of Cibois et al. (2018), and Cai et al. (2019), and consensus between eBird/Clements and IOC.	Genus change
115	Wallcreeper	Tichodromidae	Treated by H&M4 as part of Sittidae. Separated here as a distinct monotypic family following consensus between eBird/Clements and IOC.	Family split
116	Nuthatches	Sittidae	See above, and below.	No change
117	Indian Spotted Creeper	Certhiidae	Treated by H&M4 as part of Sittidae. Placed in Certhiidae, following consensus between eBird/Clements and IOC.	Family change
118	Daurian Starling	*Agropsar sturninus* (Pallas, 1776)	English name changed from Purple-backed Starling.	English name-Independent change

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119	Chestnut-tailed Starling	*Sturnia malabarica* (J. F. Gmelin, 1789)	See below.	No change
120	Malabar Starling	*Sturnia blythii* (Jerdon, 1845)	Treated by H&M4 as conspecific with *Sturnia malabarica*. Given species rank here, following consensus between eBird/Clements and IOC.	Species split
121	Scaly Thrush	*Zoothera dauma* (Latham, 1790)	See below.	No change
122	Nilgiri Thrush	*Zoothera neilgherriensis* (Blyth, 1847)	Treated by H&M4 as conspecific with *Zoothera dauma*. Given species rank here, following consensus between eBird/Clements and IOC.	Species split
123	Sri Lanka Thrush	*Zoothera imbricata* E. L. Layard, 1854	Treated by H&M4 as conspecific with *Zoothera dauma*. Given species rank here, following consensus between eBird/Clements and IOC.	Species split
124	Indian Robin	*Copsychus fulicatus* (Linnaeus, 1766)	Assigned by H&M4 to the genus *Saxicoloides*. Placed in *Copsychus* here, following consensus between eBird/Clements and IOC.	Genus change
125	White-rumped Shama	*Copsychus malabaricus* (Scopoli, 1786)	Assigned by H&M4 to the genus *Kittacincla*. Placed in *Copsychus* here, following consensus between eBird/Clements and IOC.	Genus change
126	Andaman Shama	*Copsychus albiventris* (Blyth, 1858)	Assigned by H&M4 (as a subspecies of *malabaricus*) to the genus *Kittacincla*. Placed in *Copsychus* here, following consensus between eBird/Clements and IOC.	Genus change
127	Himalayan Shortwing	*Brachypteryx cruralis* (Blyth, 1843)	Treated by H&M4 as conspecific with *Brachypteryx montana* EL. Given species rank here, following consensus between eBird/Clements and IOC.	Species split (EL)
128	White-bellied Redstart	*Luscinia phaenicuroides* (J. E. & G. R. Gray, 1847)	English name changed from Hodgson's Blue Robin.	English name-Independent change
129	Slaty-backed Flycatcher	*Ficedula erithacus* (Jerdon & Blyth, 1861)	Assigned species epithet of *sordida*, by H&M4 but *erithacus* adopted here, following the recommendation of David & Bruce (2016), and consensus between eBird/Clements and IOC.	Species epithet change
130	Plain Flowerpecker	*Dicaeum minullum* Swinhoe, 1870	See below.	No change
131	Andaman Flowerpecker	*Dicaeum virescens* Hume, 1873	Treated by H&M4 as conspecific with *Dicaeum minullum*. Given species rank here, following consensus between eBird/Clements and IOC.	Species split
132	Dead Sea [Afghan] Sparrow	*Passer moabiticus* Tristram, 1864	Treated by H&M4 as a distinct species, Afghan Sparrow *Passer yatii*. Lumped with *Passer moabiticus* here, following consensus between eBird/Clements and IOC.	Species lump (EL)

Legend: EL=Extralimital.

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Status of *Sylvia* warblers in Himachal Pradesh, India

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Himachal Pradesh is rich in avifauna due to the presence of a diverse range of habitats. At one end of the state, there is the dry, cold desert of Trans-Himalaya in Spiti, and at other end, there is Pong Lake, which is rich in avian diversity and density. There is significant altitude variation in the state, which provides suitable habitats for various birds. Six species of *Sylvia* warblers are found in India: Common Whitethroat *Sylvia communis*, Lesser Whitethroat *S. curruca*, Asian Desert Warbler *S. nana*, Eastern Orphean Warbler *S. crassirostris*, Barred Warbler *S. nisoria*, and Garden Warbler *S. borin* (Grimmett et al. 1998; Praveen et al. 2018). The last two species are considered vagrants to India (Grimmett et al. 2011; Rasmussen & Anderton 2012). All of these *Sylvia* warblers, except the two vagrants, have been recorded in Himachal Pradesh.

The Lesser Whitethroat comprises several subspecies: Hume's Whitethroat *S. c. althaea*, Desert Whitethroat or Small Whitethroat *S. c. minula, S. c. curruca, S. c. blythi, S. c. halimodendri*, and *S. c. margelanica*, all of which, except the nominate, occur or are presumed to occur in South Asia (Aymí & Gargallo 2019). Rasmussen & Anderton (2012) considered Hume's- and Desert Whitethroat as different species as did the Clements et al. (2018) Checklist (v2018). But in the latter's recent checklist (Clements et al. 2019), Desert- and Hume's Whitethroat have been lumped back into Lesser Whitethroat, following Shirihai & Svensson (2018).

In this note we provide new records and discuss the status of the *Sylvia* warblers of Himachal Pradesh (henceforth, HP).

Asian Desert Warbler *Sylvia nana*

The Asian Desert Warbler is a winter visitor to the drier plains of Pakistan and adjacent parts of north-western India including Punjab, Haryana, Rajasthan, and Gujarat (Grimmett et al. 1998; Rasmussen & Anderton 2012). In HP's neighbouring hill state of Uttarakhand, the Asian Desert Warbler is a rare passage migrant (Sharma & Sondhi 2019). It was not reported from the Union Territory of Jammu & Kashmir (Grimmett et al. 2011) until Kumar P., (2017) photographed it at Tawi, near Jammu, on 11 October 2017. It has not been recorded in the Union Territory of Ladakh (Pfister 2004; Grimmett et al. 2011).

On 10 October 2015 at 1140 h, CA visited Nagrota Surian, a prominent birding area around Pong Lake, Kangra District. While scanning the scrub in the flats around the lake (32.039°N, 76.066°E; *c.*420 m asl), he saw a warbler on the ground. It had sandy brown upperparts, whitish underparts, and a prominent yellow iris. There was rufous on rump and tail. It was immediately identified as an Asian Desert Warbler. During the following autumn migration, CA saw two Asian Desert Warblers on 12 October 2016 at two different locations, a kilometer apart, in Nagrota Surian. One bird had a missing tail **[1]**. Both sites comprised scrubland predominated by drying plants of *Senna multiglandulosa*. At one site there were a few bushes of *Lantana camara*, and a *ziziphus* sp. On 27 October 2016, at 1120 h, CA saw one individual at one of the previous sites.

The Asian Desert Warbler has also been reported from other parts of the state. CA saw one near Kahan, along the Kumarhatti-Sarahan-Nahan Road, Sirmaur District (30.703°N, 77.200°E; *c.*1,590 m asl) on 16 October 2016, in a dry area with shrubs and a few small trees. Fellow birders were able to photograph it (Cheema 2016).

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1. Asian Desert Warbler on 12 October 2016 at Nagrota Surian.

The Asian Desert Warbler was seen on multiple occasions in the same patch of scrub at Nagrota Surian during the winter of 2017–2018. The habitat was similar to the above description. The bird was first seen and photographed on 20 October 2017 (Kumar V., 2017). Subsequently, CA saw it on 09 November 2017, 03 December 2017, and 01 February 2018 at the same place. All these records were probably of the same individual, which was, perhaps, wintering at Pong Lake.

Grimmett et al. (2011) do not record the Asian Desert Warbler on its distribution map, from HP. den Besten (2004a) recorded it twice, during its migration, at Pong Lake between 2001 and 2003. He also photographed it in September 2004 at Nagrota Surian (den Besten 2004b). Dhadwal (2011) did not mention this species from Pong Lake. The Asian Desert Warbler was also photographed at Bilaspur, Bilaspur District, on 21 October 2016 (Rajput 2016). All these records are listed in Table 1.

The 2017–2018 record of the Asian Desert Warbler, around Pong Lake, is the first wintering record of the species from HP. All other records from HPoccurred during migration; thus it seems

that it is mainly an uncommon autumn passage migrant in the state, but a few individuals might be spending winter here.

Eastern Orphean Warbler *Sylvia crassirostris*

The Eastern Orphean Warbler is a summer visitor to Baluchistan and north-western Pakistan, and winters in plains, from southern Pakistan, south-western Gujarat, almost entire Indian Peninsula, and northern Plains to about Bihar (Rasmussen & Anderton 2012). There are a few records from Uttarakhand and Punjab, the neighboring states of HP (Grimmett et al. 2011; Mohan & Sondhi 2017; Panwar 2019a).

At 0900 h on 12 December 2015, at Villa Round Park, Nahan, Sirmaur District (30.558°N, 77.303°E; *c.*900 m asl), AV heard calls of multiple *Sylvia* warblers from a small area with a mix of non-native trees. In no time, an unmistakable male Eastern Orphean Warbler showed up. The all-black crown and mask, and robust build were diagnostic. Soon, sightings of three more males followed, which kept moving around in this patch. Their calls were recorded as well (Vikrant 2015). The same number of individuals was sighted on 13 and 14 December as well, keeping mostly to the *Acacia catechu* trees. Two birds were sighted on 16 December. Subsequently, only one individual remained till 19 December, beyond which it would have left for its wintering grounds.

There is only one previous record of the Eastern Orphean Warbler from HP. On 25 October 1922 Whistler (1926) saw one individual at 335 m, in the open scrub jungle of Dhamtal, Kangra District. den Besten (2004a), and Dhadwal (2011) have not reported this species.

It seems that the species is a rare passage migrant through HP.

Common Whitethroat *Sylvia communis*

In the Indian Subcontinent, the Common Whitethroat is fairly common fall passage migrant in Pakistan and north-western India (Rasmussen & Anderton 2012). In India it is regularly seen only in Gujarat and there are only a few records from other states, including Punjab, and the Union Territories of Jammu and Kashmir, and Chandigarh, in the neighbourhood of HP (Grimmett et al. 2011; eBird 2019b; Rajiv Das *in litt*., email dated 02 October 2019). Pfister (2004) mentioned it as a rare passage migrant in Ladakh. It has not been reported from Uttarakhand (Mohan & Sondhi 2017).

As part of a bird survey with Nature Conservation Foundation, AV was birding along the bank of the Spiti River near Rangrik (32.250°N, 78.039°E; *c.*3,610 m asl), Spiti, Lahaul & Spiti District, on 14 September 2016. At 1530 h, a *Sylvia* warbler with prominent brownish upperparts, greyish crown, and white tips to the tail, was seen flitting within dense clumps of *Hippophae* sp. It was identified as a male Common Whitethroat. Further, single individuals were sighted at 1545 h and 1630 h, and a group of three birds was seen moving within a small area at 1600 h.

On 21 September 2016, CA saw a whitethroat in Nagrota Surian at 1000 h **[2]**. It was hopping on the branches of a bare tree, on a bund, which was surrounded by few low bushes, inside cultivated fields. It had brownish upperparts with distinct rufous brown borders to the greater coverts and tertials. The underparts were whitish, and it had orange-brown legs. These features pointed towards a Common Whitethroat. The bird was seen feeding in the tree, and the surrounding bushes, for an hour. CA again saw a Common Whitethroat, probably the same individual, at the same spot on the mornings of 24 and 25 September. Most of the times, the bird was seen resting in the tree. It was not seen on 30 September, thus it remained there for at least six days.

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2. Common Whitethroat on 21 September 2016 at Nagrota Surian.

On 24 September 2016, at 0900 h, CA saw a loose flock of four birds at another location of Nagrota Surian, one kilometer away from the previous location **[3]** in scrub with ample growth of *Senna multiglandulosa* and *Lantana camara*. One of these individuals had prominent grey on its head, suggesting a male. On 15 September 2017, at 0800 h, CA saw one Common Whitethroat at the same location. On 28 September 2019, CA photographed one individual (Abhinav 2019) at Sthana, Kangra District, in the outflow area of Pong Dam (31.960°N, 75.901°E; c.325 m asl). It was seen alongside the ponds near the Shah

Table 1. Records of Asian Desert Warbler from Himachal Pradesh

Sr. No.	Date	Location	Remarks	Observer/ Reference
1	2001-2003	Pong Lake, Kangra District	Two records, Photographed	den Besten 2004a
2	September 2004	Nagrota Surian, Pong Lake, Kangra District	Photographed	den Besten 2004b
3	10 October 2015	Nagrota Surian, Pong Lake, Kangra District	Photographed	CA
4	12 October 2016	Nagrota Surian, Pong Lake, Kangra District	Two individuals seen	CA
5	16 October 2016	Near Kahan, Sirmaur District	Photographed	CA, Cheema 2016
6	21 October 2016	Bilaspur, Bilaspur District	Photographed	Rajput 2016
7	27 October 2016	Nagrota Surian, Pong Lake, Kangra District	Photographed	CA
8	20 October 2017 to 01 February 2018	Nagrota Surian, Pong Lake, Kangra District	Photographed on multiple dates	CA, Kumar V., 2017

Nehar Barrage Lake, in the outflow area of Pong Dam, in a patch of *Lantana camara*, *Senna multiglandulosa*, and *ziziphus* sp., which was surrounded by ipomea sp., and tall *Saccharum* sp.

3. Common Whitethroat on 24 September 2016 at Nagrota Surian.

There is only one previous record from HP. Koelz (1937) collected a juvenile male on 01 September 1933, a few miles above Losar, in Spiti, Lahaul & Spiti District. den Besten (2004a), and Dhadwal (2011) have not mentioned this species from Pong Lake. We list these records of the Common Whitethroat from HP in Table 2.

These records from the Pong Lake are a first for lower HP, and are the first photographic records from the state. The present records also add to the scarce records of this species in India outside the drier regions of north-western India. We conclude that it is an uncommon autumn passage migrant in HP.

Lesser Whitethroat *Sylvia curruca*

The Lesser Whitethroat is a common winter visitor throughout the northern half of the Indian Subcontinent up to 1,500 m, reaching West Bengal in east; there are also few records from peninsular India (Rasmussen & Anderton 2012). Grimmett et al. (2011) show a more extensive range for it, in southern India, but less extensive in eastern India. Both works show its range reaching the south-western border of HP in northern India. Grimmett et al. (2011) show only one record from Spiti, on their distribution map. It is a winter visitor in the lower regions of Uttarakhand (Mohan & Sondhi 2017; Manoj Sharma *pers comm*., dated 30 September 2019). The distribution map in Grimmett et al. (2011) showed it as a migrant in Ladakh. We describe Hume's Whitethroat separately below, excluding its records in the details of distribution of the Lesser Whitethroat, as Hume's is the only one of its races that breeds in the Indian Subcontinent.

The Lesser Whitethroat is the most common *Sylvia* warbler in HP (Fig. 1). CA has recorded it several times during winter, in the lower regions of HP, most frequently on the flats around Pong Lake **[4]**, and in the hills up to 1,700 m. AV has recorded this birds frequently in winter, up to 1,300 m, in Sirmaur District. We have also recorded it frequently during migration. In one such sighting, CA recorded *c.*15 individuals on 28 September 2019 at Sthana, Kangra District, near the ponds around Shah Nehar Barrage Lake. It most commonly found in open areas with sparse tree cover, and tends to avoid dense forests. The records from higher altitudes, in Sirmaur, were mostly in disturbed habitats at the edges of pine forests.

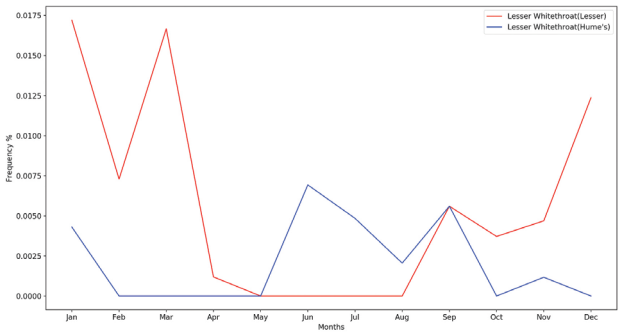

Fig. 1. Frequency of sightings of Lesser Whitethroat and Hume's Whitethroat.

Alt: C. Abhinav

4. Lesser Whitethroat on 24 September 2016 at Nagrota Surian.

Table 2. Records of Common Whitethroat from Himachal Pradesh

Sr. No.	Date	Location	Remarks	Observer/ Reference
1	01 September 1933	Near Losar, Spiti, Lahaul & Spiti District	Specimen collected	Koelz 1937
2	14 September 2016	Near Rangrik, Spiti, Lahaul & Spiti District	Sight record	AV
3	21–25 September 2016	Nagrota Surian, Pong Lake, Kangra District	Photographed	CA
4	24 September 2016	Nagrota Surian, Pong Lake, Kangra District	Four birds photographed	CA
5	15 September 2017	Nagrota Surian, Pong Lake, Kangra District	Sight record	CA
6	28 September 2019	Sthana, Kangra District	Photographed	CA

In Kangra District, Whistler (1926) found it fairly common at Indaura at the end of October 1922, and also observed it at Bera on 20 February 1921. Koelz (1937) obtained two specimens on 25 September 1933 from Dankhar, Spiti, and saw several individuals of this species at same place. Jones (1948) mentioned it as a rare winter visitor in Kalka at *c*.760 m. den Besten (2004a) recorded 17 birds around Dharamsala, Kangra District, between 250 m and 1900 m during 1997 to 2003, and 80 birds around Pong Lake between 2001 and 2003. Piyush Dogra saw one bird at Bangotu Village, near Dharamsala, Kangra District, at 2,100 m asl on 26 December 2016 (Piyush Dogra *pers comm*., dated 04 October 2019). Buner & Ranganathan (2016) ringed six individuals in January 2015 and ten in February 2016 at Pong Lake. A few more reports have been published, e.g., Saikia et al. 2008 recorded it in the high altitude Pangi Valley, Chamba District and Marshall (1884) recorded it at Chamba, Chamba District. eBird (2019c) also shows its sightings throughout the state, mostly from low altitude regions. Kumar S., (2017) recorded it twice in October 2017 at Udaipur, Lahaul & Spiti District. We are not trying to be exhaustive in its records from HP, as these above mentioned records are enough for assessment of its status in the state.

To conclude, the Lesser Whitethroat is a fairly common winter visitor and passage migrant, mainly to the lower altitude regions of HP, contrary to the distribution suggested by Grimmett et al. (2011), and Rasmussen & Anderton (2012). It can also be seen at higher altitudes (up to 2,100 m) in HP, and much higher up (including in the Trans-Himalayas) during migration.

Hume's Whitethroat *Sylvia curruca althaea*

Hume's Whitethroat is a summer visitor to the mountains of Balochistan, the Safed Koh range (Afghanistan), and the inner Himalayas from Chitral to Ladakh. Rasmussen & Anderton (2012) considered it doubtful that it bred east of Ladakh and Garhwal. Grimmett et al. (1998, 2011), and Aymí & Gargallo (2019) also mention its breeding range only till Kashmir and Ladakh. Grimmett et al. (2011) do not show any record of Hume's Whitethroat from HP, and show it as a passage migrant in western and northern India (in the sates of Punjab, Haryana, Rajasthan, Gujarat, and the western parts of Madhya Pradesh), till the boundary of HP in the north. It has not been reported from Uttarakhand (Mohan & Sondhi 2017).

There have been multiple records of Hume's Whitethroat from HP.

Sirmaur District: AV saw single birds on 12 and 23 January 2016 at Villa Round Park, Nahan, Sirmaur District. They were identified by their dark crowns, which blended seamlessly with their black eye masks. These were the only occasions when they were sighted in deep winter. On 28 September 2017, one bird was sighted at Villa Round at 0735 h. This bird also had the diagnostic dark crown concolourous with the eye mask. A third individual was observed on 02 November 2017 near Ramadhon Road (30.576°N, 77.304°E; *c*.730 m asl) at 0845 h, which lies lower in the valley, northwards of Nahan. The habitat here consisted primarily of *Acacia catechu* interspersed with *Eucalyptus* sp., and a dense understory of *Lantana camara* next to a small stream.

The districts of Lahaul & Spiti, and Kinnaur: CA saw one whitethroat near a stream at Lari, Spiti, Lahaul & Spiti District (32.083°N, 78.417°E; *c*.3,350 m asl) on 12 June 2015. It was identified as Hume's Whitethroat by its dark ear coverts, which were almost as dark as the crown, larger bill, and greyer mantle. AV observed one Hume's Whitethroat near Dumla in Spiti, Lahaul & Spiti District (32.346°N, 78.001°E; *c*.4,010 m asl) on 21 July 2016 at 0610 h near a small stream that had dense thickets of willow *Salix* sp. During another birding stint at Rangrik, on 28 August 2016, two birds were seen moving within clumps of *Hippophae* sp. On 05 June 2019, CA saw two birds at Pooh, Kinnaur (31.765°N, 78.578°E; *c*.3,060 m asl), on the rocky slope of a hill near an apple orchard. On 06 June 2019, CA counted five birds on a two-kilometer stretch of the road alongside the same hill **[5]**, with many bushes of *Rosa webbiana*, widely separated from each other. The birds were mostly seen moving from one bush to another but sometimes they also entered the orchard. CA did not see any nesting activity. On 12 August 2019, CA saw one bird feeding in thickets of *Hippophae* sp., on the western bank of the Spiti River, near Rangrik. On the other side of the river, near Rangrik there is a two-and-a-half kilometer long patch of vegetation with *Hippophae* sp., and with a few willow trees, which is fed by multiple water channels branching off from the Spiti. On 18 August 2019, CA observed a presumed pair of Hume's Whitethroat feeding near the southern-most part of this vegetation patch for ten minutes. Four more birds were seen in other parts of this patch that morning.

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5. Hume's Whitethroat on 06 June 2019 at Pooh, Kinnaur District.

Records of Hume's Whitethroat by other observers: Koelz (1933a) collected one male Hume's Whitethroat in Dankhar, Lahaul & Spiti, on 25 September 1933; one male in Chala, Kinnaur District (32.000°N, 78.608°E; *c*.3,783 m asl) on 02 October 1933 (Koelz 1933b); and one female in Chango, Kinnaur District (31.977°N, 78.595°E; *c*.3,000 m asl) on 03 October 1933 (Koelz 1933c).

Waite collected two specimens of Hume's Whitethroat in May, in the Sutlej Valley, one from Urni, and another from Kanam, Kinnaur District (Jones 1948). There is one undated sight record from Pong Lake by den Besten (2004a) without any details. Dhadwal (2011) mentioned its status from Pong Lake as 'not common winter visitor', but provided no photograph, or details of identification. Manjunath (2015), and Nitin (2015) photographed one bird on 10 June 2015, on the same hill in Pooh, Kinnaur District. Buner & Ranganathan (2016) ringed three birds at Pong Lake in January 2015. Panwar (2019b) photographed one individual at Chitkul, Kinnaur District on 06 June 2019. On 18

Table 3. Records of Hume's Whitethroat from Himachal Pradesh

Sr. No.	Date	Location	Remarks	Observer/ Reference
1	25 September 1933	Dankhar, Spiti, Lahaul & Spiti District	Specimen collected	Koelz 1933a
2	02 October 1933	Chala, Kinnaur District	Specimen collected	Koelz 1933b
3	03 October 1933	Chango, Kinnaur District	Specimen collected	Koelz 1933c
4	May	Urni and Kanam, Kinnaur District	Two specimen collected	Jones 1948
5	2001-2003	Pong Lake, Kangra District	Sight record	den Besten 2004a
6	January 2015	Pong Lake, Kangra District	Three individuals ringed	Buner & Ranganathan 2016
7	10 June 2015	Pooh, Kinnaur District	Photographed	Manjunath 2015; Nitin 2015
8	12 June 2015	Lari, Spiti, Lahaul & Spiti District	Photographed	CA
9	12 and 23 January 2016	Villa Round Park, Nahan, Sirmaur District	Sight record	AV
10	21 July 2016	Dumla, Spiti, Lahaul & Spiti District	Sight record	AV
11	28 August 2016	Rangrik, Spiti, Lahaul & Spiti District	Two individuals seen	AV
12	28 September 2017	Villa Round Park, Nahan, Sirmaur District	Sight record	AV
13	02 November 2017	Ramadhon road, Sirmaur District	Sight record	AV
14	06 June 2019	Chitkul, Kinnaur District	Photographed	Panwar 2019b
15	18 June 2019	Lingti Village, Spiti, Lahaul & Spiti District	Photographed	Kirola 2019
16	05-06 June 2019	Pooh, Kinnaur District	Five individuals seen/photographed	CA
17	12 August 2019	Rangrik, Spiti, Lahaul & Spiti District	Photographed	CA
18	18 August 2019	Rangrik, Spiti, Lahaul & Spiti District	Six individuals seen/photographed	CA

June 2019 Kirola (2019) photographed a bird at Lingti Village, Spiti. All records of Hume's Whitethroat are listed chronologically in Table 3.

Spiti is adjacent to Ladakh, where Hume's Whitethroat is common during summer, and is known to breed from May to July (Pfister 2004); and both have similar topography. Although no direct evidence of Hume's Whitethroat nesting in Spiti or adjacent areas of Kinnaur has been reported, it was observed on multiple occasions in these regions during June and July (breeding season), in suitable habitats; hence we suspect that the species is probably breeding in Spiti and in adjacent regions of Kinnaur. In the lower regions of HP it is, probably, a rare passage migrant. But sometimes it is seen during winter, e.g., the Villa Round and Pong Lake sightings in January. Similarly, in the Delhi region, Ganguli (1975) considered them to be spring passage migrants, but Vyas (2019) mentioned a few through the winter, between October and April. There is always the possibility of confusion with the Lesser Whitethroat, thus further confirmed records from the lower regions (including Pong Lake) of HP would help to ascertain its exact status during winter.

To conclude, we are reporting new records of Common Whitethroat and Eastern Orphean Warbler, which were previously recorded only once in HP, and reporting several new records and the possible wintering of the Asian Desert Warbler, which was only recorded on a few occasions earlier. We recorded Hume's Whitethroat on many occasions, mainly during summer, and are suggesting its possible breeding in HP. In addition to these, we are suggesting a correction in the distribution range of Lesser Whitethroat. The Desert Whitethroat is also expected from the state, as Grimmett et al. (2011) showed its wintering range up to the boundary of HP with Punjab, and it might be migrating through HP. As *Sylvia* warblers are small, drab birds and most of them are shy and difficult to observe properly, they could easily be overlooked and, furthermore, uncommon whitethroats could be erroneously reported as Lesser Whitethroat.

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Hooded Crow *Corvus cornix* in Ladakh, India

On 08 November 2018, at 1237 h, I photographed a single Hooded Crow *Corvus cornix*, along with five to six Carrion Crows *C. corone*, at Shey Holy Pond (34.07°N, 77.63°E), Leh, Ladakh **[6]**; Daya 2018]. Its identification is straightforward, as Hooded Crows are quite different from all other crow species found in India, including the Carrion Crow.

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6. Hooded Crow at Shey Holy Pond, Leh.

Until recently, the Hooded Crow was treated as a subspecies of the Carrion Crow in 'India Checklist' (Praveen *et al.* 2016). To the best of my knowledge, there has not been any report of a Hooded Crow from the India-administered part of the Ladakh Union Territory (Pfister 2004; eBird 2020). However, it has been reported from Gilgit in the nineteenth century, as always observed, from December–February, 'mixed up with other Crows' (Biddulph 1881), or as a fairly common winter visitor in the valleys 'from the middle of November to third week of March' (Scully 1881). These records are the reason for including it in the 'India Checklist' (Praveen *et al.* 2016).

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Black-browed Reed Warbler *Acrocephalus bistrigiceps* in Sri Lanka

The Black-browed Reed Warbler *Acrocephalus bistrigiceps* is a small reed warbler (Acrocephalidae) that breeds in north-eastern China, eastern Mongolia, the Korean Peninsula, south-eastern Russia, and Japan, and winters mainly in South-east Asia (Kennerley & Pearson 2010). It is a winter visitor to the Indian Subcontinent, arriving in small numbers to eastern and north-eastern India, Bangladesh, and the Andaman Islands (Ali & Ripley 1987; Kennerley & Pearson 2010; Rasmussen & Anderton 2012; eBird 2020). The Black-browed Reed Warbler has not been recorded previously from Sri Lanka (Henry 1998; Warakagoda et al. 2012); this note describes its sighting in Bundala National Park, southern Sri Lanka.

On 03 February 2020, three birders were observing waterbirds at the Embilikala Lagoon, Bundala National Park (6.198°N, 81.201°E). This area consists of marshy vegetation, mainly tall reeds of *Typha* sp., marsh barbel *Hygrophila auriculata*, and water hyacinth *Eichhornia crassipes*. At 0625 h the dawn chorus had started and Clamorous Reed Warbler *A. stentoreus*, Blyth's Reed Warbler *A. dumetorum*, Ashy Prinia *Prinia socialis*, and Plain Prinia *P. inornata* were very vocal. Suddenly, I spotted a small warbler skulking in a patch of marsh barbel. It disappeared quickly into the bush but, at close range, I saw a dark eyebrow on it, which drew my attention. The bird was quite shy and hardly came out into the open. A few minutes later it reappeared, and we were able to photograph and observe it well.

It was a small warbler (slightly smaller than a Blyth's Reed Warbler and almost half the size of a Clamorous Reed Warbler; both species were present at the location for comparison) **[7, 8]**. It had a round head with a broad, whitish-buff supercilium extending well beyond the eye. Above it was a well-marked, broad blackish, lateral crown-stripe. The median crown-stripe was broad and buff in coloration. A dark brown, thin eye-stripe was observed up to the upper end of the ear coverts. Its lores were dark. It had a uniform greyish brown mantle and tail, warm brown rump, pale whitish throat, buff flanks and underparts. Its remiges, and the greater- and median coverts had slightly darker brown centers with pale edges (the pale edges were the same colour as the mantle). The undertail-coverts were a very pale buff, and long, extending to slightly over half the tail length). Bill was very fine and small; upper mandible dark, with pale edges, lower mandible pale. Tarsi and toes were dark greyish. Iris dark brown. During the time of observation this bird kept feeding among the vegetation. A faint rattling call was heard from it once but was unclear due to the loud dawn chorus at the time.

Moditha Kodikara Arachchi

7. Black-browed Reed Warbler at Bundala National Park.

Moditha Kodikara Arachchi

8. Black-browed Reed Warbler at Bundala National Park.

Analysing its plumage and structural details with reference to Rasmussen & Anderton (2012), we were able to confirm it as a Black-browed Reed Warbler. Further we compared it with similar species occurring in the area. Black-browed Reed Warbler can be separated from Blyth's Reed Warbler by its distinguishing head pattern, fine bill, smaller size, rounder head, warmer plumage, and different build. A well-marked Paddyfield Warbler *A. agricola* can be distinguished by its darker, warm brown crown and a comparatively less pronounced brow; especially behind the eye, which is much broader on a Black-browed Reed Warbler. The Black-browed Reed Warbler is quite different from a Clamorous Reed Warbler in size alone, where the latter is about twice larger. The latter also lacks the head pattern, has a longer bill, and different body structure. The Manchurian Reed Warbler *A. tangorum*, which is a somewhat similar species, can be differentiated by the difference in the head pattern; which has a less contrasting black brow, finer supercilium behind eye (broader behind the eye on Black-browed) and less prominent eye-stripe. It has a shorter primary projection when compared with the Black-browed, a longer tail, and bill, with relatively pale tarsi and toes. A Sedge Warbler *A. schoenobaenus* can be differentiated from this bird by the more streaked upperparts and crown, and a longer primary projection. A Moustached Warbler *A. melanopogon* can be differentiated by its streaked warm brown upperparts and dark crown, broader eye-stripe and more defined ear-coverts with a moustachial line. Also it has a very short primary projection compared to a Black-browed (Kennerley & Pearson 2010; Rasmussen & Anderton 2012).

This Black-browed Reed Warbler was sighted again, at the same location, on the next day (04 February 2020) (Pavan Gamage, *verbally*, dated 04 February 2020), but was not reported thereafter. Its occurrence here could be possible due it overshooting, its usual wintering areas in north-eastern India and moving further southwards to Sri Lanka or, passing Myanmar to the Andaman Islands, which is a regular wintering site (eBird 2020), and finally ending up in southern Sri Lanka. Being small, skulking, and favoring inaccessible habitats , this warbler may be overlooked in the region. Such sightings reflect the importance of conservation of wetlands such Bundala National Park (a RAMSAR wetland), which are the last remaining wetlands to harbour such birdlife.

After our submission, we were made aware by the Ceylon Bird Club Rarities and Records Committee of another report of Black-browed Reed Warbler a week earlier, on 25 January 2020, from the same location. It was sighted again on the next day after ours (04 February 2020) as well (Pavan Gamage, verbally, dated 04 February 2020), but was not reported thereafter.

I thank Sarath Seneviratne, Hemantha Seneviratne, and Iroshan Rupasinghe for accompanying me in the field.

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White-browed Crake *Amaurornis cinerea* from the Andaman & Nicobar Islands

On 02 December 2019, at 1600 h, during a guided bird watching tour at Sippighat wetlands (11.60°N, 92.70°E) in South Andaman Island, GS spotted a crake walking behind a Cinnamon Bittern *Ixobrychus cinnamomeus*, on the reed bed. Initially, we thought it was Baillon's Crake *Zapornia pusilla*, which is a regular winter visitor to the islands. However, upon closer examination, through a spotting scope, we noticed that the bird had a dark grey crown, greenish-yellow bill with orange base, and a blackish eye-stripe with a white supraloral, and moustachial stripes. The bird had long yellowish-green legs with elongated toes **[9,10]**. The characteristics of the bird did not resemble any crake previously documented from the Islands. Kazmierczak (2000) and Grimmett et al. (2011) had no illustration of the species, but Robson (2015) identified it as the White-browed Crake *Amaurornis cinerea*.

The bird was recorded subsequently, at the same location on 03 December 2019 at 0535 h, when we saw it actively foraging for over one hundred minutes. The bird walked on reeds, lily pads, and other aquatic vegetation in a manner reminiscent of a jacana (Jacanidae).

This is the first record of the species from the Andaman & Nicobar Islands, and the second for India. It was sighted at Maguri-Motapung Beel, Assam, on 05 March 2016 (Gogoi & Phukan 2016).

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9. White-browed Crake in Sippighat, South Andaman Is.

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10. White-browed Crake in Sippighat, South Andaman Is.

The White-browed Crake occurs mainly in Malaysia, Singapore, Philippines, Indonesia, New Guinea, and North Australia (Taylor 1996). It is presumed that the bird is expanding its range across South-east Asia (Duckworth & Hedges 2007), including Thailand, Cambodia, Vietnam, and Laos (Mundkur et al., 1995; Robson, 2000, 2004, 2011; Buckton & Safford 2004). This bird stayed in this area for three and a half months, and many visiting and local birders observed and photographed it. Sudhir Gaikwad-Inamdar last saw it on 14 March.

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Passage records of the Fire-capped Tit *Cephalopyrus flammiceps* from Devalsari, Tehri Garhwal, Uttarakhand, and an analysis of eBird records from India

The Fire-capped Tit's *Cephalopyrus flammiceps* wide global distribution begins in the west from north-eastern Afghanistan, and spreading eastwards through northern Pakistan, the Himalayas covering India, Nepal, and Bhutan, southern China, eastern Myanmar, and north-western Thailand to Laos (Rasmussen & Anderton 2012). In India, the western and central Himalayan populations of the nominate subspecies breed in the Himalayas largely between 2,000 and 3,500 m asl, with published records from Shimla, Dharamshala, and Khajjiar in Himachal Pradesh (Marshal 1884; Jones 1919a; Hingston 1921; Whistler 1928; Ali & Ripley 1973). It winters in the north-central Indian plains, with records reported from southern and northern Uttar Pradesh: Kanpur, Etawah, and Dudhwa; eastern Rajasthan: Bharatpur; Madhya Pradesh: Gwalior, and Saugar (=Sagar); Chhattisgarh: Raipur; and Maharashtra: Ahmednagar, and Nagpur (Ali & Ripley 1973; D'Abreu 1935; Javed 1992; Chandra & Singh 2004; Venkitachalam 2008; Kulkarni & Kulkarni 2018). The race, *olivaceus*, from the Eastern Himalayas is found from eastern Nepal eastwards, and winters between 300 and 2,300 m asl (Ali & Whistler 1939; Ali & Ripley 1973; Rasmussen & Anderton 2012). Ali & Ripley (1973) stated that *flammiceps* is seen on 'passage in the foothills mostly in the second half of March and early April'. There are numerous records of the species on its March–April spring passage in the areas between its wintering grounds and its summer breeding area. These records include sightings from erstwhile Jammu & Kashmir, Haryana: Ambala District (Jones 1919b), Uttarakhand: Dehradun, and Corbett (Singh 2000; Anonymous 2019), and Delhi (Vyas 2019).

Here, we report repeated sightings over four years of the Fire-capped Tit from Devalsari (30.53°N, 78.18°E; 1,725 m asl), Tehri Garhwal District, Uttarakhand. Devalsari is located in the Aglar Valley, and the Aglar River runs through this landscape. At Devalsari, a rural youth group, Devalsari Paryavaran Sanrakshan Awam Tekniki Samiti (www.devalsari.org) runs a conservation and livelihoods programme. As a result of this, numerous birdwatchers have been visiting the area, and regular biodiversity assessments for avian, Lepidopteron, and herpetological fauna have been conducted in the landscape in the last four years. KS, a resident of Moldhar village, is a local bird guide, who regularly watches birds and butterflies in the landscape.

On 18 March 2017 at 1337 h, SS and AS spotted a large flock of 12–15 Fire-capped Tits (1,504 m asl), about a kilometer before Bangseel village **[11]**. The birds were feeding on the flowers of a tree, which was provisionally identified as kakkar *Pistacia chinensis integerrima*. This tree had small reddish flowers, and its fresh leaves were a fiery red **[12, 13]**. The tits remained near the flowering tree, flitting from one branch to another, feeding on nectar, or, perhaps, the tender flower buds. The behavior of the tits was very much warbler-like, with the birds constantly flicking their wings, and often upending themselves on a branch to feed on flowers. We watched the tits for 15 min, while they continued to forage on two trees of the same species, which were next to each other.

On 17 March 2018 at 1600 h, KS, while birdwatching with visitors, spotted a solitary Fire-capped Tit near Udarsu village (1,570 m asl). It was perched on a Himalayan or banj oak *Quercus leucotrichophora*. This location was a few hundred meters, as the crow flies, from that of the 2017 sightings.

11. Fire-capped Tit, Devalsari 18 March 2017.

12. Flowers of kakkar, Devalsari, 18 Mar 2017.

13. Leaves of kakkar, Devalsari 18 March 2017.

On 16 March 2019, at 1715 h, SS, AS, RS, and VMG spotted a large flock of 20+ *flammiceps* tits once again, near Udarsu village (1,570 m asl) **[14, 15]**. The birds were perched in banj oak. We watched the birds for more than a half hour, and for the most part they sat still, without any other activity, at the same spot. We thought that they would be roosting at that location for the night. A visit by SS and AS to the same area on 30 March 2019 did not reveal any tits, and we presumed that they had left for their breeding grounds at higher altitudes.

All: Sanjay Sondhi

14. Fire-capped Tit, Devalsari, 16 March 2019.

15. Image 5 Devalsari 16 March 2019 Fire-capped Tit.

On 16 March 2020, VMG and KS, spotted a flock of 5 Fire-capped Tits at 1700 h, once again, near Udarsu, 200 m from the location in 2019, feeding on *Pistacia chinensis integerrima* flowers.

The male birds sighted in all the four years were already in breeding plumage, with bright orange-scarlet forehead and throat (Ali & Ripley 1973; Rasmussen & Anderton 2012; Grimmett *et al.* 2011). Females, with much reduced red, or the red entirely absent, were present in the flocks observed in 2017 and 2019. These four sightings of the Fire-capped Tits over closely bunched dates, 16, 17, and 18 March, over four separate years in the same locality seems to imply that the birds undertake their annual spring passage on virtually identical routes and dates.

To verify this hypothesis in the larger Himalayan context, we downloaded an eBird Data Set (eBird 2019) for records from India between 2015 and 2019. It must be noted that eBird data is as much an indicator of the extent of birdwatching in the respective states in India and the prevalence of the use of a tool such as eBird for presenting data. Yet, there are insights to be gained from the total of the 255 records of the species that exist from across India within the duration mentioned (Table 1). A review of the sightings of the Fire-capped Tit reveals that the most records are from Uttarakhand (111), followed by Himachal Pradesh (56). Including the records from erstwhile Jammu & Kashmir, there are 188 records from the Western Himalaya, and only 51 records from the Eastern. There are very few records (16 records) of the species from its wintering grounds in Central India, namely, Uttar Pradesh, Rajasthan, Maharashtra, Madhya Pradesh, and

Table 1. eBird records of Fire-capped Tit *C. flammiceps* between December 2015 and April 2019, from all states

S No	State	No of records
1	Arunachal Pradesh	22
2	Uttarakhand	111
3	Assam	5
4	Himachal Pradesh	56
5	Jammu & Kashmir	20
6	West Bengal	7
7	Sikkim	17
8	Punjab	1
9	Uttar Pradesh	1
10	Maharashtra	4
11	Madhya Pradesh	9
12	Chhattisgarh	1
13	Rajasthan	1
	Total	255

Chhattisgarh. While these limited records could be an indicator of reduced birdwatching in these states, it is also likely that the wintering population of the Fire-capped Tit is spread over a large area, reducing sightings.

Analyzing the eBird records for a month-wise distribution does not reveal any striking trends (Fig. 1), though April, when the Fire-capped Tit is on its spring passage to its breeding grounds, has the maximum number of records (42).

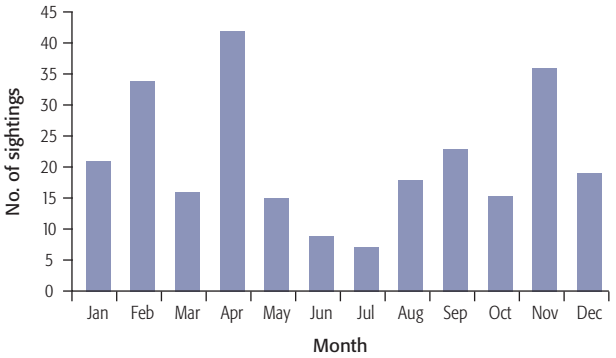

Fig. 1. Number of sightings of the Fire-capped Tit, across months (2015–2019), from eBird (2019)

Examining the eBird data for the percentage of checklists (Frequency) that report the species in the five Himalayan states during 2015–2019 (Fig. 2) shows clear peaks in spring (March–May) and autumn (August–October) indicating passage migration. Sikkim reported a high frequency (6.17 vs. 1.64, which is the next highest) and hence we have broken the Y-axis to show the passage peaks in each state clearly.

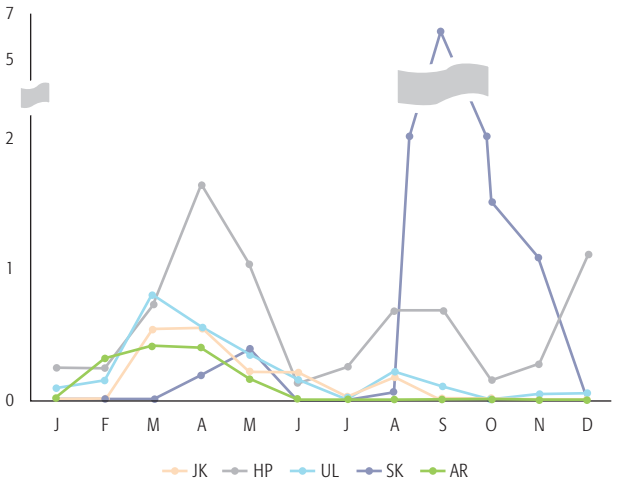

Fig. 2. Reporting frequency of Fire-capped Tit on eBird, from the five Himalayan states (erstwhile Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Sikkim, and Arunachal Pradesh), clearly showing peaks in spring and autumn.

Unlike the records from Devalsari, where the species was recorded in the same locality on the same dates over a four-year period, there are no other records of this kind in the eBird database. However, this could as well be on account of lack of data generated by an annual monitoring program. It is the intention of the authors to continue to monitor the passage of these birds in the Devalsari area. This monitoring programme is now crucial crucial given the threat of a road being constructed through the precise habitat in which the bird has been recorded over the last four years.

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The Yellow-browed Bunting *Emberiza chrysophrys* in the Andaman Islands, India

The Yellow-browed Bunting *Emberiza chrysophrys* is a medium-sized passerine (Emberizidae), just larger than a White-rumped Munia *Lonchura striata*. Its breeding range is mostly in eastern Siberia, from the upper Nizhnyaya Tunguska River, Bratsk, and Irkutsk in the west, to the Vilyuy River and Yakutsk in the east, and to the Chamar Daban Range, south of Lake Baikal, and on the Vitim River in the Stanovoy Mountains to the south. It is possible that it also breeds in north-eastern Mongolia (Kundu & Abhinav 2018). During winter migration the bird has been occasionally spotted in southern China and, also in Western Europe.

On 01 December 2019, the Andaman Avians Club had its weekly birding session around the Ograbraj wetlands, South Andaman Island, India. The route followed was along the dirt roads (*kaccha* roads) lined with casuarina *Casuarina equisetifolia* trees, off NH4, after Ograbraj Police Station, towards Ferrargunj. At 0530 h we started birding along the route and sighted many wetland species. En route, an unfamiliar birdcall was heard, which we followed. BB and RKP spotted the bird (11.66°N, 92.66°E), whereupon we approached it cautiously, and took multiple photographs **[17, 18]**. The bird hopped around in the casuarina trees for about 15 min. It then flew back into the forest. Our first birding session ended at 0900 h, when AS tentatively identified the bird as a bunting, but without pinpointing the species. Continuing birding thereafter we did not spot the bird again that morning. Gopalan (2019) recorded the bird at the same location the next day.

17. Yellow-browed Bunting showing its prominent yellow stripe at the supercilium.

Both: Arun Singh

18. Yellow-browed Bunting showing white spot at the end of the eye covert and white submustachial stripe.

The bunting, which at first sight resembles a sparrow, had a yellow supercilium, a white submoustachial stripe, and a blackish malar stripe. The prominent yellow superciliary stripe stretched from the base of the beak to the mantle, towards which it became whitish. The bird also had a white spot at the end of its brown ear coverts. The brown-blackish crown was visible. The light pink beak had a black band on the culmen, and on the tip of the lower mandible. It had vertical black stripes from the throat region till the breast and along its flanks, below the closed wings. The white of the belly extended up till the undertail-coverts. The mantle was light brown (chestnut) with black spotting. The tail is forked and is edged with black. The feet are pinkish.

With the help of Grimmett et al. (2014 digital ed.), Gopalan (2019), Singh (2019), and the Merlin Bird ID App., we could only confirm the family, while the species of the bird remained unclear. AS finally identified it as a male Yellow-browed Bunting in non-breeding plumage, after some research on Oriental Bird Images, and with the help of Polakowski & Niemc (2015), and Kundu & Abhinav (2018). The following pointers clinched the identification:

- The distinct head pattern with dark brown to blackish crest.
- The prominent yellow superciliary stripe.
- The white submoustachial stripe.
- The whitish spot at the rear end of the ear covert.

The eBird (2019) species range map illustrates that the Yellow-browed Bunting is abundant in eastern parts of China and Japan. The vagrancy of this species is observed during the migratory period, which tendency leads it to many countries in Western Europe, Japan, parts of Russia, and India. Kundu & Abhinav (2018) reported a female of the species from the Sundarbans in April 2018, which was the first record for India. This is the first record for the Andaman and Nicobar Islands, and the second for India.

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The Brown Bush-Warbler *Locustella luteoventris* in Govind Pashu Vihar Wildlife Sanctuary, Uttarakhand: An addition to the avifauna of the Western Himalayas

The Brown Bush-Warbler *Locustella luteoventris* is considered a resident in the Eastern Himalayas and the north-eastern hills, from Darjeeling, north-western Bengal, to Arunachal Pradesh, and in the southern Assam hills, occurring in grassy or scrubby hillsides at various elevations (Rasmussen & Anderton 2012; Grimmett et al. 2011). Kennerly & Pearson (2010) described it as a skulking bird that breeds in tall grass from the Eastern Himalayas, the north-eastern Indian hills to Eastern China.

In general, bush-warblers in the genera *Locustella* and *Bradypterus* are known to be cryptically coloured, and challenging to identify; except by song. Little is known, therefore, about their migration patterns between wintering and breeding ranges (Kennerley & Pearson 2010). Here we provide the first record of this species for the Western Himalayas.

In the first week of June 2010, while on a birding trail in the Tons River Valley in the Govind Pashu Vihar Wildlife Sanctuary (Uttarakhand; henceforth, GPVWL), YH had a brief sighting of a skulking bird with an insect-like call. YH was quite certain that the bird in question was not a West Himalayan Bush-Warbler *L. kasmirensis* and surmised that it was either a Long-billed Bush-Warbler *L. major* or a Brown Bush-Warbler. The bird was, however, not definitively identified, and no photographs were taken at the time. With this observation in mind, when AM and SK visited GPVWL on 16 June 2018, they heard a distinctive insect-like reeling '*tik-tik-tik…*' song, emanating from grassy slopes of the same valley (of YH's bird) at *c.*2,900 m asl; 31.12°N, 78.36°E). They identified it as that of the Brown Bush-Warbler. Altogether five birds were heard in an area that they covered on a, roughly, one-and-a-half kilometer trail. Three of these birds were observed through binoculars, and their songs and pictures recorded. Two birds were heard calling 20 m apart from one another, in cultivated wheat grass **[19b]**. A third bird was heard calling from some distance up the slope. Finally, another pair was observed in a patch of wild shrubbery, roughly one kilometer from where the first two birds were seen **[19a]**. Although there was no conclusive evidence of the birds breeding at that location, the fact that they were in pairs suggests that they might use these grassy slopes for the purpose.

Both: S. Krishnan

19 (a) The Brown Bush-Warbler in wild shrubbery. **(b)** A different individual which sang from inside a cultivated wheat grass patch.

The field characteristics of the three birds that were observed were very similar, all in adult-like plumage: uniformly brown upperparts, paler rusty-brown flanks, unbarred undertail coverts, whitish unmarked throat and belly, pale whitish eye-ring, faint rusty-brown breast patch, pink-orange legs, and a pale yellowish lower mandible. The songs of all these birds were identical. A representative spectrogram of the recording made using an Olympus LS-12 recorder is shown in Fig. 1. The time interval between two '*tiks*' was 0.10 sec (Bioacoustics Research Program 2014). In the literature, recordings of the reeling '*tik-tik-tik…*' song of the Brown Bush-Warbler are only available from Arunachal Pradesh (West Kameng), Nagaland, Myanmar, and China, from April to June (Alström 1990; Athanas 2006; Campbell 2016; Cox 2018; Cox 2019; Irving 2013; Kennerly 2019; Kirwan 2016; Kirwan 2017; Lambert 2012; Lambert 2013; Lambert 2014; Lambert 2016; Liao 2018; Munshi 2018; Nelson 2015; Robson undated; Singal 2016; eBird 2019; Xeno-Canto 2019). The altitude of these recordings ranges from 950 m to 3,000 m asl. As per our analysis, the time interval between two '*tiks*' in these songs (recordings) was in the range 0.09–0.14 sec. No discernible correlation seems to be present between this time interval and the geographical location, altitude, or season of these recordings. The frequency range of the song is 2–8 kHz in most of the recordings. The maximum frequency of these '*tiks*' rises to 14 kHz in some recordings.

From the Eastern Himalayas, westernmost records of this bird are from Sikkim and the adjoining hills of West Bengal (SACON 2004; Birdwatchers' Society of Bengal 1994; Dutta 2016; eBird 2019; Lachungpa 2014; Tempo 2014; Warren 1990). There have been no earlier reliable records of this bird from west of these hills. One record by Inskipp & Inskipp (1985), from Sukla Phanta in the western-most part of Nepal, is found in extant literature. This record was however treated unacceptable later (Inskipp & Inskipp 1991), and the Brown Bush-Warbler is, consequently, not included in the checklists of Nepal (Grimmett et. al. 2016; Department of National Parks and Wildlife Conservation and Bird Conservation Nepal., Kathmandu, Nepal. 2018). Even west of Nepal, the checklist of birds of the state of Uttarakhand lists this bird as a doubtful record (Mohan & Sondhi 2015; Sondhi, S. pers. comm. 2019). The Director: Zoological Survey of India (2010) (henceforth, ZSI) cited Osmaston (1921), and Myers & Singh (2006) when referring to the distribution of this bird. Osmaston (1921), however, did not include any mention of the Brown Bush-Warbler, and Myers & Singh (2006), referred to a doubtful 1990 record by S. Sondhi (Sondhi, S., *pers. comm*. 2019).

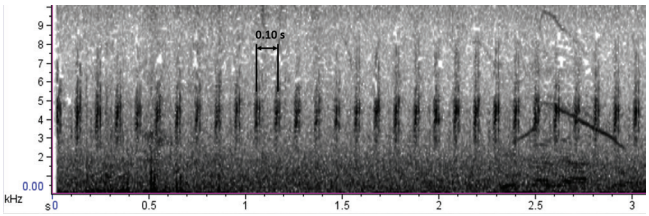

Fig. 1. A representative spectrogram of the song of one of the observed individuals.

This, our first record of the Brown Bush-Warbler from Uttarakhand is a very important one considering its geographical location in the Great Himalayan range. This location, which is more than 1,000 km westards of regions from where there have been confirmed records of this bird, is well outside its traditionally known distribution range. The large geographical separation, and the absence of noticeable differences in plumage and vocal characteristics between the individuals,

reported here, and those that have been reported in the literature from Eastern Himalayas, north-eastern India and East Asia can mean two things. One, that our observations point at an extension of the previously known distribution range of the same species in the east and that this species has been previously overlooked in the Western Himalayas, or that we possibly have a case of cryptic speciation where the observed specimens are genetically separable from the eastern specimens. DNA studies will therefore be necessary to confirm the taxanomic status of the specimens observed in the Western Himalayas. Our record also motivates further field work that can shed more light on the seasonal movements of this species, its breeding range, and to ascertain whether these birds breed in the surveyed location.

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