

MALABAR

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**BREEDING OF
BLACK-WINGED
STILT
AT MUNDERI
KADAVU**

**EUROPEAN
BEE-EATER
FROM THRISSUR
DISTRICT, KERALA**

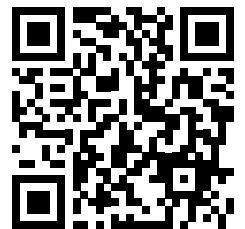
**COMMON POCHARD
A NEW DUCK SPECIES
IN KERALA**

**AKKULAM LAKE:
CHANGES IN THE BIRDLIFE
IN TWO DECADES**

**PATTERNS OF
DISCOVERY OF
BIRDS IN KERALA**

**ODONATES
OF KADAVOOR VILLAGE**

**FULVOUS WHISTLING DUCK
- AN ADDITION TO THE
BIRD LIST OF - KERALA**



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Black-winged Stilt

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Editorial

The term 'ecosystem services', coined by Ehrlich P R and Mooney H A in 1983 and defined as 'those aspects of the earth that benefit humans', attracted the attention of ecologists and environmental activists since The Millennium Ecosystem Assessment (MA) report was published in 2003. The objective of the MA, initiated by the United Nations Secretary General in 2000, was 'to assess the consequences of ecosystem change for human well-being and the scientific basis for action needed to enhance the conservation and sustainable use of those systems and their contribution to human well-being'. MA found that, generally, little was known about the ecosystem services and even much less about the economic value of the non-marketed services. There was a visible change in this state of affairs after 2003 and an exponential increase in the number of publications on ecosystem services related to various taxonomic groups was noticed.



Paul Ehrlich



Harold A. Mooney

Interpreting and quantifying ecosystem services of any component of the ecosystem in monetary value (commodification) is not easy. But in a consumerist society, this may be the only way to convince the policy makers as well as the layman on the importance of mammals, birds, insects, spiders, fungi, plants etc.

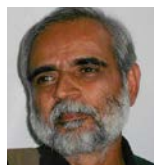
A good example of this type of interpretation was provided by Markandya, A., *et al.*, 2008 in their paper



'Counting the cost of vulture decline — An appraisal of the human health and other benefits of vultures in India' (*Ecological Economics*, doi:10.1016/j.ecolecon.2008.04.020). In this paper, the authors assessed, through economic valuation, the outcome of the catastrophic population crash (99.9%) of Gyps vultures in India from 1992 to 2007 caused by the use of the veterinary drug diclofenac. The disappearance of vultures caused accumulation of rotting domestic ungulate carcasses in most parts of India resulting in environmental pollution and an increased incidence of infectious diseases among people and livestock. Other non-obligate scavengers like feral dogs, rats etc. increased in numbers causing the spread of diseases like leptospirosis and rabies. India has the highest rate of human rabies infections in the world, and 95% of human deaths here due to rabies are caused by dog bite. An increase of 72.5 lakhs feral dogs in the period 1992 to 2006 has been calculated by the Census Ministry of Agriculture in the 17th Livestock Census, 2003. 1.67 crore dog bites are estimated for an year leading to an additional 3.85 to 3.97 crore dog bites and 48,000 human deaths. The cost for the treatment of the bites alone was estimated to be Rs.1310 to Rs.2440 crore. The authors estimated that the total health cost due to the decline of vultures could be Rs.99,800 to Rs.1,09,500 crore. Apart from this, the Parsi community had a loss of Rs 16 lakhs as their 'sky burial' custom had to be replaced other means. Overall, this is a huge amount considering the low annual income of the majority of the common people who were the victims.

This is the consequence of the decline in the population of one group of birds, explained in terms of money, that too a very conservative estimate. But this is enough to show the impact on the loss of a species of bird to humanity as a whole. The phenomenal cost of the long term programme on the conservation breeding and reintroduction of these critically endangered species, which will run into billions of rupees, also has to be considered.


Thus, quantifying the services provided by Nature may give us a lot of new insights about the resources that we squander without a second thought.



C. Sashikumar

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THE DISAPPEARING SCAVENGER...



Vultures at Nagorhole, Karnataka

Abhilash Raveendran

Patterns of Discovery of Birds in Kerala

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Introduction

Sálim Ali reported a definitive list of 356 species in his book *Birds of Kerala* published in 1969¹. After this publication, there have been several compilations to update our knowledge of the birds of the region and keep the state checklist up-to-date. Here, I attempt to analyse the discovery patterns of new bird species added to the Kerala checklist after Ali's work and to see if this pattern is dependent on the changes in bird diversity or changes in the profile of the birdwatcher network or a combination of both.

Methodology

All records that are treated as the first definitive record of a species for Kerala were tabulated while excluding the 356 species which were already reported in Ali (1969) as confirmed. Based on the date of sighting, these were grouped into different birdwatching eras as described below.

Historical (pre-1967): These are well-published records from Kerala that existed at the time of Sálim Ali's compilation (Ali 1969). Apparently, these publications were overlooked by him and hence not included in the book. Most of these records were by British ornithologists of the colonial period or by K.K.Neelakantan (KKN). For pragmatic reasons, it is assumed that the final text for the book must have been finalised in

¹ Ali (1969) covers 386 species and subspecies out of which some of them are considered tentative and indicated in square brackets.

1967 and he would not have had a chance to update the text after that.

Incubation (1967-1980): This is the period when the first seeds of modern day field ornithology (or birdwatching) were laid through persistent writings from KKN and his book in Malayalam *Keralathile Pakshikal*, that paved the way for a much intense activity in the next decade.

Nature Groups (1981-1993): Efforts during the previous decade borne fruits with small nature conservation groups springing up in different corners of the state and starting independent, but regular birdwatching. The period saw an interest in wetland birds and Asian Waterbird Census (AWC) was launched in 1987. Last couple of years in this period saw an interest to explore the forests through systematic bird surveys using birdwatcher networks. KKN passed away in 1992 but this period culminated with the publication of *A Book of Kerala Birds* by KKN and his co-workers (Neelakantan *et al.* 1993) that updated the checklist of birds of Kerala with new additions till 1993.

Bird Surveys (1993-2002): The pace gained in the previous decade through KKN's efforts provided further impetus to continue forest and wetland bird surveys in different parts of the state, filling the gaps in our knowledge. Communication and coordination was still at snail's pace using traditional postal service but birdwatchers regularly met each other in these camps and exchanged notes and salient observations.

E-Groups(2002-2010): In May 2002, *Kerala Birder* Yahoo e-group was formed heralding Kerala ornithology into the information age, shrinking

distances and increasing communication and collaboration between birdwatchers. Much of the data collected in the last decade were collated during this period. Forest and wetland bird surveys continued with greater furor across the state (Praveen & Nameer 2009, Nameer *et al.* 2015). This period culminated with the publication of *Birds of Kerala – Status and Distribution* that updated the complete ornithological knowledge of the state since Ali (1969).

Social Media (2011-2017): 'Facebook' changed the face of Kerala Ornithology bringing many young and old enthusiasts into closer contact. 'Birdwatchers of Kerala' Facebook group became the new-age networking forum for birdwatching. Together with the popularity of digital photography, it saw more enthusiasts getting weaned into this hobby with a camera in hand. Quality of documentation improved tremendously and so did knowledge. Apart from land-based birding, pelagic birding was also kick-started during this period (Karuthedathu *et al.* 2012). In 2013, Kerala embraced eBird (www.ebird.org) for documenting the birds of the state and this brought in much needed information on distribution and abundance at our finger tips. This era is still in progress, but a brief assessment was done with a fresh compilation of a state checklist in November 2015 tallying 500 species (Praveen 2015). In the past two years, social networking has transformed yet again with multiple district focused 'WhatsApp' groups while Facebook groups have taken a back seat. Documentation via eBird continues and the state has embarked on a massive bird atlas programme involving hundreds of birdwatchers.

Apart from timeline based classification, another classification based on the habitat preferences is

also attempted as below.

Pelagic Birds: Birds that are strictly restricted to the open sea and very rarely straggles to the coasts; including skuas, tropicbirds, frigatebirds, petrels, shearwaters, storm-petrels, boobies and certain gulls and terns that are mainly oceanic in their habits.

Waterfowl: Birds that are purely dependent on inland and coastal wetlands, including diving waterbirds, herons and allies, storks and allies, shorebirds, rails and allies apart from gulls and terns.

Openland Birds: This is a broad category of the birds that prefer open habitats that include wetlands (excluding waterbirds), grasslands, meadows and open scrubs etc. E.g. pipits, buntings, raptors, bee-eaters, swallows, wheatears etc.

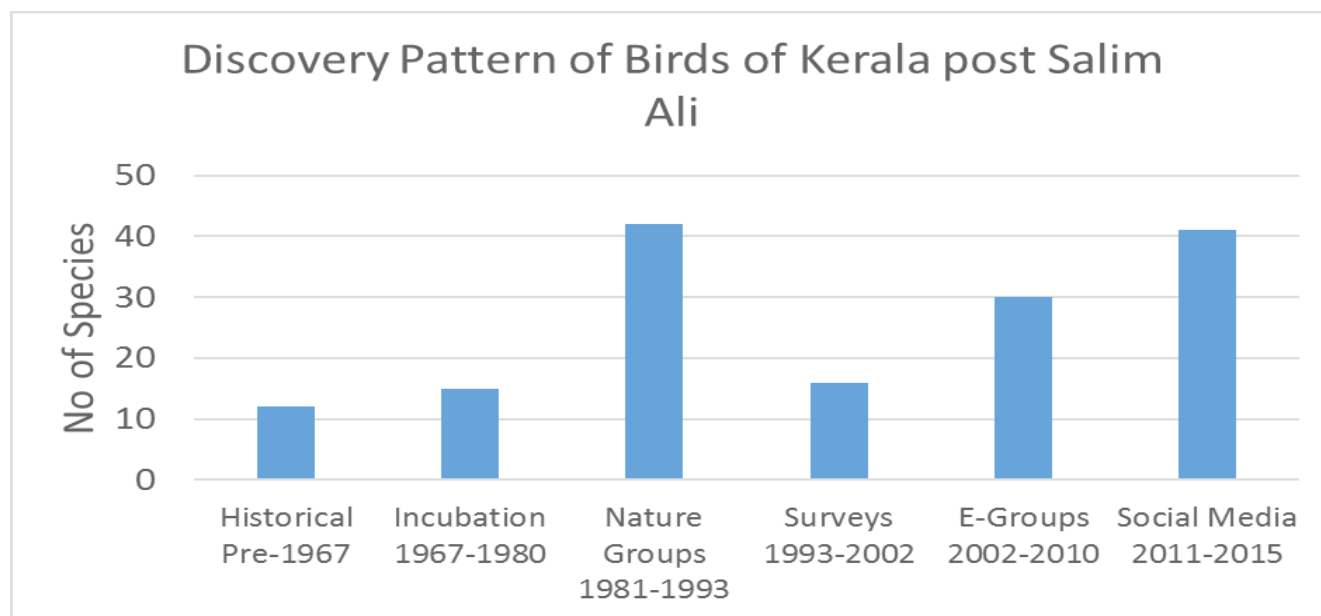
Woodland Birds: These are birds that prefer light woodlands but avoid thicker forests of the Western Ghats. E.g. Ashy Minivet *Pericrocotus divaricatus*.

Forest Birds: Birds that show a strong preference towards wet evergreen or moist/mixed deciduous forests and does not prefer lightly wooded areas. E.g. Bay Owl *Phodilus badius*.

Results and Discussion

A total of 160 species have been added to the state checklist after Ali (1969) making it 516 species. The broad spread of species discovery is depicted in Figure 1. The two prominent periods of species discovery were during the 1980s when different nature groups were active and more recently in the period of social media. In fact, the rate of species discovery in the social media era was so high that a new species was added at an average of one species every 50 days (Figure 2). Contrast this rate with that during incubation period when the average was one new species every year. Admittedly, Ali (1969) had missed documenting more than ten species due to insufficient literature survey.

Fig. 1 ♡



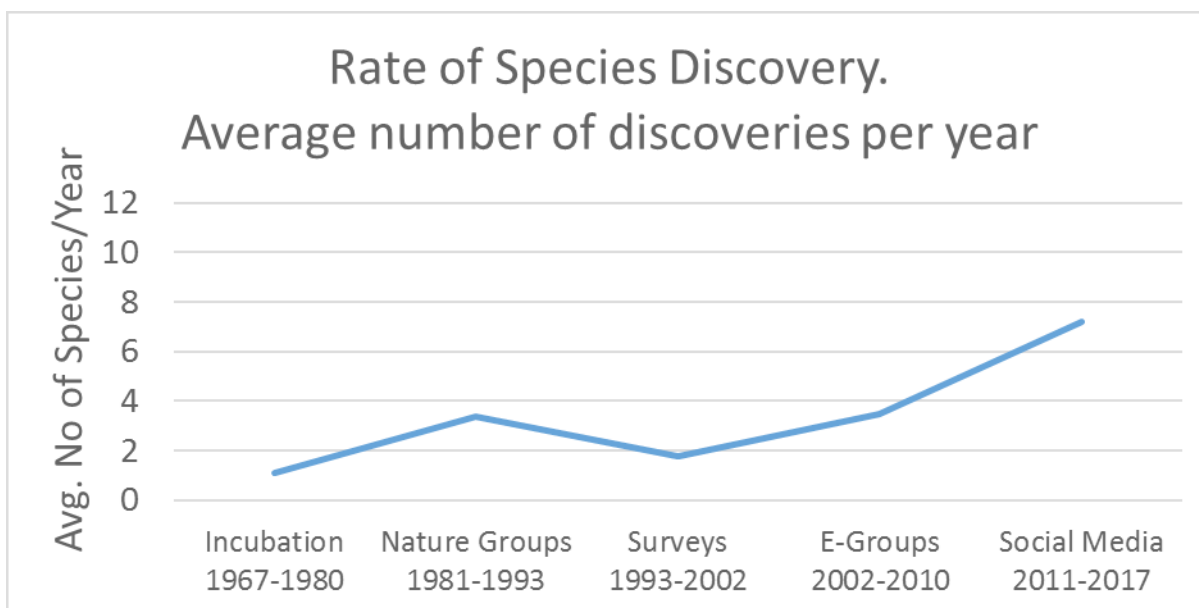
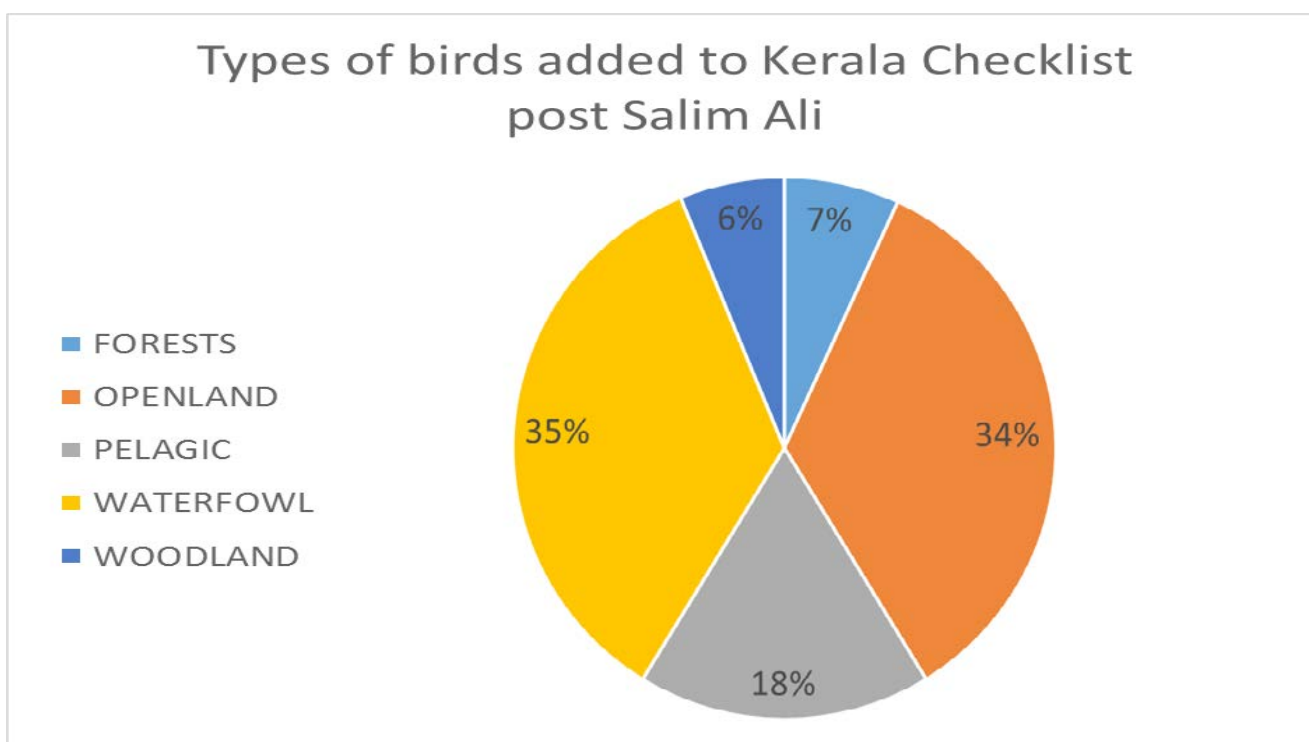


Fig. 2

The classification of different types of birds added to the Kerala checklist give an idea of what Ali (1969) missed out (Figure 3). The largest gap filled by the subsequent workers was obviously in waterfowl (35%) followed by openland birds (34%). The case of waterfowl is quite understandable as very few

wetlands were covered during Sálím Ali's surveys. However, the high number of openland species shall be investigated subsequently. Pelagic birds account for 18% of the new discoveries post-Ali; which is directly related to the increase in pelagic boat trips.

Fig. 3

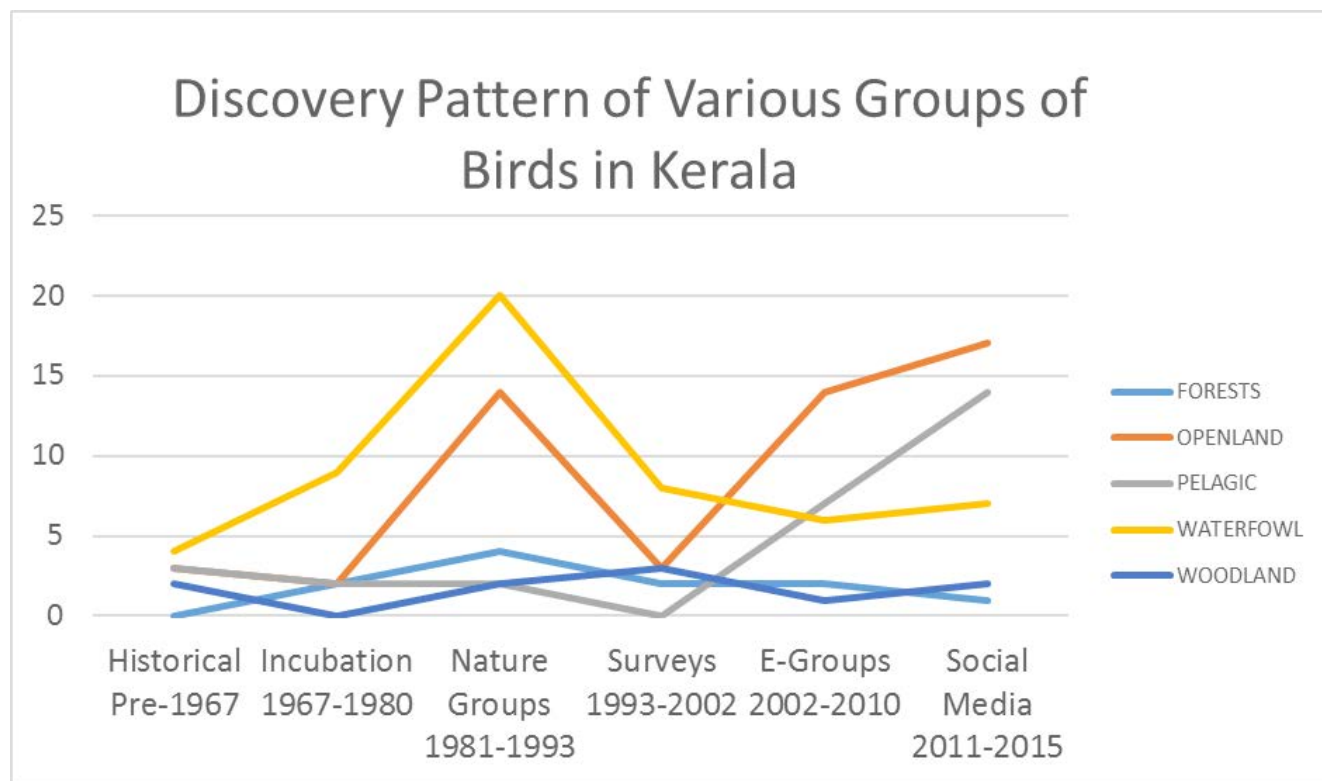


This disparity is further illustrated by a timeline chart (Figure 4) for different groups of birds discovered during different periods of time. The 1980s clearly saw a boom in the number of wetland species newly discovered from Kerala. This clearly has to be do with increased focus in wetlands, a landscape not given sufficient importance during Ali's surveys. However, post 2010, the number of pelagic birds discovered shot up and is directly related to the increased number of off-shore boat trips. Hence, both these factors had nothing to do with birds, but resulted from birdwatchers focusing on unexplored areas.

It is worth mentioning that some of the larger wetland birds (e.g. Painted Stork *Mycteria leucocephala*) that were new discoveries in

1980s have now an established resident or wintering population in the state. Some of these populations have shown a marked increasing trend from the beginning of the 21st century (Nameer *et al.* 2014), despite perceived decrease in the available wetland habitat. The reasons for this rather skewed population change, compared to populations of shorebirds or gulls & terns that went down, have not been investigated thoroughly. One of the possible reasons could be the increase in awareness and consequent reduction in poaching and trapping of large water birds all over southern India together with widespread increase in fish farming in Kerala. By the very nature of this selective population increase, it is rather unlikely to be related to climate change as is widely put forward in popular media.

Fig. 4



However, this does not explain the two spikes that are visible in Figure 4 for openland birds. Are they also increasing in Kerala? To analyse this, I divided the openland species into the following categories.

Resident: A resident population which was discovered post-Ali.

Migrant: A winter migrant from northerly latitudes that occur as a vagrant or regular in

small numbers.

Passage: Birds that are mostly considered as autumn or spring passage migrants elsewhere in India. Some passage migrants on the way to Africa or on the way back from south-east Asia seems to visit Kerala.

Straggler: These are regular resident species in the adjoining states of Tamil Nadu and Karnataka that sporadically visit Kerala

Status of Openland Birds discovered in Kerala in post-Ali era

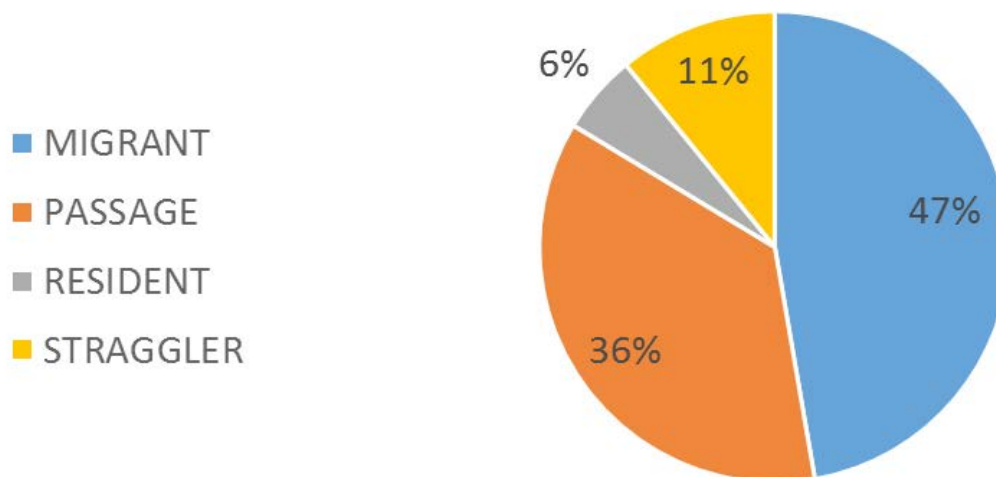


Fig. 5

As can be seen in Figure 5, passage migrants account for more than 36% of the birds, a disproportionately large number for a state like Kerala that has never been a migration corridor like Gujarat coast or Point Calimere in south Tamil Nadu. Almost all of them are mere stragglers/outliers from the main migration channel that covers as a broad-front over the Indian peninsula. It must be appreciated that the passage migrants spend only a very short time in Kerala before they continue with their migration. Hence a survey like that of Ali's is bound to miss almost all of them.

Only sustained birding in the open habitats will produce more sightings of passage migrants. On top of it, many of the passage migrants are difficult to identify and are easily overlooked. With the advent of digital cameras, we are getting better documentation of these birds to identify them with confidence. Hence, this explains the spurt in sightings of openland species post 2010—of which just five species were winter migrants while 11 were passage migrants.

47% of the openland birds (26 species) have

been winter migrants from the northerly latitudes. Another 11% account (6 species) for stragglers from the neighbouring states; which together accounts for 58% of open land bird species that has been additions to the Kerala avifauna. Are these 32 species undergoing a range expansion due to climate change and drying of the Kerala coast? This is a fancy proposition that needs further scrutiny. Notably, 16 of these 32 species are even now best considered extreme vagrants, with less than three records in the 21st century. Hence, they are taken out of analysis and those records merely reflect the depth of our birdwatcher network. Amongst the remaining sixteen, some of them (e.g. pipits, warblers) are a result of better documentation tools. However, there are four cases of range expansion that could potentially have a relation to changing climatic patterns. I list them here as candidates for future study.

- Indian Spotted Eagle *Clanga hastata* & Greater Spotted Eagle *C. clanga*: See Sashikumar (2004) for an early review of its status in Kerala.
- Red Collared Dove *Streptopelia tranquebarica*
- Siberian Stonechat *Saxicola maurus*
- Grey-necked *Emberiza buchanani*, Red-headed *Granativora bruniceps* & Black-headed Buntings *G. melanocephala*

www.ebird.org is an excellent resource to study and understand the patterns of these species and how they have expanded their ranges.

Conclusion

It is safe to state that species discovery pattern in Kerala has been largely connected to the profile of the birdwatching community of that particular era - their specific focus area, their competence/

gadgets and most importantly their numbers. Though there is a slight indication of a connection between climatic changes and species discovery pattern, this is restricted to a small set of birds and still requires robust studies to prove the correlation. Hence, birdwatchers and popular media should be careful in interpreting the occurrence of a 'rare' bird in Kerala. Rather than climate change or dry weather, increase in focused observation is a more likely reason for the appearance of rare birds. Media and scientists involved in understanding changing pattern of birdlife due to climatic changes should focus on the abundance (or changes in abundance) of common birds using forums like eBird rather than invest energy in interpreting the occurrence of 'rare' birds.

Acknowledgements:

My thanks to Dipu Karuthedathu and C Sashikumar for commenting on an earlier draft and to Abhinand Chandran for keeping www.ebird.org updated with the observations of rarities.

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Orange-breasted Pigeon

Treron bicinctus

📷 Raju Kidoor

“ My first observation is on 12th November 2016 at Kidoor village of Kasaragod on an Acacia tree. There were around five individuals. Last seen on 1 July 2017 near a paddy field.. Highest count reported from here is a group of 31 individuals on a Mulluvenga (*Bridelia retusa*) tree.

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Akkulam Lake: Changes in the birdlife in two decades

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📷 Source: 5061RR at English Wikipedia

Introduction

Akkulam Lake, an extension of Veli Lake, is a well-known picnic and backwater destination which is located about 10 km from Thiruvananthapuram City, the capital of Kerala. It is a small, relatively shallow, brackish backwater in Ulloor Panchayat (Lat 8°30'N Long 76°55'E) (Sashikumar *et al.*, 2011). This beautiful location has a wonderful diversity of birds, both resident and migratory.

Historic records obtained from early 1990s indicate that there has been an immense change in the Akkulam Lake, both in the landscape and in the birds sighted over the years (Nair, 1994, Reghunadh *et al.*, 1995, Regi & Bijukumar, 2012, Swarnalatha *et al.*, 2013). A couple of decades back, Akkulam was a remote location which was calm, serene and known for its scenic beauty. The water at the Akkulam side had lush green growth of water plants and its most remarkable factor was the diverse micro habitats spread over 13 km². Birds like herons, egrets, jacanas, and cormorants were seen in all months. In addition migratory birds like Garganey *Anas querquedula*, Northern Pintail *Anas acuta*, Osprey *Pandion haliaetus*, Peregrine Falcon *Falco peregrinus* and Western Marsh Harrier *Circus aeruginosus* wintered here. Breeding of Common Coot *Fulica atra* has also been recorded (Nair, 1994). However, there were environmental concerns even then; e.g., water pollution caused by increased boating activity of the tourists and toxic waste from factories and sewers of Thiruvananthapuram city. In addition to that, a large portion of vegetation on the adjoining hillock was cleared by the Southern Air Command authorities to construct their offices, causing destruction to foraging and nesting grounds of many woodland birds; small animals and snakes too perished (Nair, 1994).

Here, an attempt is made to assess the present birdlife of Akkulam and examine the changes that have happened in the last two decades, based on the observations and documentation made in the early 1990s by Manoj V Nair (1994) and the observations made by me over a span of about two years.

Methods

I documented the birdlife of Akkulam by photographing the birds using a telephoto lens and also made observations using binoculars. My major birding site, particularly for observing raptors, was the terrace of an independent house situated on a hillock next to the lake which provided an excellent view.

The observations were conducted from October 2011 to April 2013, mainly from 6:00 A.M. to 11:00 A. M. However, there were instances when new species were seen in the evenings and all the owls were spotted mainly in the night. Photographs of the birds I saw were taken using a Canon 1100D camera with a Canon telephoto lens (55- 250mm).

The birds were observed using the following methods:

1. A long walk around the periphery of the lake-bed which is about 3 km radius
2. A short walk of about 500 m into the Lake bed.
3. Observation into the valley from the hillock close to the lakebed which is ideal for raptors, using Olympus 8 X 40 DPS I binoculars
4. Observing birds along the road/pathway of the lake right up till Chavadimukku junction (located 2 km away from Akkulam Lake) travelling by car or by scooter.
5. Walk along the road from Akkulam Lake up to the toll gate which is about 800 m away from the lake.

In addition to the abovementioned study period, incidental observations in the later years also have been included in the analysis.

Results & Discussion

Changes in the habitat

In the period of my study, I could see a tremendous transformation in the geographical parameters of Akkulam Lake, as compared to what it was two decades ago. What appeared as a possible threat to this wetland then has manifested into a massive change in the land use all around the lake. Numerous concrete structures, including upcoming residential buildings and shopping areas has transformed this locality into a fast growing urban commercial place. This habitat has deteriorated vastly, thanks to the project plan of making this a top notch tourist attraction. The Akkulam tourist village, a popular tourist centre run by the government, was closed down in January 2012 but has recently been reopened. Multiple problems have plagued the lake and it will be a herculean task to get it back to its old grandeur. Dredging, which has been a constant feature since 2012, is responsible for sucking away crores of rupees and the lake is now filled with water hyacinth. Encroachment too has a severe impact on the lake ecosystem. Swarnalata *et al.* (2013) reported the presence of toxic metals in the lake. All these environmental stresses have affected the flora and fauna of this ecosystem.

Changes in the bird community

The degradation of the habitat seems to have its impact on the avifauna too. Nair (1994) recorded 158 species; out of this 78 (49.4 %) species of birds that occurred then were

not recorded in this study (see bird list). The bird families which appear to have been most affected by the environmental changes in the intervening years were: Anatidae (ducks – 3 species), Rallidae (rails and coots – 3 species), Scolopacidae (sandpipers – 10 species), Ardeidae (herons, bitterns – 8 species), Charadriidae (plovers and lapwings – 5 species) and Laridae (gulls and terns – 5 species). Species like flamingos, gulls, certain species of bitterns, etc. were never encountered here during my study period. In December 2015, I observed a disturbing state of affairs with even regularly seen birds like Common Coot and Little Grebe *Tachybaptus ruficollis* not seen anywhere in the lake; during the study period, these birds could be seen in good numbers and this shows that the wetland has degraded further. Apart from these, many woodland species like Coppersmith Barbet *Psilopogon haemacephalus*, Plum-headed Parakeet *Psittacula cyanocephala*, Vernal Hanging Parrot *Loriculus vernalis* and 26 species of passerines (Order Passeriformes – perching birds) belonging to 17 families were missing in the present study, indicating the loss of the many microhabitats present in this ecosystem.

However, it was always a wonderful experience to come across new birds which were not observed previously: in all, 16 new species were recorded during the current study. This included Glossy Ibis *Plegadis falcinellus*, Painted Stork *Mycteria leucocephala*, Indian Peafowl *Pavo cristatus*, Crested Serpent Eagle *Spilornis cheela*, Steppe Buzzard *Buteo buteo vulpinus* etc.



Booted Eagle ♂

An interesting aspect of this study was the number of raptors seen during the migratory season. In September, three to four Booted Eagles *Hieraaetus pennatus*, both pale and dark morph, were regularly seen soaring along with Black Kites *Milvus migrans* in the mornings at about 9:00 AM. They stayed on till March, in spite of being incessantly harassed by kites and crows. Western Marsh Harrier *Circus aeruginosus* too arrive around the same time in September and were seen on the lake bed, perched on tree stumps, scanning the ground in search of a prey. As soon as they took off, there was instant confusion and fear among other birds who vacated that area in search of a safer place. Marsh Harriers started disappearing by around middle of April. During winter, Oriental Honey Buzzard *Pernis ptilorhyncus*, Steppe Buzzard and Peregrine Falcon *Falco peregrinus* were also seen on most of the days. Crested Serpent Eagle was usually seen in November, suggesting

local migration.

Brown Shrike *Lanius cristatus* and Blyth's Reed Warbler *Acrocephalus dumetorum* were regularly seen in winter, the latter especially in good numbers. I was extremely lucky to see an Indian Pitta *Pitta brachyura* in January 2012, in the kitchen of the building from where I used to observe birds. It took rest on the floor for about 25 minutes before the disturbance from the kitchen, perhaps, became unbearable. The bird looked stressed and flew helter-skelter before it was helped to fly out of the house. But the strangest encounter was in October 2012 when my friend and I were



Common Buzzard ♂

Peregrine Falcon ♀



observing a group of about ten Rose-ringed Parakeets *Psittacula krameri*. We saw something odd and upon closer observation found an Alexandrine Parakeet *Psittacula eupatria* among the group, following them wherever they flew to. This species, may be the same individual, was seen among the group of parakeets for about a month. This was discussed in various internet birding forums of Kerala and most thought that it could be an escapee as there have been no previous sightings of this species in this area.

Conclusion

The main intention of this comparison was to bring into focus the large scale changes that Akkulam Lake and its surrounding areas have gone through over the years, which has indeed been difficult for all of us as environmental enthusiasts to grapple with. This may be the story of several other wetlands at different places in Kerala, where rapid urbanization is taking place.

To conclude, 95 species of birds are still sighted at Akkulam which continue to make this a very special birding destination. The highlights of the birding experience at Akkulam have been the fast dive of a juvenile Peregrine Falcon and the sight of Steppe Buzzard flying just above the building, suddenly changing gears and accelerating, sometimes spiraling downwards upon seeing a potential prey, before it made a sudden disappearance. While the wetland is under the threat of rapid urbanization, the excitement of birding still lives on and makes this place a birding hotspot.

Acknowledgements

This work would not have been possible without the support of residents of Dwarakamai Home at Akkulam for their immense support to help me do birding on a regular basis. In addition, I would like to thank Praveen Jayadevan for his immense support in guiding and motivating me. I am indebted to my friend Chhavi Aggarwal for the help in writing this paper.

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Sl. No	English name	Scientific Name	Nair (1994)	Present Study
1	Lesser Whistling Duck	<i>Dendrocygna javanica</i>	x	x
2	Garganey	<i>Spatula querquedula</i>	x	
3	Gadwall	<i>Mareca strepera</i>	x	
4	Indian Spot-billed Duck	<i>Anas poecilorhyncha</i>	x	x
5	Northern Pintail	<i>Anas acuta</i>	x	
6	Cotton Teal	<i>Nettapus coromandelianus</i>	x	x
7	Indian Peafowl	<i>Pavo cristatus</i>		x*
8	Quail spp.	<i>Perdica</i> spp.	x	
9	Greater Flamingo	<i>Phoenicopterus roseus</i>	x	
10	Little Grebe	<i>Tachybaptus ruficollis</i>	x	x
11	Rock Pigeon	<i>Columba livia</i>	x	x
12	Spotted Dove	<i>Streptopelia chinensis</i>	x	x
13	Pompadour Green Pigeon	<i>Treron pompadora</i>	x	
14	Emerald Dove	<i>Chalcophaps indica</i>	x	
15	Brown-backed Needletail	<i>Hirundapus giganteus</i>	x	
16	Indian Swiftlet	<i>Aerodramus unicolor</i>	x	
17	Asian Palm Swift	<i>Cypsiurus balasiensis</i>	x	
18	Indian House Swift	<i>Apus affinis</i>	x	x
19	Greater Coucal	<i>Centropus sinensis</i>	x	x
20	Pied Cuckoo	<i>Clamator jacobinus</i>	x	x
21	Asian Koel	<i>Eudynamis scolopacea</i>	x	x
22	Common Hawk Cuckoo	<i>Hierococcyx varius</i>		x*
23	Slaty-legged Crake	<i>Rallina eurizonoides</i>	x	
24	Slaty-breasted Rail	<i>Lewinia striata</i>	x	
25	Ruddy-breasted Crake	<i>Zapornia fusca</i>	x	
26	Baillon's Crake	<i>Zapornia pusilla</i>	x	
27	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	x	x
28	Watercock	<i>Gallicrex cinerea</i>	x	x
29	Purple Swampphen	<i>Porphyrio porphyrio</i>	x	x
30	Common Moorhen	<i>Gallinula chloropus</i>	x	x
31	Common Coot	<i>Fulica atra</i>	x	x
32	Painted Stork	<i>Mycteria leucocephala</i>		x*
33	Asian Openbill	<i>Anastomus oscitans</i>	x	x
34	Woolly-necked Stork	<i>Ciconia episcopus</i>		x*
35	Great White Pelican	<i>Pelecanus onocrotalus</i>	x	
36	Spot-billed Pelican	<i>Pelecanus philippensis</i>	x	
37	Little Bittern	<i>Ixobrychus minutus</i>	x	
38	Yellow Bittern	<i>Ixobrychus sinensis</i>	x	
39	Chinamome Bittern	<i>Ixobrychus chinamomeus</i>	x	
40	Black Bittern	<i>Ixobrychus flavicollis</i>	x	
41	Malayan Night Heron	<i>Gorsachius melanolophus</i>	x	
42	Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	x	
43	Striated Heron	<i>Butorides striata</i>	x	x
44	Indian Pond Heron	<i>Ardeola grayii</i>	x	x

Sl. No	English name	Scientific Name	Nair (1994)	Present Study
45	Cattle Egret	<i>Bubulcus ibis</i>	x	x
46	Grey Heron	<i>Ardea cinerea</i>	x	x
47	Purple Heron	<i>Ardea purpurea</i>	x	x
48	Great Egret	<i>Ardea alba</i>	x	
49	Intermediate Egret	<i>Ardea intermedia</i>	x	x
50	Little Egret	<i>Egretta garzetta</i>	x	x
51	Western Reef Egret	<i>Egretta gularis</i>	x	
52	Black-headed Ibis	<i>Threskiornis melanocephalus</i>		x*
53	Glossy Ibis	<i>Plegadis falcinellus</i>		x*
54	Little Cormorant	<i>Microcarbo niger</i>	x	x
55	Great Cormorant	<i>Phalacrocorax carbo</i>	x	x
56	Indian Cormorant	<i>Phalacrocorax fuscicollis</i>	x	x
57	Oriental Darter	<i>Anhinga melanogaster</i>	x	x
58	Black-winged Stilt	<i>Himantopus himantopus</i>	x	
59	Pacific Golden Plover	<i>Pluvialis fulva</i>	x	
60	Little Ringed Plover	<i>Charadrius dubius</i>	x	
61	Kentish Plover	<i>Charadrius alexandrinus</i>	x	
62	Lesser Sand Plover	<i>Charadrius mongolus</i>	x	
63	Yellow-wattled Lapwing	<i>Vanellus malarbaricus</i>	x	
64	Red-wattled Lapwing	<i>Vanellus indicus</i>	x	x
65	Greater Painted-snipe	<i>Rostratula benghalensis</i>	x	
66	Pheasant-tailed Jacana	<i>Hydrophasianus chirurgus</i>	x	x
67	Bronze-winged Jacana	<i>Metopidius indicus</i>	x	x
68	Whimbrel	<i>Numenius phaeopus</i>	x	
69	Eurasian Curlew	<i>Numenius arquata</i>	x	
70	Ruddy Turnstone	<i>Arenaria interpres</i>	x	
71	Little Stint	<i>Calidris minuta</i>	x	
72	Snipe spp.	<i>Gallinago</i> spp.	x	
73	Terek Sandpiper	<i>Xenus cinereus</i>	x	
74	Common Sandpiper	<i>Actitis hypoleucos</i>	x	x
75	Green Sandpiper	<i>Tringa ochropus</i>	x	
76	Common Greenshank	<i>Tringa nebularia</i>	x	
77	Common Redshank	<i>Tringa totanus</i>	x	
78	Wood Sandpiper	<i>Tringa glareola</i>	x	
79	Marsh Sandpiper	<i>Tringa stagnatilis</i>	x	
80	Brown-headed Gull	<i>Chroicocephalus brunnicapillus</i>	x	
81	Black-headed Gull	<i>Chroicocephalus ridibundus</i>	x	
82	Little Tern	<i>Sternula albifrons</i>	x	
83	Gull-billed Tern	<i>Gelochelidon nilotica</i>	x	
84	Whiskered Tern	<i>Chlidonias hybrida</i>	x	x
85	River Tern	<i>Sterna aurantia</i>	x	
86	Osprey	<i>Pandion haliaetus</i>	x	x
87	Black-winged Kite	<i>Elanus caeruleus</i>	x	
88	Oriental Honey Buzzard	<i>Pernis ptilorhynchus</i>		x*

Sl. No	English name	Scientific Name	Nair (1994)	Present Study
89	Crested Serpent Eagle	Spilornis cheela		x*
90	Bonelli's Eagle	Aquila fasciata		x*
91	Booted Eagle	Hieraaetus pennatus		x*
92	Western Marsh Harrier	Circus aeruginosus	x	x
93	Pallid Harrier	Circus macrourus	x	
94	Shikra	Accipiter badius	x	x
95	Brahminy Kite	Haliastur indus	x	x
96	Black Kite	Milvus migrans	x	x
97	Common Buzzard	Buteo Buteo(Vulpinis)		x*
98	Common Barn Owl	Tyto alba		x*
99	Brown Hawk Owl	Ninox scutulata	x	x
100	Jungle Owlet	Glaucidium radiatum	x	x
101	Spotted Owlet	Athene brama	x	x
102	Collared Scops Owl	Otus bakkamoena	x	
103	Lesser Golden-backed Woodpecker	Dinopium benghalense	x	x
104	White-cheeked Barbet	Psilopogon viridis	x	x
105	Coppersmith Barbet	Psilopogon haemacephalus	x	
106	Green Bee-eater	Merops orientalis	x	x
107	Blue-tailed Bee-eater	Merops philippinus	x	
108	Indian Roller	Coracias benghalensis	x	x
109	Common Kingfisher	Alcedo atthis	x	x
110	Pied Kingfisher	Ceryle rudis	x	x
111	White-throated Kingfisher	Halcyon smyrnensis	x	x
112	Common Kestrel	Falco tinnunculus	x	
113	Peregrine Falcon	Falco peregrinus	x	x
114	Plum-headed Parakeet	Psittacula cyanocephala	x	
115	Alexandrine Parakeet	Psittacula eupatria		x*
116	Rose-ringed Parakeet	Psittacula krameri	x	x
117	Vernal Hanging Parrot	Loriculus vernalis	x	
118	Indian Pitta	Pitta brachyura		x*
119	Black-headed Cuckooshrike	Lalage melanopectera	x	
120	Black-hooded Oriole	Oriolus xanthornus	x	x
121	Indian Golden Oriole	Oriolus kundoo	x	x
122	Black-naped Oriole	Oriolus chinensis	x	x
123	Ashy Woodswallow	Artamus fuscus	x	
124	Common Woodshrike	Tephrodornis pondicerianus	x	
125	Common Iora	Aegithina tiphia	x	
126	Black Drongo	Dicrurus macrocercus	x	x
127	Ashy Drongo	Dicrurus leucophaeus	x	
128	Brown Shrike	Lanius cristatus	x	x
129	Long-tailed Shrike	Lanius schach	x	
130	Rufous Treepie	Dendrocitta vagabunda	x	x
131	House Crow	Corvus splendens	x	x
132	Large-billed Crow	Corvus macrorhynchos	x	x

Sl. No	English name	Scientific Name	Nair (1994)	Present Study
133	Indian Paradise-flycatcher	Terpsiphone paradisi	x	x
134	Pale-billed Flowerpecker	Dicaeum erythrorhynchos	x	x
135	Purple-rumped Sunbird	Leptocoma zeylonica	x	x
136	Purple Sunbird	Cinnyris asiaticus	x	x
137	Loten's Sunbird	Cinnyris lotenius	x	
138	Jerdon's Leafbird	Chloropsis jerdoni	x	
139	Streaked Weaver	Ploceus manyar	x	
140	Baya Weaver	Ploceus philippinus	x	
141	Red Munia	Amandava amandava	x	
142	White-rumped Munia	Lonchura striata	x	
143	Scaly-breasted Munia	Lonchura punctulata	x	x
144	Black-headed Munia	Lonchura malacca	x	x
145	Yellow-throated Sparrow	Gymnoris xanthocollis	x	
146	Richard's Pipit	Anthus richardi	x	
147	Paddyfield Pipit	Anthus rufulus	x	
148	Western Yellow Wagtail	Motacilla flava	x	
149	Grey Wagtail	Motacilla cinerea	x	x
150	Citrine Wagtail	Motacilla citreola	x	
151	White-browed Wagtail	Motacilla maderaspatensis	x	x
152	Common Rosefinch	Erythrura erythrura		x*
153	Jerdon's Bushlark	Mirafra Affinis	x	
154	Malabar Lark	Galerida malabarica	x	
155	Zitting Cisticola	Cisticola juncidis	x	x
156	Ashy Prinia	Prinia socialis	x	x
157	Plain Prinia	Prinia inornata		x*
158	Common Tailorbird	Orthotomus sutorius	x	x
159	Blyth's Reed Warbler	Acrocephalus dumetorum	x	x
160	Clamorous Reed Warbler	Acrocephalus stentoreus	x	x
161	Red-rumped Swallow	Cecropis daurica	x	
162	Barn Swallow	Hirundo rustica	x	x
163	Red-whiskered Bulbul	Pycnonotus jocosus	x	x
164	Red-vented Bulbul	Pycnonotus cafer	x	x
165	White-browed Bulbul	Pycnonotus luteolus	x	
166	Greenish Leaf Warbler	Seicercus trochiloides	x	x
167	Yellow-billed Babbler	Turdoides affinis	x	x
168	Rosy Starling	Pastor roseus	x	x
169	Brahminy Starling	Sturnia pagodarum	x	
170	Chestnut-tailed Starling #	Sturnia malabarica	x	
171	Common Myna	Acridotheres tristis	x	x
172	Jungle Myna	Acridotheres fuscus	x	x
173	Oriental Magpie Robin	Copsychus saularis	x	x
174	Asian Brown Flycatcher	Muscicapa dauurica	x	
		Total	158	95
# Nair (1994) has considered this as two species. * New species observed during this study.				



Mating wheel of *Lyriothemis acigastra* ♀

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Kadavoor is a small village in Paingottoor Gramapanchayat in Kothamangalam Taluk at the eastern border of the Ernakulam district of Kerala (10° 00' 10.73' N, 76° 44' 00.52' E). It is located about 20km away from the nearby towns of Muvattupuzha, Kothamangalam and Thodupuzha. River Kaliyar flows through the southern side and north side is bordered with small forest belongs to Kothamangalam Division. Pothencheeni-Kadakolmuri water stream begins from the forest, flows across the village, and falls in River Kaliyar. Several paddy fields, pineapple farms and small ponds can be seen on the bank of this stream.

I have been maintaining a checklist of dragonflies from

my village since 2003. Altogether 68 species of odonates belonging to 13 families under 49 genera were recorded from the area (Table-1). Of these, 44 are dragonflies (Suborder: Anisoptera) and 24 species belong to the suborder Zygoptera (damselflies). Of the 68 species, 9 are endemic to the Western Ghats viz. *Gomphidia kodaguensis*,

Merogomphus longistigma, *Macrogomphus wynaadicus*, *Microgomphus souteri*, *Macromidia donaldi*, *Pseudagrion indicum*, *Euphaea fraseri*, *Protosticta gravelly*, *Caconeura* sp. The classification and nomenclature is adapted after Fraser (1933-36; 1957) and Subramanian (2014).

The main attraction of the region is *Lyriothemis acigastra* which was observed first on June



2015 in Kadavoor. Previously, the species was known only from very few specimens from Aravanchal and Madayipara areas in Kannur District of North Kerala (Emiliyamma et al, 2011). There is no information available on its ecology and habitat of the species. Here in Kadavoor, I observed many matured males perched on the vegetations on the bank and inside small canals which are artificially created for pineapple and

similar crops. Those canals are well covered with vegetations and the water is semi-stagnant. Although many running water streams are nearby, this dragonfly seems avoid them. A pair mated in front of me, and soon after, the female started ovipositing in the stream while the male hover over the place.

We saw this species in 2016 and this year, now. No adults were observed after August, last year.

Systematic Checklist of Odonata of Kadavoor village, Ernakulam district, Kerala

Order: Odonata ; Suborder Anisoptera

Family: Aeshnidae

1. *Anax guttatus* (Burmeister, 1839)
2. *Gynacantha bayadera* Selys, 1891
3. *Gynacantha dravida* Lieftinck, 1960

Family: Corduliidae

4. *Macromidia donaldi* (Fraser, 1924)

Family: Gomphidae

5. *Gomphidia kodaguensis* Fraser, 1923
6. *Ictinogomphus rapax* (Rambur, 1842)
7. *Macrogomphus wynadicus* Fraser, 1924
8. *Merogomphus longistigma* (Fraser, 1922)
9. *Microgomphus souteri* Fraser, 1924
10. *Paragomphus lineatus* (Selys, 1850)

Family: Libellulidae

11. *Acisoma panorpoides* Rambur, 1842
12. *Aethriamanta brevipennis* (Rambur, 1842)
13. *Brachydiplax chalybea* Brauer, 1868
14. *Brachydiplax sobrina* (Rambur, 1842)
15. *Brachythemis contaminata* (Fabricius, 1793)
16. *Bradinopyga geminata* (Rambur, 1842)
17. *Cratilla lineata* Foerster, 1903
18. *Crocothemis servilia* (Drury, 1770)
19. *Diplacodes trivialis* (Rambur, 1842)
20. *Indothemis carnatica* (Fabricius, 1798)
21. *Lathrecista asiatica* (Fabricius, 1798)
22. *Lyriothemis acigastra* (Selys, 1878)
23. *Neurothemis fulvia* (Drury, 1773)
24. *Neurothemis tullia* (Drury, 1773)

25. *Onychothemis testacea* Laidlaw, 1902
26. *Orthetrum chrysis* Selys, 1891
27. *Orthetrum luzonicum* (Brauer, 1868)
28. *Orthetrum pruinosum* (Burmeister, 1839)
29. *Orthetrum sabina* (Drury, 1770)
30. *Palpopleura sexmaculata* (Fabricius, 1787)
31. *Pantala flavescens* (Fabricius, 1798)
32. *Potamarcha congener* (Rambur, 1842)
33. *Rhodothemis rufa* (Rambur, 1842)
34. *Rhyothemis triangularis* Kirby, 1889
35. *Rhyothemis variegata* (Linnaeus, 1763)
36. *Tetrathemis platyptera* Selys, 1878
37. *Tholymis tillarga* (Fabricius, 1798)
38. *Tramea limbata* (Desjardins, 1832)
39. *Trithemis aurora* (Burmeister, 1839)
40. *Trithemis festiva* (Rambur, 1842)
41. *Trithemis pallidinervis* Kirby, 1889
42. *Urothemis signata* (Rambur, 1842)
43. *Zyxomma petiolatum* Rambur, 1842

Family: Macromiidae

44. *Macromia* sp.

Suborder: Zygoptera

Family: Calopterygidae

45. *Vestalis apicalis* Selys, 1873
46. *Vestalis gracilis* (Rambur, 1842)

Family: Chlorocyphidae

47. *Libellago lineata* (Burmeister, 1839)

48. *Rhinocypha bisignata* Hagen in Selys, 1853

Family: Coenagrionidae

49. *Aciagrion occidentale* Laidlaw, 1919
50. *Agriocnemis keralensis* Peters, 1981
51. *Agriocnemis pieris* Laidlaw, 1919
52. *Agriocnemis pygmaea* (Rambur, 1842)
53. *Agriocnemis splendidissima* Laidlaw, 1919
54. *Archibasis oscillans* (Selys, 1877)
55. *Ceriagrion cerinorubellum* (Brauer, 1865)
56. *Ceriagrion coromandelianum* (Fabricius, 1798)
57. *Ischnura aurora* (Brauer, 1865)
58. *Pseudagrion indicum* Fraser, 1924
59. *Pseudagrion microcephalum* (Rambur, 1842)
60. *Pseudagrion rubriceps* Selys, 1876

Family: Euphaeidae

61. *Euphaea fraseri* (Laidlaw, 1920)

Family: Lestidae

62. *Lestes elatus* Hagen in Selys, 1862
63. *Lestes praemorsus* Hagen in Selys, 1862

Family: Platycnemididae

64. *Copera marginipes* (Rambur, 1842)
65. *Copera vittata* Selys, 1863

Family: Platystictidae

66. *Protosticta graveleyi* Laidlaw, 1915

Family: Platycnemididae

67. *Caconeura* sp.
68. *Prodasineura verticalis* (Selys, 1860)

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« Chick of Black-winged stilt observed at
Munderikadavu wetlands
(Fig.1)

Breeding of Black-winged Stilt

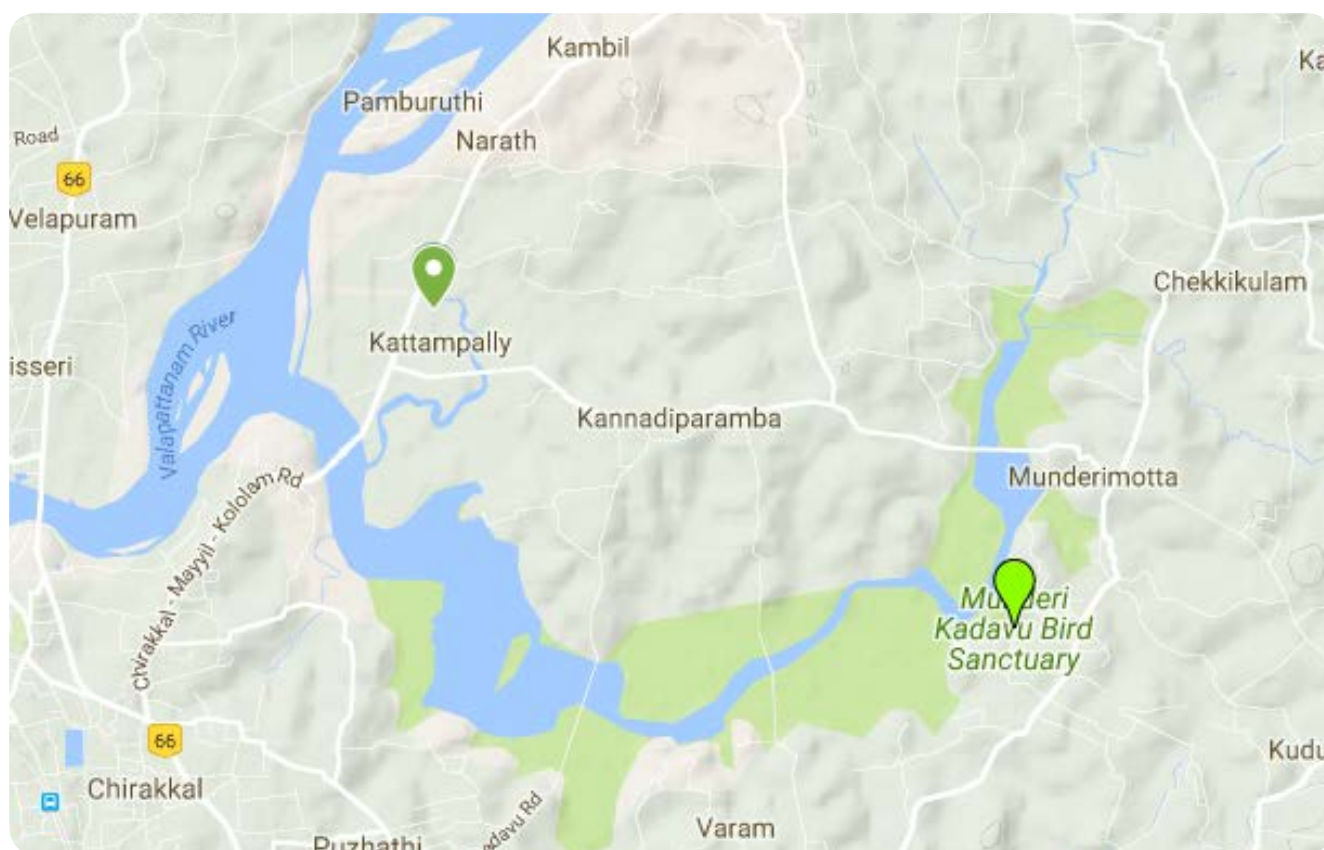
Himantopus himantopus in

At Munderi Kadavu, Kattampally Wetlands, Kannur

Vishnu Vinod, Sreelakam, Mathukkoth, Varam P.O., Kannur 670594

✉ **vishnusagar1996@gmail.com**

Black-winged Stilt *Himantopus himantopus* is a widespread winter visitor in Kerala with occasional breeding records (Sashikumar et al., 2011). It is a common species found in wetlands, marshes and paddy fields. Adults birds are 35-40cm long, slender, with long pinkish legs, fine straight black bill and are blackish above and white below with a white head and neck with varying amount of black on the crown and hindneck. Males have black upper wings with greenish gloss; females have wings with a brown hue. Juveniles have browner upperparts with buff fringes (Grimmett et al., 2011). These birds are seen in flocks as well as individuals feeding on insects, aquatic invertebrates and small fishes. Their breeding season is from April to July.



Source: <https://www.google.co.in/maps>

In Kannur, the breeding Black-winged Stilt has been reported from Chempallikundu wetlands (Rajeevan *et al.*, 2012). Here, I report another breeding record of the species at Munderikadavu, a part of Kattampally wetlands, an IBA comprising of nearly 4000 acres of marshlands. In 2015 also, nesting was observed in the same area and at one spot had four nests with four eggs each (Rahim Munderi. pers. comm.), but all these nests were destroyed due to heavy rains.

On 13 June 2017, two chicks (Fig.1) along with their parents were observed foraging in the wetland. Even though there were few attempts from a Brahminy Kite *Haliastur indus* to hunt the young ones, adult birds gave alarm calls and attacked the predator when it approached the chicks. This observation shows that the Black-winged Stilt has been successfully breeding here this year.

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Common Pochard

Aythya ferina

A new duck species in Kerala

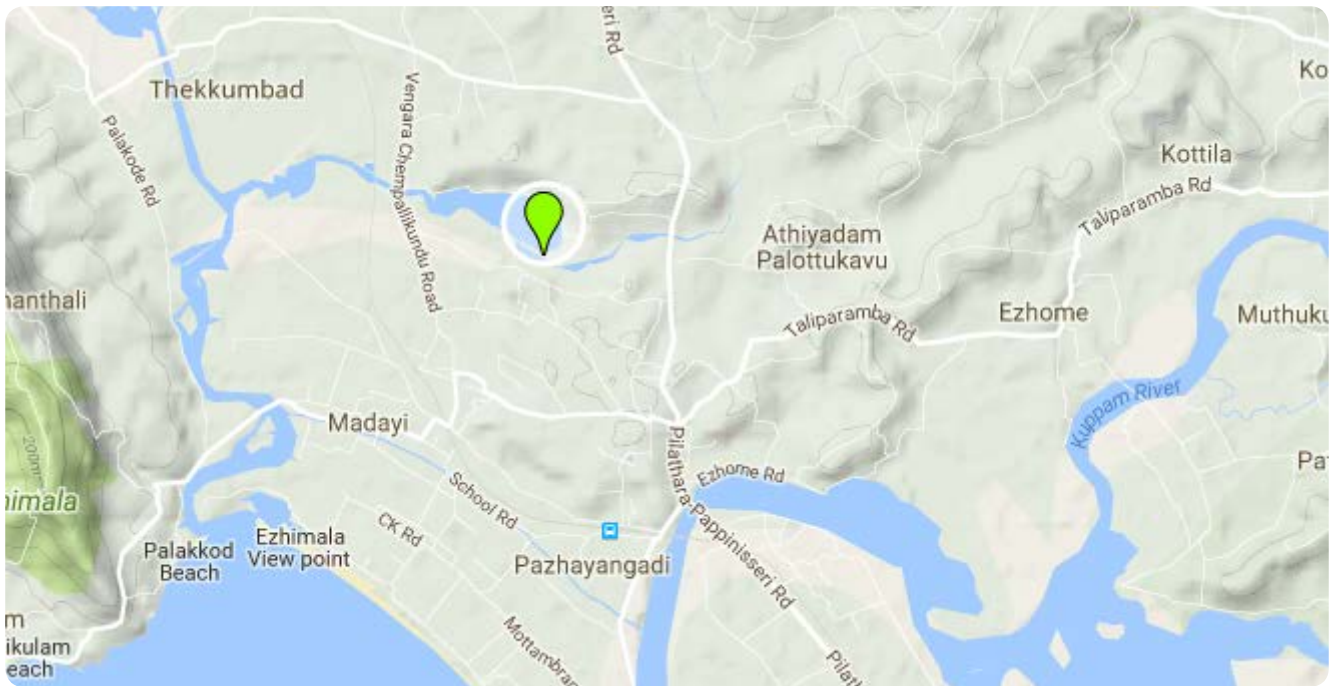
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Common Pochard | *Aythya ferina* 

On 5 November 2016, I was watching birds at the Chempallikkundu wetlands in Kannur district, about 28 km north of Kannur. In the open water fringed with mangroves, about 50 Northern Pintail *Anas acuta*, Garganey *Spatula querquedula* and a pair of Little Grebe *Tachybaptus ruficollis* were feeding actively. At the edge of the waterbody, close to the mangroves, a pair of large ducks was seen resting. These birds were distinct,



Source: <https://www.google.co.in/maps>

unlike any ducks I saw here regularly: one had chestnut head, black breast, greyish back and flanks and dark rear; the other duck was duller overall and had a pale eyeline. Both had dark bill with a pale grey band in the middle. The neck appeared thick; crown peaked with a sloping forehead (Fig. 1). All these field marks matched to that of Common Pochard *Aythya ferina*, the dark bird a male and the duller one a female. The birds were very shy and moved to cover when approached closer. I could observe them for about two hours from 830 AM. They were not seen feeding during the observation period: they either slept with head tucked over the shoulder or just stayed idle. These two ducks were seen at this wetland in the next four days also.

In all, 14 species of ducks belonging to the family Anatidae have been recorded from Kerala (Praveen 2015). Common Pochard is the latest addition to this list. This species is a winter visitor mainly to northern India, scarce in the southern peninsula (Ali & Ripley 1987, Rasmussen & Anderton 2012).

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Eurasian Coot *Fulica atra* affected by progressive greying

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Eurasian Coot- affected by progressive greying 🔴

On 14 November 2016, a bird watching trip was conducted by Quilon Nature Society covering Neendakara , Vellanathuruthu , Kandachira and Polachira in Kollam district. At Polachira, while we were watching a group of Lesser Whistling Duck *Dendrocygna javanica* and Eurasian Coot *Fulica atra*, we found a very strange bird. It looked like Eurasian Coot but was unusual in color (Fig. 1&2). After discussing this sighting with Praveen J, we came to conclusion that, it was Eurasian Coot affected by progressive greying. This is the first report from Kerala and one among the few reports from India.

The development of white feathers is not unusual in wild birds. Leucism is a genetic disorder altering the production of pigments, the melanins, affecting all the colours in the feathers and reducing them in intensity; this may be partial or total. Complete loss of feather pigment is also common and may result in true “albinism”, where pigment is totally absent throughout the body resulting in red eyes, pale pink legs and bill. In some cases, pigment producing cells are lost progressively with the advancement of age; this results in progressive greying in the individual. In these birds, only a few white feathers appear at early age, but after each successive moult, the number of white feathers increases (Campbell & Lack 1985, Rodríguez-Ferraro *et al.* 2015, van Grouw 2013). This aberration may be due to genetic disorders which result in the loss of pigment cells or by external non-heritable factors, such as disease and habitat or deficiency in diet. The colour of bare parts like bill and feet is unaffected in this phenomenon (van Grouw 2013).



Eurasian Coot (Fig 1) ⬆



Eurasian Coot (Fig 2) ⬆

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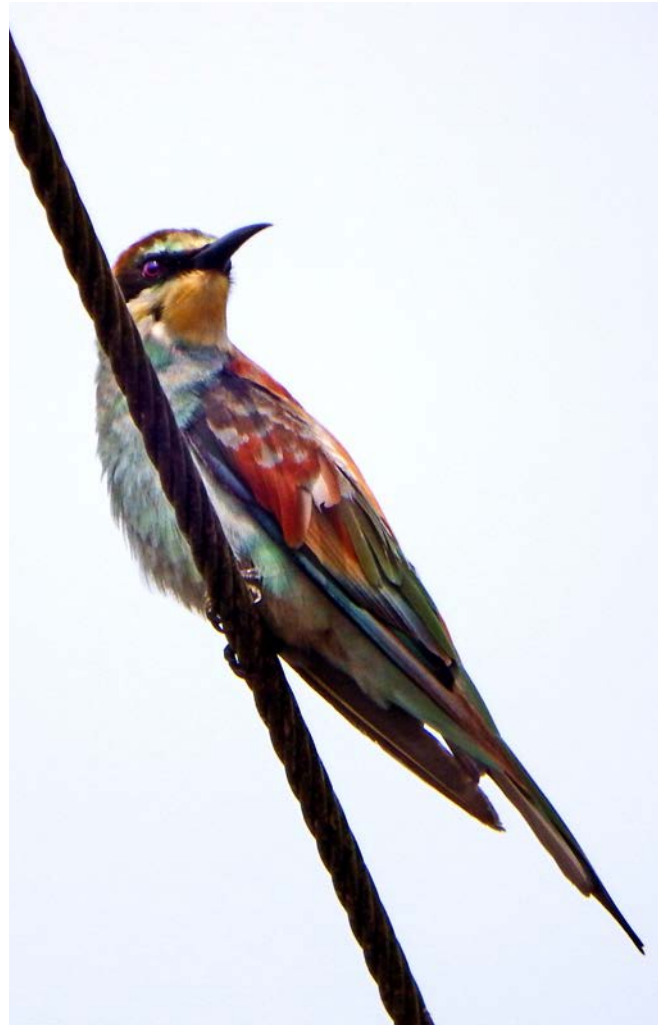
European Bee-eater

Merops apiaster

from Thrissur District, Kerala

Rison Thumboor & Sajin Varghese ✉ sajin.mattathil@yahoo.com

It was a foggy morning of 28 November 2016. I was at Thommana- Muriyad Kole, part of the Kole Wetlands. My friend Rison Thumboor had given me a call earlier and informed me that there was a bee-eater of unusual size among the group of Blue-tailed Bee-eaters *Merops philippinus* and he had even photographed it. I rushed to the spot thinking all about a Blue-cheeked Bee-eater *Merops persicus* among the Blue-tailed bee-eater group as it had been reported from further south in Alappuzha district in the recent years. However, what I found was European Bee-eater *Merops apiaster*, with a flash of rich colours, just as I had seen, when I was in Dubai. Although this one was little different with duller colours, I was pretty much sure that they looked similar. I was highly surprised as to how this bird was seen in an entirely different region where there was no previous sighting of this bird. I visited the spot again in the evening, but it was not there, probably it was a stopover after a long journey. I sought the expert help of Praveen J and Dr.Jinesh P.S and to my utmost pleasure, they also confirmed the identification of this bird as European Bee-eater. They also informed that it was the first

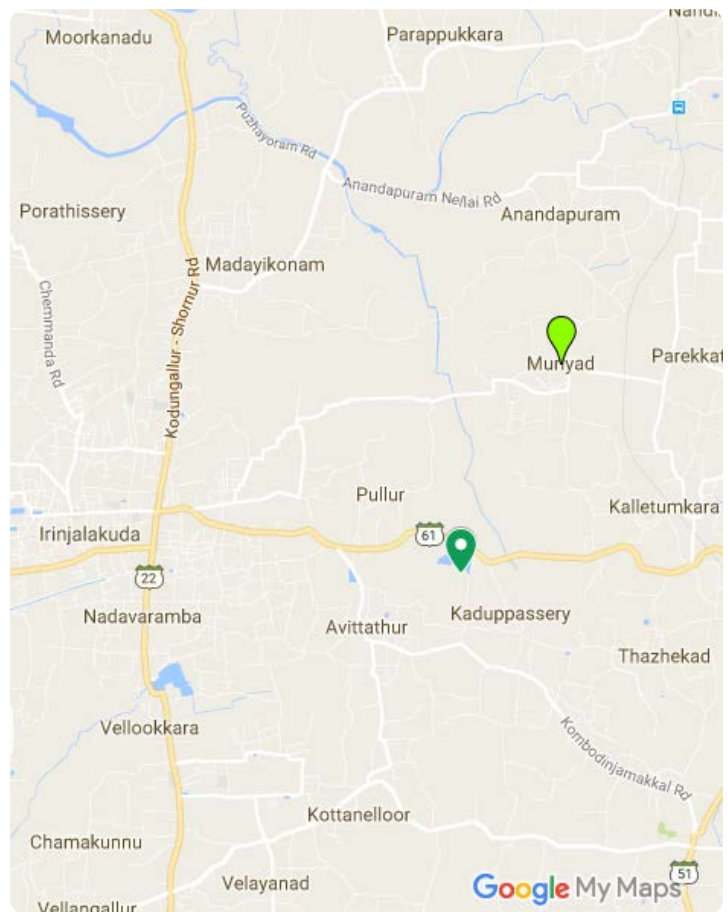


European Bee-eater / *Merops apiaster* ▲

definite record of this species in Kerala. Compared to Blue-tailed Bee-eater, it was the larger size and the variation in colours that helped to differentiate this bird from other bee-eaters.

European Bee-eater is a "Summer visitor to Afganistan, Baluchistan and the Himalayas of N Pakistan to Kashmir. Passage vagrant through scattered localities of W Peninsula; a few over winter in Sri Lanka (rare but regular) " (Rasmusen & Anderton 2012).

There had been sporadic records from south India since 1952 and regular winter records from Kavery river valley in Karnataka which was on the rise in the 1990s (Shyamal 1998). More recently, there were reports of this species with photograph near Banglore (Praveen 2007). A sighting was reported from Sathyamangalam forests in Tamilnadu (Joshua *et al.* 1998), but Khacher (1997) suspected this could be a mistaken identification and this view was supported by Wesley (1998). But, eBird data shows several records, with photographs, from Sathyamangalam Tiger Reserve as well as from different parts of Coimbatore, Salem and Erode districts of Tamilnadu during 2015, 2015 and 2017. This suggests that that the earlier record from Sathyamangalam also may have been of the same species. Some records from Karnataka also are available on eBird since 2010 (ebird.org).



Source: <https://www.google.co.in/maps>

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A mating pair of Grey-headed Fish- Eagle

Ichthyophaga ichthyaetus
at Sholayar

Grey-headed Fish-Eagle (Fig1) 

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According to the ornithological literature in India (Ali & Ripley 1987), it was believed that the fish-eagles found in south India were Grey-headed Fish-Eagles *Ichthyophaga ichthyaetus* (GHFE) until a Lesser Fish-Eagle *Ichthyophaga humilis* (LFE) was photographed from Cauvery wildlife sanctuary in 2004 (Lethaby 2004). LFE was first reported in Kerala from Parambikulam Wildlife Sanctuary on 20 January 2006 by P.O.Nameer (Sashikumar *et al.* 2011a). Since then there were several reports of LFE from many of the protected areas in Kerala (Praveen 2011). Interestingly, none of the bird surveys after 2006 reported GHFE. It was not clear whether GHFE was being replaced by LFE, which was expanding its range or it could have been, as many suspected, a case of misidentification by earlier observers.


On 7 September 2016 while birding en route Malakapara from Vazhachal, we made a stopover at the Sholayar dam site. I have been in that area many times during my birding trips and I told my team mates that it is a good place to see LFE. Suddenly we saw a fish-eagle followed by another flying over the trees near to the dam and suddenly I noticed the clear white upper-tail and black sub-terminal band of one of the birds. As I was familiar with both the fish-eagles from north India, I immediately identified it as a GHFE. Finally the eagles settled on a tree top and copulated. The birds changed their perch repeatedly and each time they flew we could see the white upper tail clearly. This is the diagnostic feature to distinguish GHFE from LFE, which has a dark tail with a dusky base (Rasmussen & Anderton 2012). After mating for a couple of times, one bird flew across the dam and we could photograph it clearly (Figs. 1, 2 and 3). The second fish-eagle started calling and I could recognize it as the call of GHFE, with which I was familiar. Even though I could identify the species positively as GHFE in the field itself, the photographs were circulated among the experts who confirmed the identification.

In south India GHFE has been sighted and photographed regularly at the Kabini river basin (Praveen 2011). It was thought that as the Kabini river originates and flows through Wayanad, Kerala, this species may be present in the Kerala part also. But none of the bird surveys or reports from Wayanad encountered GHFE whereas LFE was seen and photographed



Grey-headed Fish-Eagle (Fig 2) 



Grey-headed Fish-Eagle (Fig 3) 

many times. Mohandas (2008) photographed a fish-eagle from Chimmony Wildlife Sanctuary, Kerala on 27 May 2008 which was believed to be a GHFE (Sashikumar *et al.* 2011a). However, I analysed the photograph once again, which showed only the underside, and the tail pattern did not show any conclusive field marks for this to be a GHFE. As LFE has been definitely photographed from Chimmony WLS could not be ruled out, identification of this fish-eagle should be treated as LFE/ GHFE. In August 2010 another fish-eagle was seen at Chimmony by Sandeep Das, which he believed was GHFE, but no photos were taken (Das 2010). A report of GHFE without photo documentation from Kannankuzhi

region of Parambikulam Wildlife Sanctuary also existed (Narayanan 2010). Chithrabhanu (2013) photographed a GHFE from Sholayar, one of the photographs showing the white upper-tail. Further claims of GHFE from Kerala are enlisted in Sashikumar *et al.* (2011a) with a note that LFE could be involved.

During Travancore-Cochin ornithological survey in 2009, 32 species of diurnal raptors out of 44 reported from Kerala were encountered but not the GHFE. The survey report says “another mystery is the total absence of GHFE, another threatened species from Kerala which deserves more attention” (Sashikumar *et al.* 2011b). According to Praveen (2011), there are two major concentrations for LFE in south India: one around the basin of midcourse of Cauvery River while the second around the Chalakudy river basin. So it was assumed that the fish-eagles found in Chalakudy valley area around Parambikulam, Vazhachal, Sholayar, Chimmony and further south to Idamalayar and Thattekkad were LFE.

Breeding of fish-eagles were reported from Idamalayar and Kuruva islands (Sashikumar *et al.* 2011a) but the exact species identity is doubtful in the present scenario. The sighting of the mating pair of GHFE indicates that they may breed in Vazhachal river basin. Bird surveys in future may provide more light on the status and distribution of this species in Kerala.

Acknowledgments

I would like to thank my team mates Rayees Rahman and Hisham Ashraf for their field support and for providing the photographs used here. My sincere gratitude to C Sashikumar and Praveen J for encouraging and guiding me for writing up this note and providing the necessary literature.

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Nilgiri Thrush

Zoothera neilgherriensis

from coastal north Kerala

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Nilgiri Thrush (Fig 2) ♡

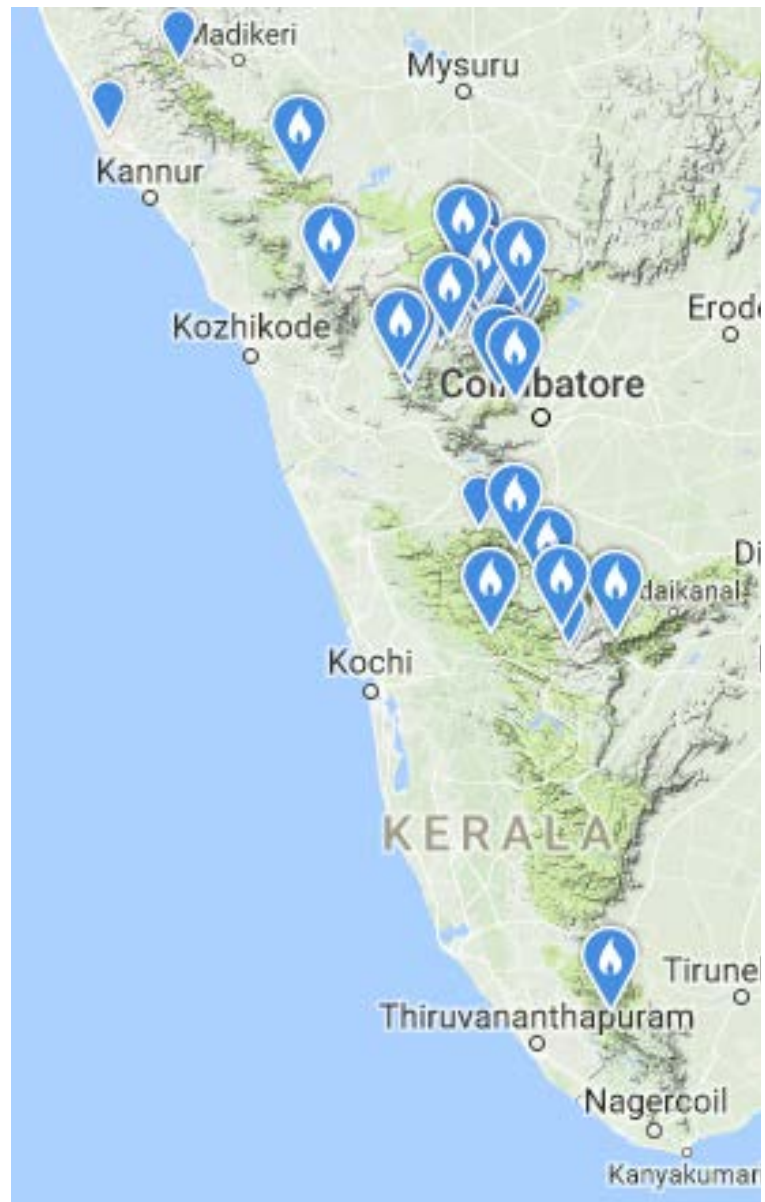
On 5 February 2016, while watching birds, I saw a Nilgiri Thrush *Zoothera neilgherriensis* in a small sacred grove in Thekke Mambalam (12°05'18.23"N; 75°12'00.73"E), Payyanur, Kannur district, Kerala. The sacred grove is 0.2 acre in size, surrounded by paddy fields. The dominating tree species of the grove were *Holigrana arnottiana* and *Adenanthera pavonina*, about 20m in height. There were shrubs and woody creepers also in the grove.

The bird was seen in the grove till 11 March 2016, usually active during mornings (6:00 AM-10:00 AM) and evenings (3:00 PM – 6:00 PM). Most of this time the bird was found to forage on the ground for insects and other prey in the leaf litter. When disturbed it flew and hid in the foliage of the nearby trees. This bird was photographed by Dr Jayan Thomas on 28 February 2016 (Fig. 2).

This grove is at an altitude of 7 m above sea level and is situated in the coastal plain. This could be the lowest elevation at which this species has been reported in Kerala or elsewhere, as per eBird data (Fig.1). Usually the species occurs in dense evergreen sholas and forests from 600 m to 2100 m (Rasmussen and Anderton, 2012, Sashikumar et al., 2011). The nearest sightings of the species were reported from Coorg hills and in Wayanad (Fig 1.).

Nothing is mentioned about the altitudinal or seasonal movements of this forest bird in ornithological literature, though the conspecific Small-billed Scaly Thrush *Zoothera dauma* of the Himalayas is known to have altitudinal and short distance movements in summer (Ali & Ripley, 1984, Rasmussen & Anderton, 2012).

I thank Roshnath R., who helped me to write this report and Dr. Jayan Thomas, who provided the photograph.



Sightings of Nilgiri Thrush using eBird species map. (Fig 1:) 

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Fulvous Whistling Duck

Dendrocygna bicolor

-An addition to the Bird list of Kerala

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On 4 January 2017 I was birding at Pallithode wetlands in Alappuzha District. The field was filled with more than 5000 Lesser Whistling Ducks *Dendrocygna javanica* on that day but I could spot a different looking bird in that huge group. Initially, I thought it was a Lesser Whistling-duck in brighter plumage, but closer examination of the photographs taken in the field revealed its conspicuous white streaked flanks and dark streaks on the neck. After consultation with the experts by sharing the photographs, this bird was identified as a Fulvous Whistling Duck *Dendrocygna bicolor*. The photographs and the bird list of that day have been uploaded in eBird which can be seen at: <http://ebird.org/ebird/view/checklist/S33426364>. This is the first photographic record of this species in Kerala, though

there had been some unauthenticated sight records (Neelakantan *et al.* 1993, Sashikumar *et al.* 2011).

Fulvous Whistling-duck was considered as a resident with nomadic movements mainly in north east India, vagrant elsewhere (Ali & Ripley 1987, Rasmussen & Anderton 2012). But, in recent years, this species has been observed round the year in the lakes around Chennai and some other locations in Tamilnadu. Initially a small flock was spotted in the Pallikaranai marsh, Chennai in July 2009 and latter it was found breeding there in November 2012 (Santharam 2011a, 2011b)

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Fulvous Whistling Duck ♡





Recent records of rare earthworm genera from Kerala, India

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Introduction

Hitherto, 419 species of earthworms have been recorded from India; this comes to about 11.1% of the known global earthworm diversity (Julka *et al.*, 2009). With 53% of the country's earthworm diversity, the Western Ghats and western coastal plains have the highest level of earthworm species richness in India (Julka and Paliwal, 2005). Kerala, a small Indian state at the southern tip of the Western Ghats harbours a rich array of earthworms with 91 species belonging to 27 genera and 9 families, of which 55 are endemic, 9 near endemic, 10 native peregrine (Narayanan *et al.*, 2016a) and 17 exotic (Narayanan *et al.*, 2016b; Athira *et al.*, 2016). Exotic species means, 'species which have been introduced in India from other zoogeographical regions' and native peregrines are 'some native Indian species which are able to tolerate disturbance, different climatic and edaphic parameters and thus they have gained distribution in various parts of the country' (Narayanan



Amyntas corticis

et al.,2016a). We are reporting here the present distribution of two earthworm species in Kerala, among these *Amyntas corticis* (Kinberg, 1867) is an exotic invasive species while *Octochaetona beatrix* (Beddard, 1902) is a native peregrine species.

Materials and methods

Earthworms were collected by digging and hand sorting method as proposed by Julka (1990). Soil lumps were broken and the soil was sifted between fingers to sort out the worms. Collected specimens were preserved in 5% formalin. Anatomical details were examined under binocular dissection microscope. Specimens collected were identified using Gates (1972) and Julka (1988). Further, earthworm specimens at the Zoological Survey of India, Western Ghats Regional Centre (ZSI-WGRC), Kozhikode (Calicut), Kerala, India were also examined for the presence of these species. All the collected specimens were deposited in the earthworm laboratory and museum of the Advanced Centre of Environmental

Studies and Sustainable Development, Mahatma Gandhi University, Kottayam, Kerala, India.

Results

Family Octochaetidae

Octochaetona beatrix (Beddard, 1902)

Diagnosis . Setae perichaetine; prostomium epilobous; first dorsal pore at intersegment 12/13; clitellum annular, covering segments 13-17, 18; setae retained, furrows obscured; male genital field slightly depressed; male pores minute, at or just median to *a*; prostatic pores minute, median to *a*; seminal grooves concave between setal arcs of segments 17 and 19; female pores paired; spermathecal pores minute, on or slightly anterior to the setal arcs of segments 8 and 9, median to *a*; combined male and prostatic pores superficial on segment 18; female pore single at middle of segment 14; discrete genital markings absent, but paired oval to circular slightly thickened areas present, lateral to seminal grooves, on segments 18 and

19; septa 4/5,8/9-11/12 muscular, 5/6/7/8 absent; gizzard between septa 4/5 and 8/9; intestine begins in 16 or 17; typhlosome present, large bifid lamelliform; metandric; penial setae ornamented with sparse triangular teeth; spermatheca two pairs, each with a spheroidal, shortly pyriform, oval or flattened and shelf-like, shortly stalked iridescent anal diverticulum.

Material examined. 2 clitellate, 4 a clitellate, Karicode, dist. Kollam, Kerala (N 8° 54' 48.2" E 76° 38' 2.28"), alt. 1217 m, open area near homestead, 30 May 2015, coll. A. Sidharthan (Reg. no. ACESD/EW/521); 1 clitellate, Kollamkunnu in Shendurney Wildlife Sanctuary, dist. Kollam, Kerala, 17 August 1997, coll. P.M. Sureshan (Reg. no. ZSI/WGRC/IR/INV-10453).

Distribution. Kerala: Dist. Thiruvananthapuram: Karakulam, Thiruvananthapuram; Dist. Kollam: Karicode, Kollamkunnu in Shendurney Wildlife Sanctuary (new records).

Family Megascolecidae

Amyntascorticus (Kinberg, 1867)

Diagnosis. Setae perichaetine; prostomium epilobous; first dorsal pore at intersegment 10/11; clitellum annular, covering segments 14-16; combined male and prostatic pores superficial on segment 18; female pore single at middle of segment 14; spermathecal pores four pairs, in intersegmental furrows of 5/6/7/8/9; genital markings present, small and circular in clusters or scattered between male pores on segment 18, paired on some or all of segments 6-9 at levels of spermathecal pores; intestine with typhlosome; intestinal caeca simple, in segments 27-32; Holandric; Testes sac unpaired in ventral; Seminal vesicles in 11 and 12; prostates racemose in segments 16-22; penial setae absent;



excretory system meronephric.

Material examined. 8 clitellate, Chempakathozhukudi, dist. Idukki, Kerala (N 10° 2' 3.2" E 77° 13' 6.2"), alt. 1217 m, near to a water channel within plantation of cardamom and pepper, 18 July 2012, coll. S.P. Narayanan, M. Ramesan, S. Sathrumithra and S.A. Sasi (Reg. no. ACESD/EW/2); 2 clitellate, Periyakanal power house, dist. Idukki, Kerala (N 10° 1' 22.3" E 77° 10' 22.3"), alt. 1337 m, from tea plantation, 18 July 2012, coll. M. Ramesan and S. Sathrumithra, M. (Reg. no. ACESD/EW/54); 3 clitellate, Viripara, dist. Idukki, Kerala (N 10° 5' 26.6" E 76° 56' 49.8"), alt. 914 m, from road side near to a cardamom plantation, 25 October 2011, coll. T. Augustine and J.R. Thomas (Reg. no. ACESD/EW/59); 1 clitellate, Bander (Vandaravu) in Papmadum Shola National Park, dist. Idukki, Kerala (N 10° 7' 51.3" E 77° 16' 19.7"), alt. 2358 m, wattle planted region, 25 July 2013, coll. S.P. Narayanan, S. Sathrumithra, T. Augustine and S.A. Sasi (Reg. no. ACESD/EW/114); 1 a clitellate, 18 clitellate, Mannavan Shola in Anamudi Shola National Park, dist. Idukki, Kerala (N 10° 11' 18.5" E 77° 11' 1"), alt. 1946 m, shola forest, 25 May 2013, coll. T. Augustine, S. Sathrumithra and

S.P. Narayanan (Reg. no. ACESSD/EW/116); 12 clitellate, Pampadum Shola National Park – check post, dist. Idukki, Kerala (N 10° 7' 28.3" E 77° 15' 23.2"), alt. 1916 m, decayed wood, stream side, road side etc within shola forest, 26 May 2013, coll. T. Augustine, S.P. Narayanan, S.A. Sasi and S. Sathrumithra (Reg. no. ACESSD/EW/117); 2 clitellate, Kamblippara Shola – Marayoor range, dist. Idukki, Kerala (N 10° 16' 30.1" E 77° 7' 34.7"), alt. 1730 m, shola like evergreen forest, 23 November 2013, coll. S.P. Narayanan, D. Kuriakose, S. Sathrumithra and T. Augustine (Reg. no. ACESSD/EW/244); 1 clitellate, Devikulam Shola – Marayoor range, dist. Idukki, Kerala (N 10° 3' 31.2" E 77° 6' 12.8"), alt. 1573 m, shola forest, 18 July 2012, coll. S.A. Sasi, M. Ramesan, S. Sathrumithra and S.P. Narayanan (Reg. no. ACESSD/EW/481); 1 clitellate, Aanakkulam, dist. Idukki, Kerala (N 10° 9' 44.2" E 76° 54' 44.9"), alt. 326 m, evergreen forest, 26 October 2011, coll. S.P. Narayanan, C.S.P. Kumar and T. Augustine (Reg. no. ACESSD/EW/529); 1 clitellate, Pambanar, dist. Idukki, Kerala (N 9° 34' 43.4" E 77° 00' 51.6"), alt. 1042 m, streamside in a tea plantation, 23 October 2015, coll. S.P. Narayanan and S. Sathrumithra (Reg. no. ACESSD/EW/533); 4 clitellate, Pampadum Shola National Park, dist. Idukki, Kerala, 26 May 2014, coll. P.M. Sureshan (Reg. no. ZSI/WGRC/IR/INV-20304); 5 clitellate, Pettymudy forest camp shed in Eravikulam National Park, dist. Idukki, Kerala (N 10° 10' 26.7" E 77° 1' 25.6"), alt. 1966 m, stream side in shola forest, 21 November 2016, coll. S.P. Narayanan, S. Sathrumithra and G. Christopher (Reg. no. ACESSD/EW/701).

Distribution. Kerala: Dist. Idukki: Aanakkulam, Bander (Vandaravu) in Pampadum Shola National Park, Chemakathozhukudi, Devikulam Shola – Marayoor range, Kamblippara Shola – Marayoor range, Mannavan Shola

in Anamudi Shola National Park, Pampadum Shola National Park, Periyakanal, Pettymudy in Eravikulam National Park, Viripara (new records); Dist. Thrissur: Peringadoor.

Remarks. At Aanakkulam, they were very common under elephant dung in the evergreen forest.

Discussion

Octochaetona beatrix is considered as a native peregrine species in India (Narayanan *et al.*, 2016a) and it has been first described from Kolkata (Beddard, 1902), even though it is widely distributed in different parts of the world (Blakemore, 2012). Before the present records, *O. beatrix* was reported only two times from the state, first recorded from Thiruvananthapuram by Michaelsen (1910) and later from Karakulam by Stephenson (1916). Occurrence of the exotic invasive species such as *Pontoscolex corethrurus* (Müller, 1857) and *Metaphire holleti* (Perrier, 1872) in the state was reported around a century back (Fedarb, 1898; Michaelsen, 1910; Stephenson, 1916), and now they have colonized here widely (Narayanan *et al.*, 2015, 2016c). It is found that compared to the above mentioned exotic species, *O. beatrix* could expand its range only to the nearby Kollam district in a span of 100 years. Interestingly, they have spread to the protected Shendurney Wildlife Sanctuary as well. They are widely reported from other Indian states such as Andhra Pradesh, Bengal, Goa, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, Uttarakhand (Julka, 1988; Julka and Paliwal, 2000; Halder and Dhani, 2005; Mandalet *et al.*, 2011). Outside India it has been recorded from Australia, Malaysian Peninsula,

Myanmar (Burma), Nepal, Pakistan, Philippines and Vietnam (Julka, 1988; Blakemore, 2012).

The origin of *Amythascorticis* China from where it has been transported to various parts of the world (Julka, 2008, 2014). This species is considered as the most widely distributed of the peregrine species of the pheretimoid group, having been recorded from temperate and tropical regions throughout the world, although it seems to have failed to establish in certain European countries and tropical lowlands of India (Gates, 1972; Blakemore, 2012). First record of *A. corticis* from the state was from Peringadoor in 2015, during a short term study on the earthworm fauna of urban and suburban regions of Thrissur district (Athira *et al.*, 2016). Since 2012, we have collected it in good numbers from various cooler areas of the Idukki district. Climate-wise, its presence in the hotter suburban Thrissur district is interesting. *A. corticis* does not figure in the extensive survey of earthworms of Vanderavu range (= Bander) of Tamil Nadu – Kerala border by Jamieson (1977). The present record from Bander shows that the species has colonized the area recently. The effects and implications of invasive species in below ground terrestrial ecosystems are not well known as compared to above ground terrestrial and marine ecosystems (Gonzalez *et al.*, 2006). When an exotic earthworm is naturalized in a new

area it can seriously alter the structural properties of the soil, organic matter and nutrient dynamics, as well as plant and animal communities above and below ground (Hendrix *et al.*, 2008). Higher altitude regions of Idukki district, are ecologically fragile (especially the Shola-Grassland ecosystems) and many of the plant and animal taxa are unique to this region, especially several shield-tail snake species. Earthworm form one of the major prey items of these burrowing snake species. At present, *A. corticis* wide spread in the Munnar region (including the many National Parks) hence the shield-tail snakes would be preying on them. Further studies are needed to evaluate the interactions. We assume that *A. corticis* would colonize in all the potential suitable habitats within the state in a short period of time. According to Julka (2008), it is now well established in various natural habitats of India. Apart from Kerala, it is recorded from 15 other states of India (Stephenson, 1923; Soota and Halder, 1981; Gates, 1972; Mandalet *et al.*, 2011).

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Platysticta deccanensis ♀



Dragonfly survey of Aralam Wildlife Sanctuary Kannur district, Kerala - A report

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A dragonfly survey was organized at Aralam WLS, Kannur district from 28th to 30st October 2016 jointly organized by Kerala Forests & Wildlife Department, Malabar Natural History Society (MNHS) and Travancore Natural History Society (TNHS). As many as 52 odonate enthusiasts from various parts of Kerala participated in the survey, spread across 6 locations and this was the second systematic survey of the odonata of the region. Major locations surveyed were Kottiyur forests, Meenmutty falls, Kappil, Paripputhodu, Chavachi, Kuruckathodu, Narikadavu, Bhoothankallu, Pookundu and Valayamchal

A total of 53 species of odonates were recorded during the survey, including 32 species of dragonflies and 21 species of damselflies. Among the 53 species, 12

species are endemic to the Western Ghats. The significant odonata species observed during the survey were Kodagu Clubtail *Gomphidia kodaguensis* Daggerhead *Idionyx* sp. Yellow-striped Grass Dart, *Pseudagrion indicum*, Nilgiri Torrent Dart *Euphaea dispar*, Malabar Torrent Dart, *Euphaea fraseri* Pied Reedtail, *Protosticta gravelly*, Little Reedtail *Protosticta hearseyi*, Red-spotted Reedtail *Protosticta sanguinostigma*, The highlight of the survey was the spotting of Black-winged bambootail, *Disparoneura quadrimaculata* and Saffron Forest Damselfly (Saffron Reedtail), *Platysticta deccanensis*. Both the species are narrow endemic to the Western Ghats and spotted for the first time from the Sanctuary. With this survey, total odonata diversity of the Sanctuary has become 93 (36 damselflies and 57 dragonflies), including 23 endemics (Table-1).



Disparoneura quadrimaculata ♂

The survey was inaugurated by Shri. V.C. Balakrishnan, Secretary, Society for Environmental Education in Kerala (SEEK). Shri. Madhusudanan V, Asst Wildlife Warden welcomed the gathering. Shri. Sajikumar, Wildlife Warden, Aralam WLS, Shri. Balakrishnan Valppil, also spoke on the occasion. Dr Jafer Palot and C.G. Kiran coordinated the survey.

Table-1: Dragonflies (Insecta: Odonata) recorded from Aralam Wildlife Sanctuary

Sl.No.	Systematic List	Remarks	Sl.No.	Systematic List	Remarks
	Suborder: Zygoptera (Damselflies)		15.	<i>Copera marginipes</i> (Rambur)	
	Family: Coenagrionidae		16.	<i>Copera vittata deccanensis</i> Laidlaw	
1.	<i>Ceriagrion cerinorubellum</i> (Brauer)			Family: Platystictidae	
2.	<i>Ceriagrion coromandelianum</i> (Fabricius)		17.	<i>Protosticta gravelly</i> Laidlaw	Endemic
3.	<i>Ceriagrion olivaceum</i> (Laidlaw)		18.	<i>Protosticta hearseyi</i> Fraser	Endemic
4.	<i>Ceriagrion rubiae</i> Laidlaw		19.	<i>Protosticta sanguinostigma</i> Fraser	Endemic
5.	<i>Pseudagrion microcephalum</i> (Rambur)		20.	<i>Platysticta deccanensis</i> (Laidlaw)	Endemic
6.	<i>Pseudagrion rubriceps rubriceps</i> (Selys)			Family: Protoneuridae	
7.	<i>Pseudagrion indicum</i> (Fraser)		21.	<i>Caconeura risi</i> (Fraser)	Endemic
8.	<i>Ischnura aurora aurora</i> (Brauer)		22.	<i>Caconeura ramburi</i> (Fraser)	Endemic
9.	<i>Ischnura senegalensis</i> (Rambur)		23.	<i>Phyllonura westermanii</i> (Selys)	Endemic
10.	<i>Aciagrion occidentale</i> (Laidlaw)		24.	<i>Disparoneura quadrimaculata</i> (Rambur)	Endemic
11.	<i>Agriocnemis pygmaea</i> (Rambur)		25.	<i>Esme</i> sp	Endemic
12.	<i>Agriocnemis pieris</i> Laidlaw		26.	<i>Podasineura verticalis</i> (Selys)	
13.	<i>Agriocnemis splendidissima</i> Laidlaw			Family: Lestidae	
14.	<i>Aciagrion hisopa</i> (Selys)		27.	<i>Lestes elatus</i> Hagen	
	Family: Platynemididae		28.	<i>Lestes praemorsus</i> (Hagen)	

Sl.No.	Systematic List	Remarks
	Family: Calopterygidae	
29.	Neurobasis chinensis chinensis (Linnaeus)	
30.	Vestalis apicalis apicalis Selys	
31.	Vestalis gracilis gracilis (Rambur)	
32.	Vestalis gracilis montana Fraser	Endemic
	Family: Chlorocyphidae	
33.	Rhinocypha (Heliocypha) bisignata (Selys)	
34.	Libellago lineata indica (Fraser)	
	Family: Euphaeidae	
35.	Euphaea dispar (Rambur)	Endemic
36.	Euphaea fraseri (Laidlaw)	Endemic
	Suborder: Anisoptera (Dragonflies)	
	Family: Aeshnidae	
37.	Anax guttatus (Burmeister)	
38.	Anax immaculifrons (Rambur)	
39.	Gynaecantha bayadera (Selys)	
40.	Gynaecantha dravida (Lieftinck)	
	Family: Gomphidae	
41.	Ictinogomphus rapax (Rambur)	
42.	Heliogomphus promelas (Selys)	Endemic
43.	Megalogomphus hannyngtoni (Fraser)	Endemic
44.	Megalogomphus longistigma Laidlaw	Endemic
45.	Onycogomphus nilgiriensis (Fraser)	Endemic
46.	Gomphidia kodaguensis (Fraser)	Endemic
47.	Microgomphus souteri (Fraser)	Endemic
48.	Paragomphus lineatus (Selys)	
	Family: Chlorogomphidae	
49.	Chlorogomphus campioni (Fraser)	Endemic
	Family: Corduliidae	
50.	Idionyx galeata Fraser	Endemic
51.	Idionyx saffronata Fraser	Endemic
	Family: Libellulidae	
52.	Tetrathemis platyptera Selys	
53.	Brachydiplax sobrina (Rambur)	
54.	Cratilla lineata calverti Forster	
55.	Lathecrista asiatica asiatica (Fabricius)	
56.	Orthetrum chrysis (Selys)	
57.	Orthetrum glaucum (Brauer)	

Sl.No.	Systematic List	Remarks
58.	Orthetrum pruinosum neglectum (Rambur)	
59.	Orthetrum sabina (Drury)	
60.	Orthetrum luzonicum (Brauer)	
61.	Orthetrum taeniolatum (Schneider)	
62.	Potamarcha congener (Rambur)	
63.	Acisoma panorpoides panorpoides Rambur	
64.	Brachythemis contaminata (Fabricius)	
65.	Bradinopyga geminata (Rambur)	
66.	Crocothemis servilia servilia (Drury)	
67.	Diplacodes trivialis (Rambur)	
68.	Neurothemis fulvia (Drury)	
69.	Neurothemis intermedia intermedia (Rambur)	
70.	Neurothemis tullia tullia (Drury)	
71.	Rhodothemis rufa (Rambur)	
72.	Epithemis mariae (Laidlaw)	Endemic
73.	Hylaeothemis indica (Fraser)	
74.	Trithemis aurora (Burmeister)	
75.	Trithemis festiva (Rambur)	
76.	Trithemis kirbyi kirbyi Selys	
77.	Trithemis pallidinervis (Kirby)	
78.	Palpopleura sexmaculata sexmaculata (Fabricius)	
79.	Rhyothemis variegata variegata (Linnaeus)	
80.	Rhyothemis triangularis Kirby	
81.	Pantala flavescens (Fabricius)	
82.	Hydrobasilus coreus (Brauer)	
83.	Tremea limbata similata (Rambur)	
84.	Tremea basilaris (Palisot de Beauvois)	
85.	Lyriothemis tricolor (Ris)	
86.	Tholymis tillarga (Fabricius)	
87.	Onychothemis testacea Laidlaw	
88.	Zyxomma petiolatum Rambur	
89.	Aethrimanta brevipennis (Rambur)	
90.	Urothemis signata signata (Rambur)	
91.	Zygonyx iris (Selys)	
92.	Zyxomma petiolatum (Rambur)	
	Family: Macromiidae	
93.	Macormia ellisoni (Fraser)	Endemic



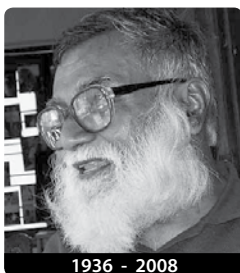
Wildlife Week Celebration

As part of the Wildlife Week Celebration, MNHS jointly with Kerala Forests & Wildlife Department and Calicut Bird Club, organized a Photo Exhibition entitled "Wildscapes" at Lalita Kala Academy Art Gallery, Kozhikode from 1-5th October 2016. Twenty five photographers participated in this curated show of contemporary wildlife photography which was on the rare species from different habitats spread across the State of Kerala. Further, the exhibition was displayed at various school and colleges in and around Kozhikode.



Dragonfly Survey at Aralam WLS

Second Dragonfly survey of Aralam WLS was conducted from 28- 30th October, 2016. Altogether 53 species of dragonflies were recorded during the survey. 52 dragonfly enthusiasts from various part of south India participated in the survey.



Prof. John C Jacob Commemorative Talk:

Prof. John C Jacob commemorative talk of the year was delivered by Dr. Arun Kumar, Principal Scientist, Salim Ali Centre for Ornithology and Natural History Society (SACON) at the Department of Environmental Studies, Kannur University, Mangad on 15th October 2016. Dr Khader Mangad, Vice Chancellor, Kannur University inaugurated the function.





Bird Race 2016

Tenth edition of Kerala Birdrace was conducted at Kozhikode on 18th December 2016. As many as 10 teams from north Kerala participated in the Programme.



Bird Walk at Kottooli wetlands

In connection with the initiation of second phase of Bird Atlas of Kozhikode district a Workshop and bird walk was organized at Kottooli wetlands, Kozhikode district on 12th January 2017



Butterfly Survey at Aralam & Kottiyur WLS

17th annual butterfly survey was conducted at Aralam on 13-15th January 2017. As many as 124 butterfly enthusiasts from various part of the country participated in the survey. 148 species of butterfly species was observed during the survey including 2 new additions to the Sanctuary- Silver Royal and Sitala Ace.



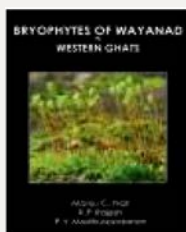
Bird Identification Workshop

Jointly with Kerala Forests & Wildlife Department and Zoological Survey of India (ZSI), organized a bird identification Workshop at Zoological Survey of India, Kozhikode on 8th March 2017. 55 bird watchers attended the Programme. Shri. E. Pardeep Kumar, Additional Principal Chief Conservator of Forests, (Northern Region) inaugurated the Programme. Shri. C. Sashikumar, Sathyan Meppayur and Dr Jafer Palot handled various sessions at the Workshop.



Bird Survey at Aralam & Kottiyur WLS

The 18th annual bird survey of Aralam Wildlife Sanctuary was conducted on 10-12th March 2017. 57 birdwatchers from Kerala, Karanataka and Tamil Nadu participated in the survey. Altogether, 128 species of birds were recorded during the survey, including 3 new bird additions from the Sanctuary.

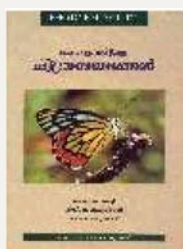


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