

India Wilds

Newsletter

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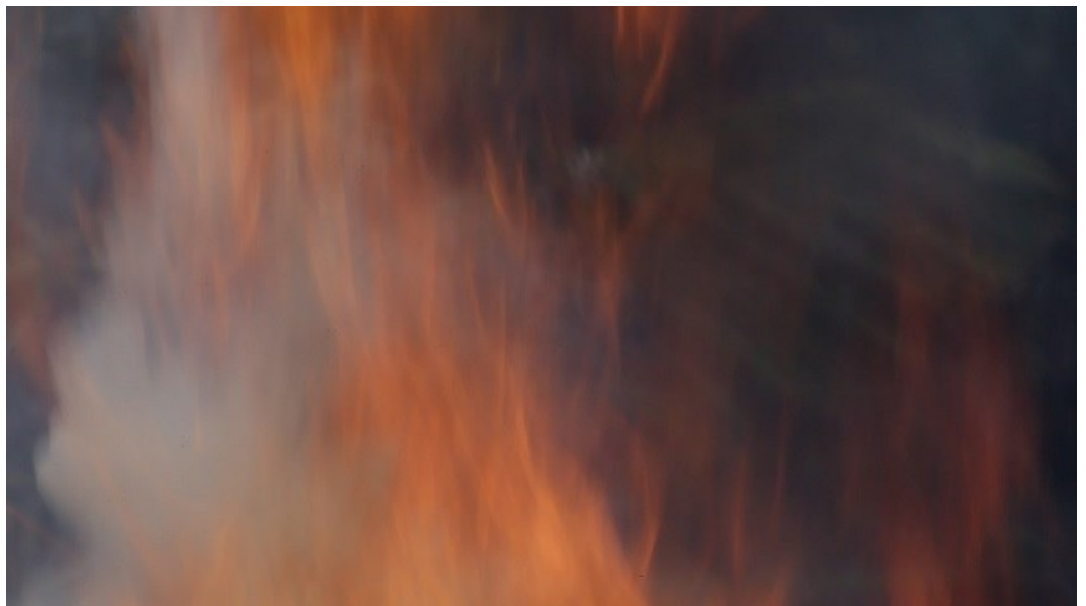
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Cover Page Photograph -

Mouse Deer by
Prashobh Ailyam Nair

Forest Fires:

India's natural heritage is facing an unprecedented assault. Every month there is a new effort to fragment our existing wilderness areas by creating a canal, road, railway line, dam, power plant, politician statue etc. Everyday millions of people enter into the forests in search of wood, Non-timber forest produce, grazing livestock etc. As if this is not sufficient, large swathes of forests are razed to the ground due to forest fires. To make matters worse, not even a tiny fraction of India's billion plus population come to know about it. Recently the forest fires in Uttarakhand attracted national attention by the sheer magnitude of it and it could easily be comparable to the massive forest fires in USA.



Wild Fire

Some estimates suggest 4048 hectares of forest have been burnt due to forest fires in Uttarakhand since the month of February 2016. Other estimates are much higher and the number of fire incidences keep on increasing every day and may cross 2000 by the time the monsoon rains make their appearance. Over 4500 hectares have been impacted by forest fire in Himachal Pradesh.

The forest department mostly talk about the loss of timber from the forests due to forest fires. The impact of forest fires on bio-diversity of these forests is neither studied nor gets any attention.

The British viewed India's forests as source of wood. Unfortunately, that mentality still remains. It is easy for a new recruit to forest service to understand the value of wood that each



tree can provide. It is also somewhat easy to understand the amount of non-timber forest produce (NTFP) collected from our forests. However, the role of our forests in our overall wellbeing is not understood.

Forests and our well being:

Forests are responsible for rains. The moisture from the trees evaporate and help in causing rains. A country, which is increasingly facing drought and its farmers routinely committing suicide, should be more concerned about this role of forests in causing rains.

Forests act as our lungs. They help in carbon sequestration. The chlorophyll of the leaves take in the carbon dioxide from the atmosphere and give back oxygen. This ecosystem service cannot be artificially created and the value of it can run up to billions. When massive chunks of forests are razed to the ground, the impact is tremendous. The forest fires lead to lot of soot and ashes into the air as well as release of carbon dioxide, carbon monoxide, methane, hydrocarbons and various other noxious gases into the air which cause short-term negative impact on the air quality. The loss in ability to take in carbon dioxide from the air and release oxygen due to loss of tree cover results in lower air quality in the long-term. This impact on air quality hasn't got the deserved attention.

According to the State of Forest 2015 (ISFR 2015), the total forest and tree cover in India is 79.42 million hectares. According to the same report the total carbon stock is 7044 million tonnes. A simple rule of thumb calculation taking an average carbon stock per hectare of forest and tree cover comes to 88.69 tonnes. So the initial estimates of 4048 hectares of forest burnt in Uttarakhand since February 2016 comes to 3.59 lakh tonnes or 0.359 million tonnes of carbon stock lost. The total impact on carbon stock of India due to forest fire would be massive. However, this rule of thumb calculation is just an approximate as different tree and plant species have a different ability to fix carbon and their age also matters. Some species like mangroves have roughly four times more capacity than other species. Nevertheless if the ISFR report can also publish this impact then it would be a big help in highlighting the massive problem of forest fires.

It would also be pertinent to mention that the INDC target for forestry sector envisages creation of additional carbon sink of 2.5 to 3.0 billion tonnes of CO₂. If our forest fires continue in this manner than this target is going to be missed by a wide margin.

The forests also play a big role in binding the soil together. Without the forests all the top soil would have been eroded in no time by the play of rain and wind. In the hilly districts like Uttarakhand, Himachal, Kashmir, north east and other states, without the forest cover the areas

would be prone to landslides.

India's North-East states (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura) have lost a total of 628 square kilometres of forests. Another hilly state of Uttarakhand has already lost 268 square kilometres of forests. Karnataka in South India which has a large portion of Western Ghats has lost 195 square kilometres of forest cover (ISFR 2015). Excluding the portion illegally occupied by Pakistan and China, Jammu & Kashmir has also lost 49 square kilometres of forest cover. It is not known how much of these is due to forest-fire. However, the soil erosion leading to landslides are evident in most of these states and the loss in carbon sequestration is huge.

The total loss of forest cover in India above an altitude of 1000 meters is 550 square kilometres (ISFR 2015, table 2.11).

Forests are our Jewels as they are vital for our economy, society and the well being of us and hence need to be preserved.

Forest Cover in Altitude Zones in Sq. Kilometers

Altitude Zone	VDF	MDF	OF	Total	Change w.r.t. ISFR 2013
1000-2000m	14,867	36,536	24,971	76,374	-109
2000-3000m	14,011	19,013	7,417	40,441	-279
3000-4000m	3,353	7,934	5,962	17,249	-100
Above 4000m	36	292	562	890	-62

(Source: ISFR 2015, Table 2.11)

The raging forest fires raise-up the temperature of the place. And in places like Uttarakhand, it won't be surprising if this leads to untimely melting of glaciers. Unfortunately there are more issues to be examined than there are scientists and funding agencies, so one can't get sufficient statistical data to convince the decision makers.

Forest fires when uncontrolled can also lead to lot of deaths of animal, bird, reptile and other species including people. Animals that are sick, old, injured and young as well as herpetofauna get burnt alive in these forest fires.

Unfortunately, the forest fires don't get sufficient attention. Unlike countries like USA and Canada where they routinely plan tackling forest fires with latest equipment and trained work force, most of the times in India either we fight a half-hearted battle due to lack of resources, fight with untrained volunteers or completely give up and hope for the forest fire to die down on its own.

In the recent forest fires in Uttarakhand and in Jammu near Vaishnodevi shrine, MI-17 helicopters of the Indian Air Force were deployed to tackle the forest fire. These helicopters carried water and poured over the forest fires. Vaishnodevi shrine

workers volunteered to douse the fire along with the forest department staff.

Forest-fire suppression is high priority globally:

As opposed to India where the IAF had to depute some of its helicopters to help in fighting forestfires, there is dedicated staff and aircraft for fighting forest fires. The US Forest Service has contracted operators who maintain 23 heavy air tankers. These aircraft are equipped with fire retardant chemicals to douse the fires. These fire retardants are given a particular colour so that they can easily identify the areas where the fire retardants are dropped. The evolving technology in fire retardants these days have ensured that the fire retardants can act as a fertiliser for help in regrowth of plants after the fire. The total amount of funds earmarked for fire suppression in US for the year 2017 is \$873.9 million dollars.

Since the present prime minister of India, Shri Narendra Modi, appeared to have a first name basis relation with President Obama of USA, I am sure he may also like to burrow a leaf from the US President's policies. Shri Modi has also asked people to store rain water this year for difficult times ahead. Given the role of forests in causing rain, carbon sequestration, NTFP and fighting climate change Modi ji's Government should focus on increasing our forest fire fighting ability.

According to scientists as long there has been forests, there has been forest fires. When the forest gets burnt down, the grasslands take over. And then slowly with the dispersal of seeds by birds, herbivores and by nature's agents trees come up. This process of conversion of forests to grasslands and vice-versa happens over decades. Over a period of time the forests

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have evolved and some species have more fire resistant capabilities. If we look at forests which have less intervention of man, for example the shola forests, the outer periphery of these forests have trees like rhododendron which are more fire resistant compared to others.

Unfortunately, with the hand of man, the nature's balancing mechanism is broken. The relentless pace at which man disrupts ecosystems is too difficult for nature to handle. The composition of our forests are changing. We have introduced exotics as well as monoculture, so when there is fire all the trees catch fire at one go. When the forest is composed of a single tree species then all of them shed their leaves at the same time and catch fire at the same pace. If there were different trees which can withstand different fire to different degrees then the fire would not have spread so fast. Like a big army relentlessly firing and marching together these forest fires spread like a big wall. So it becomes very difficult for the fire fighters as there are no pockets in between where they can stand and fight.

Rhododendron in Shola forest

Do we care?

The recent Uttarakhand fires caught national attention after a long time. As usual the mainstream media is isolated from the happenings in the rest of the country. At times people are shocked to find some forest officers non-challantly going about their daily routine despite their forest being on fire.

The fact is that most of the protected areas are incapable of fighting forest fires as they lack trained manpower and equipment. With a lot of positions vacant and the existing manpower being old and demotivated, it is not easy to goad your ill-equipped and demotivated staff to fight forest-fires which can also be life threatening to the fire-fighters. With the rise in tourism, the forest department officials are busy monitoring the tourism activities as the tourism revenue becomes an indicator of the success of their department and swells their wallet as well. There was a time when forest fires, though feared were contained due to careful creation of firelines and able fire-fighting and prevention efforts. Unfortunately, these days the routine patrolling and forest management activities are the lowest priority in most of the forests.

Most Forest Fires are man-made:

When forest fire prevention and suppression is not the top most issue in the minds of the forest department officials, it is natural that reasons for all the forest fires are properly investigated. Despite the weak data on reasons for forest fires, it is estimated that more than 95% of all the forest fires are caused by people.

At times miscreants purposefully set a forest on fire. In one of the premier national parks, a tigress with small cubs had killed a cow inside a village which was resisting relocation due to procedural issues. The villagers set fire the forest even when the field director and rangers and all staff were hardly a kilometre away. There was no mechanism to fight the fire and next day morning I saw a huge areas burnt. The fire had jumped the firelines in many places and burnt down massive areas. In the summer of 2014 miscreants in a coordinated manner burnt down close to 900 hectares in Bandipur National Park and Nagarhole National Park in Karnataka and the adjoining Wayanad Wildlife Sanctuary in Kerala. Some parts of Mudumalai National Park bordering Bandipur was also burnt.

Forest fires also happen by accident when people throw away their cigarettes and beedis while grazing cattle. Most of the times the people knowingly set fire to the undergrowth during the dry season as this will lead to new grass sprouting after rains so that their cattle can then graze in these areas. These fires which just start as a Surface Fire spreading on the ground can become get converted to a Crown Fire where the crown of shrubs and trees also burn. This happens when the forest is very dry in the later parts of Summer with lot of dry bushes and dried leaf litter in the ground. In hilly areas in the North and North East states with coniferous trees, the resins from the trees fuel the fire and it can immediately become a raging inferno going out of control burning the entire forest including old growth trees as well as the undergrowth. As long as cattle grazing and other anthropogenic activities like wood cutting happens in our forests, the chances of fire remains.

Poachers light fire to a patch of forest and wait at the other end near a game trail for the deers, sambars and other herbivores to appear. This is a favourite tactics in many forests throughout India. Poaching happens when there is lack of patrolling in the forests. Poaching also happens at times with the connivance of the staff. When the park managers have good in-

telligence gathering system and motivated field staff, then poaching incidents reduce.

Role of Forest Department after Forest Fire:

Even after a forest has been burnt down, there is an important role for the forest department. In India, roughly about 13 million hectares of land has been lantana infested. Similarly there are also other invasive weeds which cause tremendous losses to the ecosystem and has a major impact on our economy. Lantana causes crop loss to the tune of \$37.8 billion dollar per year. The pasture losses due to lantana is \$924 million US dollars per year. (IndiaWilds Newsletter Vol. 7 Issue VII <http://www.indiawilds.com/diary/indiawilds-newsletter-vol-7-issue-viii/>) So when a forest is burnt due to fire, the forest department should immediately start plantation of native tree saplings. It is important to plant saplings instead of sowing seeds because lantana reduces germination. This will help in reclaiming the forest land from invasives.

The forest department can rope in NGOs and can take the help of MGNREGA scheme to provide jobs to local people for the tree plantation in the area, weed removal etc.

Forest fire is a national disaster as in one stroke hundreds and thousands of hectares of forests are gutted. Forests are our wealth and impacts our well being so we have to protect our natural wealth from disasters. However, forest fire is not like any other national disaster as it requires specific knowledge, training and equipment to suppress as well as prevent its occurrence. The Government has to come out with a national level plan to fight forest fires throughout India. If the Government is serious about saving Wild India, then adequate resource allocation has to be done to create a Forest Fire Management Authority specifically to fight wild fires.

Ref:

http://www.fs.fed.us/sites/default/files/legacy_files/media/types/testimony/tidwell-FY2017BudgetTestimony-SENRR-20160226_0.pdf

ISFR 2015: <http://fsi.nic.in/isfr-2015/isfr-2015-forest-cover.pdf>

Conservation News

Lower Orr Dam gets Green Clearance

The Lower Orr dam project in Madhya Pradesh has got the green clearance by an expert panel of MoEF&CC. The Lower Orr dam project is scheduled to come up on the Orr River, a tributary of Betwa. The Orr project will be done by the Madhya Pradesh State Government. When the Ken-Betwa river linking project gets the final go-ahead, the Lower Orr dam project will become a part of it.

The Orr dam project will come up Didauni village and is meant to provide water supply for domestic as well as agricultural needs in Shivpur and Datia districts of MP. This project will take up huge land to the tune of 3730 hectares.

The river linking proposal between Ken and Betwa (<http://www.indiawilds.com/diary/panna-drowning-fears-of-a-volunteer/>) has been contentious as the EIA hasn't been done in a holistic manner. The nature of Ken and Betwa and all their tributaries have not been taken into consideration for the river linking project. Else the project would have been a non-starter. However, when the Ken-Betwa river linking project is yet to be decided, the clearance given to the Orr dam which is on the tributary of Betwa and completely dependent on it is strange. Without Ken-Betwa the feasibility of the Orr dam is doubtful. Perhaps it is assumed that the Ken-Betwa is a done deal and hence the EAC given to the Orr dam.

Modi Govt. to come up with new Western Ghats Policy

Shri Prakash Javadekar, Hon'ble Minister for MoEF&CC announced that the Narendra Modi Government would create a new policy to conserve the Western Ghats. He said that "The Centre will formulate a policy that will conserve the rich biodiversity of the area, at the same time ensuring that the livelihoods of 5 crore people residing in the region spread across



Gujarat, Maharashtra, Goa, Karnataka, Kerala and Tamil Nadu are not adversely affected."

He further said that "It is a myth that ecological conservation and development cannot co-exist. It is not correct to see environment and development as being two ends of a spectrum, where one must be compromised in order to enhance the other".

Conservation News

Since the last few years there is a big tussle going on for the Western Ghats. The UPA Government created the Western Ghats Ecology Expert Panel (WGEEP) chaired by Prof. Madhav Gadgil. The Gadgil committee report was criticised because it gave emphasis to the environment and there were protests. Facing these protests in Kerala where its own party was in power as well as protests from others the UPA Govt. at the centre created the Kasturirangan Committee which watered down the strong environmental protection focus of the Gadgil committee report (<http://www.indiawilds.com/forums/showthread.php?13377-No-protection-to-63-of-Western-Ghats-is-perilous>). However, there were protests in Kerala fuelled by certain Christian organisations (<http://www.indiawilds.com/forums/showthread.php?13606-Church-opposes-Kasturirangan-report>). With the announcement by the Minister that a new policy on Western Ghats is likely in the near future, the last word on this is yet to be said. With each passing day Western Ghats continues to bleed.

110 Indian One Horned Rhinos have died in Zoos

110 Indian one horned rhinos have died in Indian zoos in 50 years between 1965 to 2015. This statistics has been compiled by BM Arora former Principal Scientist in IVRI and current president of the Association of Indian Zoo and Wildlife Veterinarians. The maximum age of an Indian rhino in zoo is 47 years.

The major deaths were in the age group of 11 to 30 years (38.9%) followed by the age group 0-3 years (34.26%). 63 out of



the 110 rhinos who died were males. “From the year 1965 to 2015, the highest mortality was reported in 1982 as seven rhi-

Conservation News

nos had died in zoos across the country. Five deaths were reported in 1999 and 2007 each while two to four rhinos died in remaining years”.

Rhinos are an endangered species and each death is important. When the 110 rhino deaths were analysed it was found that only 34 of these 110 rhinos were born in the zoos. Rest of the 76 rhinos were captured from the wild and then died untimely deaths in the zoos.

The study finds that some of the deaths were due to diseases as well as natural causes. However in most of the cases, the reason of death is still need to be investigated. This shows the zoos in very poor light. Our wild rhinos are captured from the wild reducing the genetic diversity in the wild and then these endangered rhinos die in the zoo but no one cares to investigate and take action.

Our zoos have outlived their utilities. The preamble of National Zoo Policy states “Today when wildlife habitats are under severe pressure and a large number of species of wild fauna have become endangered, the zoos have not only to sustain their own populations but also augment the depleting populations of endangered species in the wild.” Unfortunately, instead of serving as breeding grounds for endangered species for populating them in the wild, endangered wildlife captured from the wild are dying in the zoos.

For more: <http://www.indiawilds.com/forums/showthread.php?109-Abolish-Zoos>

Conservation Imagery

Wasting life

By Dr. Jean-Philippe Puyravaud, Sigur Nature Trust

In the March 2016 issue of the IndiaWilds newsletter (<http://www.indiawilds.com/diary/indiawilds-newsletter-vol-8-issue-iii/>), there was an article saying that 15,000 tonnes of plastic waste is generated every day in India, out of which 9,000 tonnes is collected and processed, but 6,000 tonnes of plastic waste is not being collected. It shows that for a variety of reasons, institutions in charge of waste management are by and large, incompetent. However, it gets worse.

If you visit protected areas, you will have noticed the huge quantity of plastic waste left behind by tourists. In the Sigur Region, in the heart of the Nilgiris Biosphere Reserve, the road in between the Mudumalai Tiger Reserve and Ooty is littered with bottles, plates, bags. In theory, there is no waste management to organize, except maybe once a year, because people are not supposed to throw waste in protected areas. Not only is it against the law, but it appears to go against common sense.

I am not convinced littering is a question of education only. Yes, there are people who still don't know what a waste bin is. But most of the people who throw waste in Sigur are sufficiently educated, some in expensive cars, and I believe that many of them, the majority probably, have voted to have a cleaner country. Unfortunately they still expect some staff –in the jungle– to clean up their mess.

Actually, the trash is picked up, but not by the rare and understaffed patrols. Those who collect plastics are elephants, deers, cows and birds who die of intestinal occlusion.



Cheetal Axis axis deer munching a plastic packet of wafers in Bandipur Tiger Reserve, India. Deers often munch and swallow empty wafers packets carelessly thrown away by tourists and the deers are also known to be killed in the process.

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Conservation Imagery

However, plastics can kill even when not ingested by animals. I witnessed that plastics can form traps around the legs of animals. Recently, I saw a cheetal that had managed to put its leg through a plastic sheet pierced with large holes. The holes were sufficiently large to allow the hoof to become trapped, but not large enough to let the animal escape. After days with this contraption, the plastic sheet had lacerated the leg and this animal will soon die in cruel agony.



Cheetal's left hind leg trapped in plastic sheet

Since everyday roughly 6000 tonnes of plastic waste remains uncollected, the chances of wild herbivores having their hooves stuck in plastic are increasing everyday. Unless we change our ways, this may become an everyday sight in the not too distant future.



Closeup of the leg lacerated by the plastic sheet

Know Your Plants

Memory in Plants

People who believe that plants do not have life need to take notice of this. One of the reasons people believe plants to be different than animals is because animals do have memory and consciousness. A recent study published in Proceedings of the National Academy of Sciences (**Luminidependens (LD) is an Arabidopsis protein with prion behavior**, Charaborte *et al*, PNAS 2016 113 (21) 6065-6070) suggests that plants may have indeed proteins, which behave like prions and are capable of building molecular memory. Prions are found in mammals, insects and yeasts.

Prions were first discovered in mammals and since then they have been found in a variety of organisms like fungi, *Aplysia*, *Drosophila* etc. however, till date they had not been found in plants.

The researchers used the methods that helped them successfully uncover prions in yeast identified close to 500 Arabidopsis proteins which they suspected to have potential prion-like domains (PrDs). Out of these they found one domain Luminidependens PrD, which has some of the classic characteristics of prion proteins. The researchers feel that this is a prion-like protein because Luminidependens PrD is involved in the flowering process which takes into account several internal and external cues like very cold winter etc for regulating the flowering process. According to the researchers “We investigated the prion-forming capacity of three prion candidates involved in flowering using a yeast model, where prion attributes are well defined and readily tested. In yeast, prions heritably change protein functions by templating monomers into higher-order assemblies. For most yeast prions, the capacity to convert into a prion resides in a distinct prion domain. Thus, new prion-forming domains can be identified by functional complementation of a known prion domain. The prion-like domains (PrDs) of all three of the tested proteins formed higher-order oligomers. Uniquely, the Luminidependens PrD (LDPrD) fully replaced the prion-domain functions of a well-characterized yeast prion, Sup35. Our results suggest that prion-like conformational switches are evolutionarily conserved and might function in a wide variety of normal biological processes”.

This is going to start a new line of research and soon we should get many more interesting facets about the plant kingdom. It would be pertinent to mention that some of the trees live for hundreds of years, many times the lifespan of a human. These days by looking at the thickness of the cores in the trunk of a tree one can find out the years there was a severe winter or drought etc.

Trees shed leaves to restrict water loss. Some perennial plants and trees not only shed their leaves but also whole branches. When there is rain the dormant buds come alive and start growing leaves. Seeds of some annual flowering plants can remain dormant in the sand in desert for years. A study of Karoo flora found 34,200 viable seeds per square yard in the top three inches of the sandy soil. Their trick is to germinate with the first rain, grab available nutrients (actually more plentiful in dry sands than in humid soils, where nutrients are tied up in organic matter), mature, and set seed as quickly as possible (Africa by John Reader, National Geographic publication). So even the seeds may retain some memory so that with the first rains they have to outcompete other seeds to germinate. Memory of such incidences stored as molecular memory is an exciting topic. At the very basic we understand that the plants respond to such external environmental stimuli resulting in delay of flowering. However, are there any higher order of use of such memory?

Know Your Plants

We know that the plants kind of communicate with each other. For example, when a giraffe eats the leaves of the acacia plant, the acacia immediately sends tannins to the leaves which leave a bad taste in the mouth. If the giraffe continues to consume the leaves then the level of tannin can build up to lethal proportions. So the giraffe immediately moves to another plant. However, the acacia also emits ethylene gas, which wafts on the air and reaches other acacia trees and they in turn immediately start producing tannin. So this release of ethylene gas helps in communicating between the acacia trees about the danger of approaching predators. Since the plants communicate with each other to warn the approach of danger, do they also guide the youngsters in their community like some humans do? Does a big old tree tell a younger tree about the approaching harsh winter and suggests the younger one, which is to flower for the first time that year, to delay flowering?

I am sure many such questions will be explored in the future by scientists to help us learn and appreciate the life of plants and trees.

IndiaWilds App for Android Mobile

In India most of the internet penetration is happening through mobile phones. And the existing users who have access to desktops and laptops are becoming much more mobile then they used to be a few years ago. So to raise awareness and reach out to more people we need to adapt ourselves and make IndiaWilds easily accessed through a mobile phone using android OS.

Today, I am pleased to announce that we have created a mobile phone app so that people can access IndiaWilds anytime, anywhere without being tied to a computer. No need to type. One can access at the click of a button.

We have developed this app through Business Compass LLC a company based in Randolph, New Jersey, United States so that we create a good app.

Awareness is the first step before a person can become a champion of wildlife. I hope this will help us in reaching out to more people to raise awareness and make a real impact on the conservation landscape. If you have an android device then please download the app from this link:

<https://play.google.com/store/apps/details?id=com.businesscompassllc.indiawilds>

Equipment Discussions -

Canon EOS 1DX Mark II Review

Introduction:

The Canon EOS 1DX Mark II was one of the most awaited flagship DSLR cameras to hit the market in the recent times. Following is the hands on impression of the EOS 1DX Mark II camera. This is more of an evolving review and you will find this review to be updated many times as I continue to put it to test in a range of situations.

Sensor Size:

The Canon EOS 1DX Mark II has a full frame CMOS sensor (36mm x 24mm) for stills shooting and HD Video shooting. For shooting 4K videos, the camera uses a central portion of the sensor.

Resolution:

It shoots 20.2 Megapixels still photos. The maximum resolution of still photos is 5760 x 3240 pixels



Build Quality:

Since it is the top of the line professional DSLR model the build quality is impressive. I have always loved the rock solid feel that the 1 Series cameras of Canon since the first time I picked up a EOS 1V HS still camera a decades ago. That feeling continues even till date.

Equipment Discussions -

In the past I have used the 1D series cameras in extreme situations in rain, sandstorm, hail etc and it has never failed me. So I expect the 1DX Mark II camera to also be a robust fighter.

The buttons and the body is textured and helps in easy grip. One can feel around and press the buttons as well without taking the eye off the viewfinder while clicking still shots or when shooting movie using a LCD viewfinder.

While unboxing this camera, I was stunned by the thick instruction manual of the 1DX Mark II. It is some 564 pages thick. If you want to indeed master the camera then better to read the manual thoroughly. However, I didn't have sufficient time before a trip to read the manual. Nevertheless it was more or less intuitive if you have used a Canon camera before.



Recording Media:

The 1DX Mark II has slots for CF card and CFast card. The first card is CF and the second is for CFast 2.0 cards. Though the eject buttons for the CF card and CFast 2.0 cards are marked with two different colours, the CFast card has to be inserted with its front portion away from you. I am sure many people will have bent pins because of this.

I am not too happy that Canon has included one CF card slot and one CFast 2.0 slot. Since this camera is aimed at the professional and CFast 2.0 is the emerging standard in all professional cameras, Canon should have included dual CFast 2.0 card slots. A person who is spending \$6000 usd or some 0.4 million Indian rupees would love the best and not skimp on cards which will affect his/her performance.

I would have loved if Canon would have given us the ability to direct stills to be recorded in CF card slot and videos to be

Equipment Discussions -

recorded to the CFast 2.0 slot. When I am shooting video at 4K 50p the data rate is massive and I am always hoping that the 128 GB CFast card doesn't get full. Having two CFast 2.0 cards would have ensured that the video would have spilled over to



the other card. This is just a piece of code to be written. Wish Canon can do that through a future firmware update.

Stills shooting ability:

The Canon EOS 1DX Mark II camera has got impressive abilities. It can fire off 14 frames in one second. And if one uses the live view to shoot stills then the 1DX Mark II can shoot 16 shots per second. This is really impressive.

I belong to the old school. So while shooting wildlife, I anticipate the action and then fire 3-4 shots at one go. When I was shooting with a EOS 1V HS camera using negative rolls or slide films, I had never used the ability to fire off 10 frames per second. Ofcourse firing at such a speed would have ensured the roll to be over in 3 seconds or so. However, the main point of not firing at 10 frames per second was the lack of action. And that is the major problem even today. Even when there is peak action in front of you, not every frame would have the right composition and eye contact. So firing like a machine gun is a sheer waste in my opinion. If a bird is in flight there is only a narrow range in front of you when the eye contact, light angle and wing spread would be favourable. Most of the photographers prefer to go for a hit and miss situation of firing in bursts and hoping that they will get one good frame. I don't believe in "Spray and Pray". So I am not likely to use the full 14 fps burst many times.

The 1DX II allows a person to shoot a burst of 170 shots in raw in a single burst. If you were to keep on pressing the shutter, never lifting your finger, then you can shoot for some 12 odd seconds at 14 fps. And if you use live view mode and shoot at 16fps then you can shoot for roughly 10.6 seconds. That much power is impressive.

However, I am wondering when Canon will be able to pack in sufficient processing speed in the DSLR to give us 25 frames per second burst. That actually means raw video at some 5K+ resolution. Even a short duration burst of raw video of about 7-8 seconds from a central portion equivalent to 4K resolution would be enough to make it way more popular.

Autofocus:

I am bowled over by the impressive autofocus capabilities of this camera in both stills and video mode.

The rear LCD has touch screen capabilities. So for shooting video I can always touch and rack focus from one point to the other. Unfortunately, while shooting handheld it is not easy to do this operation. Wish the LCD was foldable like the Canon 80D. That would have made this camera really awesome.

When I first heard that this camera has got an iTR AF (Face Priority) mode which is described by Canon as intelligent Tracking and Recognition autofocus (face priority) intelligent face detection mode, I thought recruiters and placement consultants will use this camera to scan a crowd and zero in on people who are intelligent as the intelligent face detection mode was supposed to focus on intelligent people. However, when I pointed the camera it focuses on both intelligent as well as

Equipment Discussions -

dumb faces. Looks like this camera doesn't have such an algorithm which can prioritise and focus on intelligent faces :-). I guess one should read the 564 page instruction manual before trying out this camera.

Jokes apart, the iTR AF selects the focus based on AF info as well as the human face and the subjects colour information. With AI Servo AF on the subject is tracked giving weight to the information on which AF point the auto focus was first achieved as well as facial information. I realised this while shooting in Sundarbans from a motor boat. I was handholding the 1DX II and filming birds from a moving boat and when the framing changed due to a sudden movement of the motor launch the autofocus. Anyone who has filmed in such conditions know that getting smooth shots in such condition is next to impossible as the framing changes due to the movement of the boat. However, the focus mostly remained good and locked to crocodiles and other my non-human species that I was shooting. I think Canon is really in the right path as except in couple of cases from the moving boat I mostly had the AF on while filming.

High ISO ability in Stills:

The 1DX Mark II can shoot from ISO 50 to ISO 409600 while shooting stills. In Sundarbans while wandering in a village after sunset in the dark, I decided to test ISO 40000 (ISO forty thousand) to take a still shot of a resort building as I liked the reflection in the water. The image has noise but it can be used in smaller size and for web applications after some noise reduction. I am not likely to use it in many situations. However, if you find a rare subject in very low light then definitely any shot is better than no shot. In the past while stealthily clicking photos of industries that have illegally occupied wetlands, I have been angrily confronted by their goons. Now you can use the very high ISOs of this cameras for such applications.

I haven't checked the in-camera high ISO Noise Reduction as in the past I had never liked it. Nevertheless I will try it out in future in non-critical situations.

Not so High ISO for Video:

The 1DX II however has a limited ISO range in video mode. In Full HD mode one can shoot at ISO 25600. In 4K mode one can only shoot at ISO 12800.

I have been shooting in low light situations for my films. I find the ISO 12800 to be a bit underwhelming. In Sundarbans, with my first outing with this camera, I was trying hard to ramp up the ISO to shoot a jungle cat in the night and realised that ISO 12800 is the limit. I didn't have time to pick up the C300. So clearly this camera goes back into the bag at sundown and C300/ C300 Mark II etc will be used instead in such situations.

Movie Recording:

The 4K movie coverage is different from that of 1DC

The Colour sampling method used for 4k is YCbCr 4:2:2 (8-bit) Full HD: 4:2:0 (8-bit). One can record clean uncompressed video through HDMI at 4:2:2. However, 4K out through HDMI is not possible.

The Colour Matrix used are as follows:

4K: Rec ITU-R BT.601

Full HD : ITU-R BT.709

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During 4K movie shooting high speed noise reduction is not be done. So noise is more visible. One may need to use a bit of noise reduction while post processing.

For 4K movie shooting the files are recorded in MOV format. Motion JPEG (MJPEG) is used to compress the files. There is no compression between the frames. Each frame is individually compressed at a time. So the file size is big.

So if you are planning to record lot of 4K movies than provision should be made for adequate capacity hard disks. These files are also going to place challenges on editing.

Lack of C-Log & Waveform monitor:

I was surprised that the EOS 1DX Mark II didn't have c-log. Perhaps Canon wanted to differentiate this with the Cinema line up. Frankly speaking a \$6000 US dollars camera without professional video tools is a bit difficult to digest in this age when its competitors. By doing this Canon clearly signals that this is not to be used by professionals.

There was a time four years ago when 4K movie recording in a DSLR form factor was a novelty. After that many other DSLR cameras came to the market with 4K. The Panasonic GH-4 which became highly successful later got the V-log. The Sony A7s and A7SII etc have all got the Sony log profiles.

Though the Canon 1DC had c-log it also didn't have video centric tools like waveform monitor, vectroscope etc. I use waveform monitor a lot in my C300 camera. So in my first shoot with the 1DX II, I missed the waveform a lot. Nevertheless, having being a still shooter for more than two decades I understand the metering function and am comfortable in setting the correct exposure without the aid of the waveform monitor. Unfortunately given Canon's history I don't expect it to bring in these functionalities later through firmware upgrade.

Auto Lighting Optimiser:

During my formative years when I was struggling with exposure theories I wish auto lighting optimiser technology was there. There are three settings and you can choose the strength while applying it. I was curious to test it. And I found that if



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you have this feature on and are trying to intentionally get the subject in silhouette or intentionally underexpose the subject by dialing in a negative exposure compensation, then there would be noise. Initially I didn't know why I was getting mud till I read the manual. Most of the professionals won't need it except when the camera is remotely operated or placed as a camera trap etc or when there is hardly any time to set exposure before clicking.

Grabbing Stills from 4K Video:

Canon has created a facility in the camera to select the frame from the 4K video and save it as a still image. On theory this sounds fine. However, the problem is for getting a sharp still photograph you need to use a higher shutter speed. The shutter speeds that we use for video will give rise to motion blur. The following image of a crocodile is from a 4K video and the shutter speed was 1/80. The motor boat has got continuous engine vibrations and since it was very close to the shore there were lot of vibrations. I was shooting handheld and testing the dual pixel autofocus. The light was very low and that would have thrown the AF of most of the cameras off balance. If I would have only clicked a still image then I would have used a much higher ISO as well as shutter speed to get a sharp image with higher depth of field. If the subject is not moving and you are also stable, then grabbing stills from the 4K Video will work.



Conclusions:

The 1DX Mark II is now my back up camera for video to get a few angles when the Canon Cinema C300 is the main camera. In my projects I do need the ability to shoot stills during certain times. So the 1DX Mark II will be used as a primary camera for stills shooting and secondary camera for stills shooting right now is the new 80D.

The videographers will not be too happy with the limited high ISO range in video mode (12800 in 4K), no 4K HDMI out and lack of dual CFast 2.0 card slots.

After shooting with it in the last trip, I believe the 1DX II despite intentional absence of some video-centric tools will be a

Equipment Discussions -

highly successful camera as stills photographers, especially the professionals will flock to buy it.

The autofocus, especially the touch screen auto focus at the back is a huge benefit for video shooters as well as for shooting stills on tripod or other stable support.

If you are a professional who doesn't want to miss a single shot what ever the conditions might be ie. rain, hail, sandstorm, landslides, fast action, chaotic scenes; if you want your camera to be reliably working every time you pick it up and shoot blazing fast still shots then this camera is for you.

If you want the ability to select a 8.8 Megapixel from while shooting at 4K 50fps (in PAL) or 4K 60fps (in NTSC) and choose the moment when the micro-expression in the model is the best or the action of the subject is the best then this is the camera for you.

If you are a well endowed amateur having tons of cash and want to showoff the latest and the greatest camera, then this is the camera for you. If you want to showoff a macho image then the 1Series cameras are the ones and the 1DX Mark II wont disappoint you in that aspect.

Overall Verdict:

Highly recommended.

Equipment Discussions -

SanDisk becomes Western Digital Brand

Western Digital completes acquisition of SanDisk and becomes global Storage Tech leader

Western Digital® Corporation has completed the acquisition of SanDisk Corporation. This \$19 billion acquisition was announced in October 2015 following which Western Digital has now secured all regulatory approvals and financial closure of this deal.

With the completion of this acquisition Western Digital has become a storage solutions company with global scale. The combined entity will have about 74,000 employees. Its market is going to be double and it will help enter into higher growth segments. SanDisk, which has a large customer base in India and is highly popular among the photographers and filmmakers will help Western Digital with its solid state technology. The solid state drives (SSDs) are increasingly becoming cheaper and being offered in laptops as well as being used for recording in high end cameras and monitor recorders. Western Digital badly needed long-term access to SSD technology at a cheap cost to remain competitive and it will now be able to achieve it with this acquisition of SanDisk.

Western Digital also is the owner of G-Tech which is popular for its G-RAID and hard drives. Though Western Digital has said that SanDisk will remain as a brand, however all the brands are expected to benefit from each other's technology. Given the scale of the M&A between these companies the integration should take at least a year and more for the customer to find visible changes.

Press Release of Western Digital:

Western Digital Completes Acquisition of SanDisk, Creating A Global leader In Storage Technology

IRVINE, Calif. — May 12, 2016 — Western Digital® Corporation (NASDAQ: WDC) today announced that its wholly-owned subsidiary Western Digital Technologies, Inc. has completed the acquisition of SanDisk Corporation (NASDAQ: SNDK). The addition of SanDisk makes Western Digital Corporation a comprehensive storage solutions provider with global reach, and an extensive product and technology platform that includes deep expertise in both rotating magnetic storage and non-volatile memory (NVM).

The Company also indicated that the debt financing associated with this transaction has been consummated and that the previously obtained funds from this financing have been released from escrow to Western Digital Technologies, Inc.

“Today is a significant day in the history of Western Digital,” said Steve Milligan, chief executive officer of Western Digital. “We are delighted to welcome SanDisk into the Western Digital family. This transformational combination creates a media-agnostic leader in storage technology with a robust portfolio of products and solutions that will address a wide range of applications in almost all of the world's computing and mobile devices. We are excited to now begin focusing on the many opportunities before us, from leading innovation to bringing the best of what we can offer as a combined company to our customers. In addition, we will begin the work to fully realize the value of this combination through executing on our synergies, generating significant cash flow, as well as rapidly deleveraging our balance sheet, and creating significant long-term value for our shareholders.”

The integration process will begin immediately through the joint efforts of teams from both companies. As previously announced, Steve Milligan will continue to serve as chief executive officer of Western Digital, which will remain headquartered

in Irvine, California. Sanjay Mehrotra, co-founder, president and chief executive officer of SanDisk, will serve as a member of the Western Digital Board of Directors, effective immediately.

“As a combined company, we will be best positioned to address the demands for data storage, which is growing exponentially every year,” said Sanjay Mehrotra. “Growth and change go hand in hand, and we couldn’t be happier to grow and change together with Western Digital. I look forward to contributing to realizing the potential of this combination as a member of the board.”

Under the terms of the transaction, each outstanding share of SanDisk common stock was converted into the right to receive \$67.50 per share in cash and 0.2387 shares of Western Digital common stock.

Natural History -

COUNTRY NOTEBOOK: M.Krishnan: 'DRACO'

The Sunday Statesman: 1-May-2016 (shared by Shri. Saktipada Panigrahi)

"A WHITHERED, brown and yellow leaf fell from the Bijli tree above me and cut a swift arc through the air towards a teak some 25 feet away. And even before it alighted expertly on the teak's thick bole, shrank suddenly, and merged invisibly with the streaked bark. I knew that this was no leaf. True that at times an elliptic, windswept leaf does not twirl dead leaf fashion in the air, but it dashed straightway downwards, but the newly opening leaf of the Bijli (*Anogeissus Latitolia*) was a small and a shrill green in colour, not broad in the middle, brown-and-yellow and tapering to a long, acuminate tip - moreover, no leaf ever fell so purposefully.

I moved slowly and casually towards the teak for I knew that from the brown of its bark small, unseen eyes probably watching me. When I was still not close enough to discern the thin, cryptic, molten form of the 'FLYING LIZARD' against the bark, a small, vivid yellow tongue of flame that leaped up from the tree trunk and then died down betrayed the lizard to me.



Draco(Flying Lizard) Image Courtesy - Roopak Gangadharan

The flame-coloured extensile and retractile pouch is at the throat of the lizard; it can be flicked forward towards the chin and then retracted into the throat and when the flying lizard is at rest, it is retracted and invisible. But when it is excited, the gular pouch is shot out and then withdrawn in rapid succession; at times it is kept fully extended for seconds on end. The mechanics of the extra-ordinary display are less dramatic than its effect -- what the eye sees is a bright yellow tongue of flame, about the size of a candle flame and beautifully blue at the base, repeatedly leaping forward towards the chin and then being extinguished. In the male, the extended gular pouch reaches beyond the chin, the female's pouch is smaller and somewhat peg-shaped; it is less brilliantly coloured, but the female, too, can indulge in the remarkable display.

Flight is achieved by the extension of a thin membrane on either side of the dorso-ventrally flattened body: this membrane is supported by the lower ribs and is quite inconspicuous when folded up, but forms a broad parachute when spread, an orange-yellow speckled with dark brown (or even brownish purple) dots when seen from below -- this parachute gives the lizard the semblance of a withered brown leaf, yellowing at the edges, as it goes sailing through the air, the tail forming the long acuminate tip of the leaf. The head is small, blunt-jawed and furnished with small warts that serves to disrupt its shape, and the small eyes are hard to see. The molten body is almost invisible against many kinds of bark.

These lizards are small, about six inches long and much less heavy in body, limb and tail than the familiar Gecko on the wall. They do not change colour quickly or vividly but I noticed that those that have been resting for some time on the light grey bark of the Bijli grew lighter and grayer in tone. Incidentally the female is larger than the male as a rule -- I say this on my own responsibility, for I can find no mention of this in any book available to me.

Flight is direct and swift, with both vertical and lateral curvature to the line of flight. Naturally, the lizard drops down and loses height in the course of flight, and though it gains some height in the last foot or two, sailing upwards to brake the momentum; usually it takes off from fairly high up the tree it leaves, and lands fairly low on the tree it goes to. But twice recently, I was astonished to witness flight fully 15 feet in traverse, almost in a horizontal line, with only a lateral curve to the trajectory. Both times there was a distinct carrying breeze, and the lizard took off fairly low, from about 10 feet up a tree trunk; but this was made up by the ascent terminating the flight, so that it alighted on the tree of the destination also some 10 feet up the bole; one of these laterally-arched flights took it over 20 feet, and the other (unmeasured) was probably a few feet less in traverse.

The more I see of the flying lizard in action, the more I marvel at its airmastery and almost incredible skill as a parachutist. I have seen it leave a tree and circle the bole, inches from the bark in a falling spiral, to alight on the trunk of the self-same tree a yard below -- this manoeuvre was indulged in, apparently in response to my scrutiny and to escape it, the lizard getting to the other side of the tree by the move. I have even seen it flit in a half circle to the other side of the other side, losing only inches in height in doing so. The creature seems exempt from the laws of gravity and to combine magical gifts of levitation with swift wish-powered propulsion through the air! So far I have not seen it glide upward (except during the termination of its flight), but short of that it can control its flight with amazing certainty and skill.

This Lizard is *Draco dussumieri*, the only flying lizard to be found in the forests of the South; elsewhere in India, there are other species of *Draco* differing only in minor details. I do not know why it was called generically, *Draco* -- the flying dragon of legend has that name but whoever saw such a charming little dragon, even in the world of imagination? Literature on it is meagre or (more probably) beyond my reach. The creature, in spite of its small size, is one of the most remarkable denizens of our jungles.

It is an inhabitant of tall, deciduous tree forests and I have seen it only where soil moisture was adequate and where there was an admixture of evergreens with the deciduous trees that it loves. I have seen it licking up the common red tree-ants of these jungles and once another kind of ant but have seen it take no other prey.

The gular pouch seems to be used not only as a signal or a mode of communication but also in its courtship, especially by the

males. Many times I have seen pairs together on a tree but close scrutiny was impossible, for they go up the tree and hide or escape by flight. Once I observed, from a distance and through binoculars, three males and a female on a tree. The males did not indulge in any fighting, but chased one another around in circles or may be they were indulging in a kind of dance of elimination -- as it usual when the males are seeking to oust rivals. The female was a very passive onlooker. The males flashed their gular pouches in and out as they ran around -- that drab tree trunk was alive with brilliant flickering flames for almost five minutes, after that the female flew away to another tree via a clamp of bamboos (bamboo clumps are common where these creatures live), followed in swift succession by her suitors.

Sharp-sighted (these lizards can certainly make out a man from 20 feet away, and an ant from 10 feet), protectively coloured, expert at dodging and twisting on tree trunks and at merging invisibly with the bark and endowed with powers of flight as a last escape, they can not often fall prey to lizard-hunters. However, they are nowhere common. You find them in certain patches of deciduous jungles but not in others close by -- I do not mean that they are given to flitting from place to place through the forest like birds, but they seem to favour only certain places. They do not like dense cover.

What do they eat besides ants? They are obviously diurnal -- where do they spend the night and how? Do they ever come down to earth from the trees they love, and where do they secrete their eggs? To these and dozens of other questions I do not know the answers, nor can I find them in books. Perhaps some reader living near a deciduous forest or even in it, and not merely an occasional visitor like me can provide the answers to these questions."

-M. Krishnan

This was published on 24 June 1962 in The Sunday Statesman

Natural History -

Method of Food Collection by male Speckled Piculet

By Samrat Sarkar

A Piculet is one of the members of the ‘woodpecker’ family. And the Speckled Piculet (*Picumnus innominatus*) is one of the only two Piculets found in India. The other one is the White-browed Piculet.

The speckled piculet appears unusually small for a woodpecker due to its tiny size of 70-75 mm (Rasmussen & Anderson, Ripley Guide) which is slightly smaller than 3 inches. It looks cute as compared to the nearly 6 inches size of woodpeckers that one frequently encounters.

A minute attention to the bird will reveal that there is an orange patch in the front portion of its forehead. And this will prove that the bird is a male one. In the case of the female of this species the orange patch is absent.



Speckled Piculet (*Picumnus innominatus*)

These birds are seen in moist deciduous and semi evergreen forests in areas ranging from the foothills of the Himalayas in India to outside India in Pakistan in the north west, in Bangladesh in the north east and in Myanmar. Their habitats are mainly in the dense under-growths and bamboo thickets of the forests. They can be found alone or in pairs.

Its area of foraging is completely different; the parched leaves and branches of the vegetation of the foothills. Most of the standard woodpecker of size six inches will surely not be able to sit on the small branches of trees where these birds can

Natural History -

Method of Food Collection by male Speckled Piculet

By Samrat Sarkar

easily sit. Therefore the apparently invisible habitats of the ants in the dry leaves and branches are under total control of these birds. The manner the Piculets sit and move around is quite different from that of the woodpeckers. Unlike the woodpeckers, the Piculets don't use their tails as a prop and like the other small sized birds, such as warbler, flycatchers, tits etc. they can sit on slender tree branches in an upright position.

During a visit to a bird sanctuary in a place named Kitam [average height from MSL 2000 feet], situated in southern part of Sikkim, a male speckled piculet was observed. It was found on the uphill side of the road just a few meters before the Forest Range Office.

The bird landed on a dry and thin branch and started making a hole on it by pecking with its beak. All the woodpeckers including these Piculets have a peculiar capability of sensing where inside the dry leaves or the branches some insects or ants are hiding.

The main, if not the sole, nourishment of the young Piculets just from hatching to the time when pin-feathers start growing on their skin are the eggs and the larvae of the ants. [Reference: Life history of the Olivaceous Piculet and related forms by Alexander F. Skutch, received on 19 September 1947, (Page 433 to Page 449) IBIS, 90...]. As the feathers start growing they feed on full grown ants along with eggs and larvae.



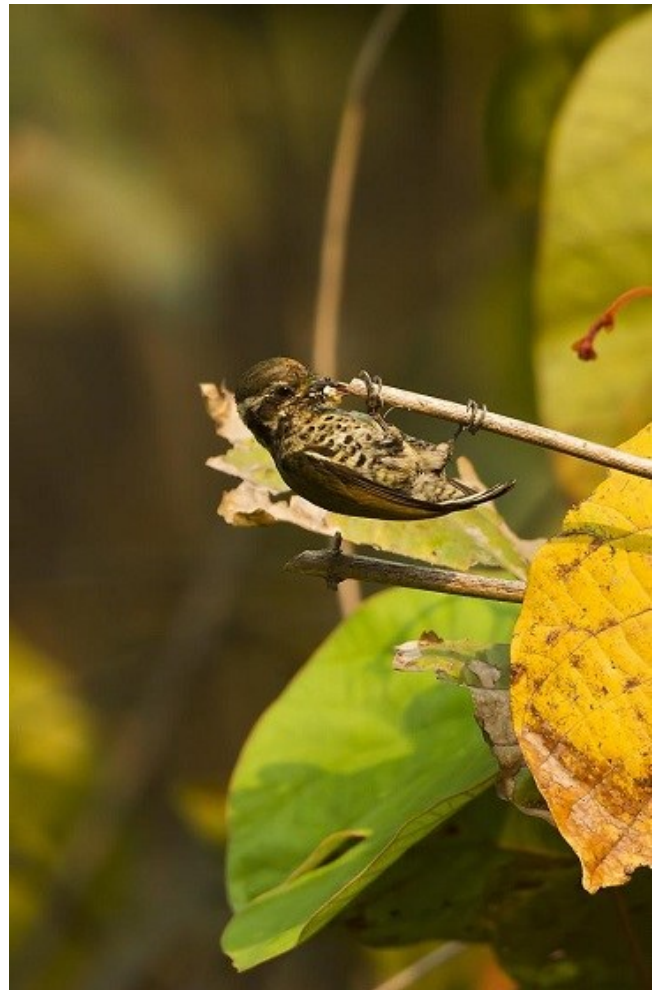
Immediately after the hole is made it climbed a little upwards in the branch and tapped on it a few times.

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Method of Food Collection by male Speckled Piculet

By Samrat Sarkar

Then without wasting a moment it came downwards near the hole, inserted its long tongue into it and when it withdrew its tongue it was smeared with a large number of larvae and a full-grown ant.



Natural History -

Method of Food Collection by male speckled piculet

By Samrat Sarkar

Conclusions:

Based on these observations the following are the conclusions:

- 1] The male birds play an active role in feeding their chicks.
- 2] The whole process completes within 3 to 4 minutes.
- 3] The tongues of all the woodpeckers are quite long and are normally kept in a rolled up condition in a small space inside the head.
- 4] This speckled piculet was seen disappearing with a mouthful of food in a dry branch of a tree downhill. It is probable that it's nest was somewhere closeby as this observation was during its breeding season which is between Jan-May (Rasmussen & Anderton, Ripley's Guide) and also because it breeds in holes in dead branches, bamboo or palms.

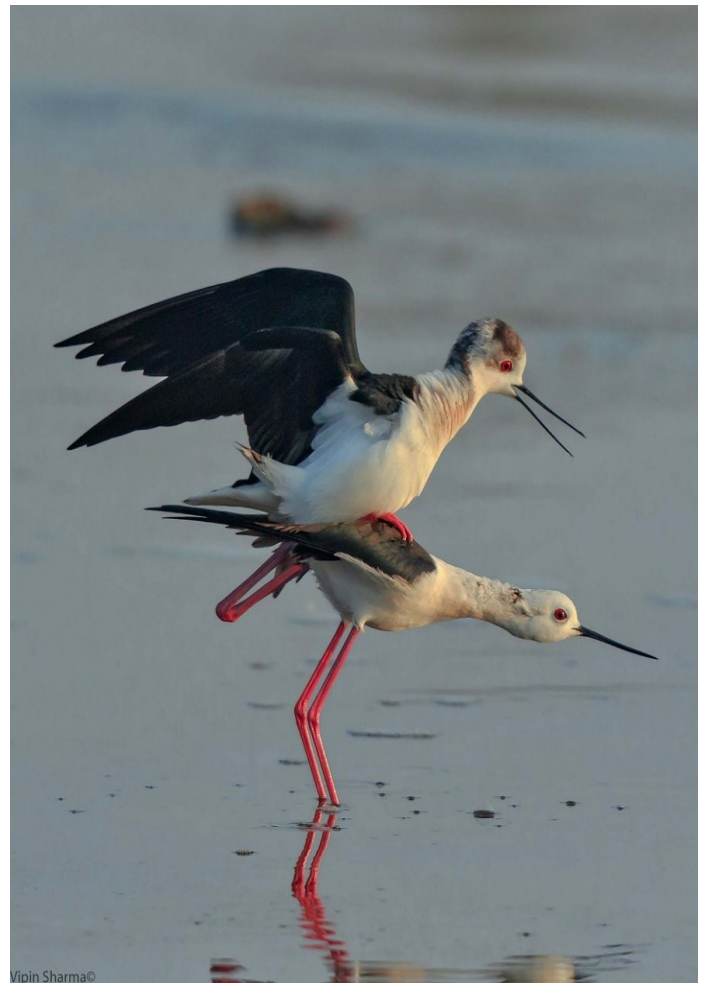
All the images were clicked with a Canon 7D camera with a Canon 500mm telephoto lens using a monopod and the images are cropped and edited for clearly showcasing the behaviour.

Natural History -

Photo documentation of Black-winged Stilts Mating

By Vipin Sharma

The mating of black-winged stilt was observed in Ranthambhore. The mating started at 10:56:55 and ended at 10:57:03. The following four images showcase the mating sequence .



Natural History -

Photo documentation of Black-winged Stilts Mating

By Vipin Sharma



Wildlife Photography -

Sukhi Patiya female of Bandhavgarh by Debasis Bose



Variable Squirrel by Shyamala Kumar



Wildlife Photography - **Prowl by Prashobh Ailyam Nair**



Leopard from Bera by Vipin Sharma



Wildlife Photography -

Elephant charging by Ulhas Kalyanpur



Eurasian Blackbird basking by Abhishek Jamalabad



Wildlife Photography -

Sirkeer malkoha displaying by Subhash Shrivastava



Scops Owl by Abhirup Dutta Gupta



Wildlife Photography -

White Throated Munia by Nishith Kumar



Owl by Prajwal Ullal



Wildlife Photography -

Snake with kill by Samrat Sarkar



Star Fish by Anil Kumar Verma



Wildlife Photography -

Orb Weaver by Arun Acharjee



I look forward to your inputs and support in preserving the last tracts of wilderness and wildlife left in our beautiful country. For other interesting articles and images check - <http://www.indiawilds.com/forums/>

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Regards,

Sabyasachi Patra

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**Plot No. 1, Akarpuri Colony,
Near Vaithal Temple, Old Town,
Bhubaneswar, 751002
Odisha
Mobile - +919910900446**