IndiaWilds®

Newsletter

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IndiaWilds
THE.LAND.OF.THE.TIGER

Inside this issue:

Cover Page Photograph:

Crested Serpent Eagle with Snake by Sabyasachi Patra

Save the Earth: Micro plastics invasion:

Plastics, invented in 1907, was seen as a major development to further the progress of mankind. Within a hundred years, the earth is swamped with plastics as they are not biodegradable. There are plastics dumped everywhere and we don't have any way of getting rid of it. There are monstrous mountains of plastic trash piles in various places. However, more than the aesthetically ugly nature of plastics floating in the rivers and waterways is the impact of plastics on the ecosystem and on us.

Micro plastics into our body and ecosystem:

There have been several cases of animals dying after swallowing polythene bags containing food. However, those are individual cases. The more important ones are the case of micro plastics have entered our blood stream. For the first time micro plastics have been found in human stool. Degraded plastic fibres and pieces of everyday plastics discarded carelessly disintegrates and then tiny sizes from 5mm to even microscopic size gets easily ingested along with food. Various scavengers scavenging the garbage dumps and the food items thrown out along forest paths with various plastic packaging chew pieces of plastics. The beauty care industry also employs microbeads in the face scrubbing and other beautifying gels and lotions.

Now the micro plastics are moving along the food chain and are even bio-accumulating without we noticing.

Rainbow runner in North Pacific Gyre ingested 18 plastic pieces Photo: Dr. Marcus Eriksen *Gyres* Institute

The impact of these micro plastics is going to unravel in myriad ways. The micro plastics can inhibit growth, reduce reproduction abilities and compromise adversely impact the immunity of the body. They can leach within the body to release chemicals the impact of which can be slow and difficult to diagnose and can cause liver and other organ damage. A research study (Transgenerational effects and recovery of micro plastics exposure in model populations of the freshwater cladoceran Daphnia magna Straus, Alexandra Martins et. al., https://doi.org/10.1016/j.scitotenv.2018.03.054) suggests that D. magna recovery from chronic exposure to micro plastics may take several generations, and that the continuous exposure over generations to micro plastics may cause population extinction. Micro plastics (0.1 mg/l) decreased growth, reproduction and population growth rate and caused the extinction of the exposed population in two generations.

One estimate suggests that there are 15 trillion pieces of plastics floating in our oceans, fresh water rivers and other water bodies. And the amount of micro plastics already in our waters may be of similar number. And these numbers can always be severe underestimation. So the chances of cleaning up our water of plastics is simply impossible.

A study (Kosuth M, Mason SA, Wattenberg EV (2018) Anthropogenic contamination of tap water, beer, and sea salt. PLoS ONE 13(4): e0194970. https://doi.org/10.1371/journal.pone.0194970) after testing 159 samples of globally sourced tap water, 12 brands of Laurentian Great Lakes beer, and 12 brands of commercial sea salt, found that 81% of tap water contained anthropogenic particles out of which 98.3% were fibres between 0.1 to 5mm in length. Similar debris were found in beer and salt out of which 99% were fibers. After adjusting for particles found in lab blanks for both salt and beer, the average number of particles found in beer was 4.05 particles/L with a range of 0 to 14.3 particles/L and the average number of particles found in each brand of salt was 212 particles/kg with a range of 46.7 to 806 particles/kg. So the authors concluded that “the average person ingests over 5,800 particles of synthetic debris from these three sources annually, with the largest contribution coming from tap water (88%).”

The microplastics are so tiny that they can be carried in air. We can breathe in air laden with microplastics and these tiny microplastics once lodged deep in the lungs can cause lung cancer.

So what will happen to humans within the next two generations? Will we be similarly impacted like the small planktonic crustacean Daphnia magna?

In 1950s the total production of plastics was to the tune of 2 million tons. Now it is 300 million metric tons. This figure is bound to rise to 33 billion metric tons every year by 2050. Gov-

ernments are still not calling for an immediate ban on plastic packaging and single use plastics. When will we wake up?

A lot of single use plastics is through water bottles and paper cups. Government has to ban all plastic disposable water bottle use in big hotels as well as in meetings and corporate offices. Hotels and caterers make money by selling packaged drinking water bottles. Onus has to be on the hotels and corporates to install water purification machines and then provide mugs and glasses to be filled from those. This may hit the profits a bit as hotels are known to have a huge markup on the water bottles. Government has to ensure that single use water bottles see a drastic fall in sale and consumption. People should be allowed to fill their water bottles from certified dispensers in different localities. That would improve the health of people as well as reduce plastic consumption.

Even after raising awareness retail chains continue their romance with single use plastics. The mushrooming tea and coffee joints continue to provide disposable cups which are paper and plastic mixed. These joints want to avoid washing cups so they give disposable cups.

With every product that we buy, there is a lot of plastics used in packaging. The more fancy the product the more is the packaging. Government has to ban plastic packaging. It has to force corporates to take back the plastics they have generated. Placing the onus on individuals means they will throw the packaging increasing the already high pollution load. Government has to start penalising corporates to force them to use alternate materials for packaging. The deadline for compliance has to be immediate.

Our municipal garbage collection and disposal systems are in abysmal condition. The Government has to immediately revamp and invest and bring in accountability so that all garbage generated is 100% recycled. Till the time scientists don't discover an antidote to plastics, we have to keep the stop the usage. We have to take urgent action to take this microplastic invasion into our bodies and all natural systems.

Travel -

An ode to "Stairway to Heaven":Valley of Flowers National Park

By - Dibyajyoti Ghosh

"The journey not the arrival matters."- T.S. Eliot, Famous British poet.

Uttarakhand is a northern Himalayan state of India famous for its serene pristine natural beauty. Uttarakhand is often at the top of the priority list for travellers. Dubbed as Deb Bhoomi because of its homage for a large number of Hindu temples, Uttarakhand has two divisions namely Kumaon and Garhwal with a large potential for destressing the modern man through breathtakingly beautiful scenic places, visiting several pilgrimages, forested areas as well as interesting cities like Dehradun, Musoorie, Nainital and others in the foothills of Himalaya. There are many protected areas in Uttarakhand with their unique biodiversity and charismatic wildlife which attract millions of tourists every year. However, unlike those the Valley of Flowers national Park holds special privilege due to its unique location and diverse journey experiences.

If you love flowers, colours, wilderness and want to have some spiritual peace, Valley of Flowers is definitely a place for you to visit.

Location:

Valley of Flowers National Park is a part of Nanda Devi Biosphere Reserve, an UNESCO World heritage site declared in 1988 due to its unique geographical, topographical and climatic transition zone located in Chamoli district. It has a total area of 87 sq. km. The park is a feast to eyes due its undisturbed alpine location with unique vegetation and harbouring a great array of different flowers and wildlife.

Forest permissions and Logistics:

Ghangharia is the last town before entering Valley of Flowers National Park. The park is a protected area that requires permission at the entry gate from the forest officials. One can have ticket for entering the park from the check post there. The altitude of the park ranges from roughly 3400 meters to 4200 which gives the area an exposure of an alpine mountain.

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There are no available staying options inside the park, so one must trek back before evening.

The Journey to Tranquility:

Journey to this mesmerising landscape starts by reaching Joshi math from Dehradun by four wheeler vehicle, which may take as long as 10 hours to cover around 295 km. Joshi Math has plenty of staying options available. The next step starts early in the morning with a travel of around 20 km till Govind Ghat. Distance from Govind ghat to Ghangharia is around 13 km. Private cars are available and charge Rs. 300/ head to reach Pulna village, a distance of 3 kms. From Pulna the rest of the journey has to be undertaken on foot. One may hire Khachars(mules)/ porters for carrying provisions or even to carry a tourist. Many local food joints are present along the trek route with options of noodles, tea, coffee and rice. Usually the trek takes 6-7 hours to reach Ghangharia depending on the capability of the individual. There are many staying options available in Ghangharia with prices ranging from 700- 3,500/ night. Non-veg food is not allowed as it is also the abode of Hem Kunt Sahib (a gurudwara located in almost 4200 m.).

Early mornings here can come as a shock to the city bred folks due to stillness all around till one gets accustomed to listen to the sounds of silence in the bone chilling weather. Early in the trek route and after a certain height comes a wide panoramic view of whole Ghangharia, misty with the clouds hugging the town, taking away all our negative vibes. Around 500 meters of the entry gate comes a river fall which still tells stories full of anecdotes by its sound and course. As the trek goes on finds that the undulating feature of the trails based on their exposure to the sun gives rise to different kinds of moisture in soil and harbour different vegetation types. One can enjoy dense vegetation along the road and suddenly the landscape changes to showcase a wide open panoramic view of the valley.

I wonder, how it can be possible to feel nostalgic about a place where I have never been before. A rough trek of 7 kms is to be completed to reach the actual Valley of Flowers where the blanket of flowers feels like touching the horizon. As cold breeze wafting over the carpet of flowers and driz-

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zling rain touches our shivering cheeks, we just allow our eyes to wander in any movement and direction as they please to soak in the beauty of this incredible valley of flowers. One can just see different colours of flowers in different directions. According to folk-lore one can get disoriented in this place as our senses become numb with joy and then become ecstatic. The only sounds present here are the running breeze and humming of bumble bees on different flowers. Several kinds of wildlife like Bullfinches, rosefinches, laughing thrush, red-start; butterflies, spiders can be observed as the area still holds pristine aesthetics and have less human interactions. Pikas, lagomorphs that looks like in between hare and rodents are abundant in here which gives a certain cuddling feeling like cute and small teddy bears. Apart from those, Siberian weasel, Black bear, Blue sheep and Snow leopard is reported from the region. One needs to trek back to the check post before 1600 hrs. and report check out from the park due to security issues.

Locals have some food shops, hotels and stationary stores who sell different daily life belongings. People of Ghangharia abandon the region and migrate down to Pulna during the winter season when life becomes hard up here due to heavy snow fall. Ideal time for visiting the park is from March to September whereas March is flowering peak season. Nature lover especially flower lovers can visit from March to August to enjoy flowering feast. One will surely enjoy the peaceful and blissful nature in all its glory at the Valley of Flowers.

Conservation News -

Non-invasive Pregnancy diagnosis of wildlife through faecal hormone profiles

If pregnancy of humans can be diagnosed easily, then why not that of wild animals? Progress in science has now made it easy. IVRI (Indian Veterinary Research Institute), which is India's premier research facility in veterinary field, has announced that it can diagnose pregnancy of wildlife through non-invasive methods with full accuracy.

Using a non-invasive pregnancy diagnosis (PD) IVRI (Indian Veterinary Research Institute) in April had declared Jessica from Etawah Lion Safari as pregnant. Subsequently Jessica has given birth to four cubs on 26-6-2019.

Photo (CCTV grab of Jessica the lioness with four cubs on 26.06.2019)

In the past the lioness Jessica was declared pregnant three times and as non-pregnant on one occasion. Accordingly she had given birth during the three times she was declared as pregnant and no parturition happened when she was declared non-pregnant. This has ensured 100% success rate in predicting pregnancy.

IVRI's non-invasive pregnancy diagnosis is done using faecal hormone profile 45 days after mating. This has been found successful in 14 samples (lions and tigers) from Etawah Lion Safari.

During previous years IVRI has received samples from MC Zoological Park Chhatbir (Punjab); Pipali Zoo, Kurukshetra (Haryana); Silvassa Vasona Lion Safari, Dakshina Kannada (Karnataka); Dharmasthala (Karnataka); National Zoo Nainital (Uttarakhand); Nahargarh Biological Park, Japiur (Rajasthan), National Zoological Park, New Delhi; Sajjangarh Biological Park, Udaipur (Raj); Dudhwa Tiger Reserve, (UP). A total of 36 such samples were evaluated based on progestin concentration and found to be 100% successful.

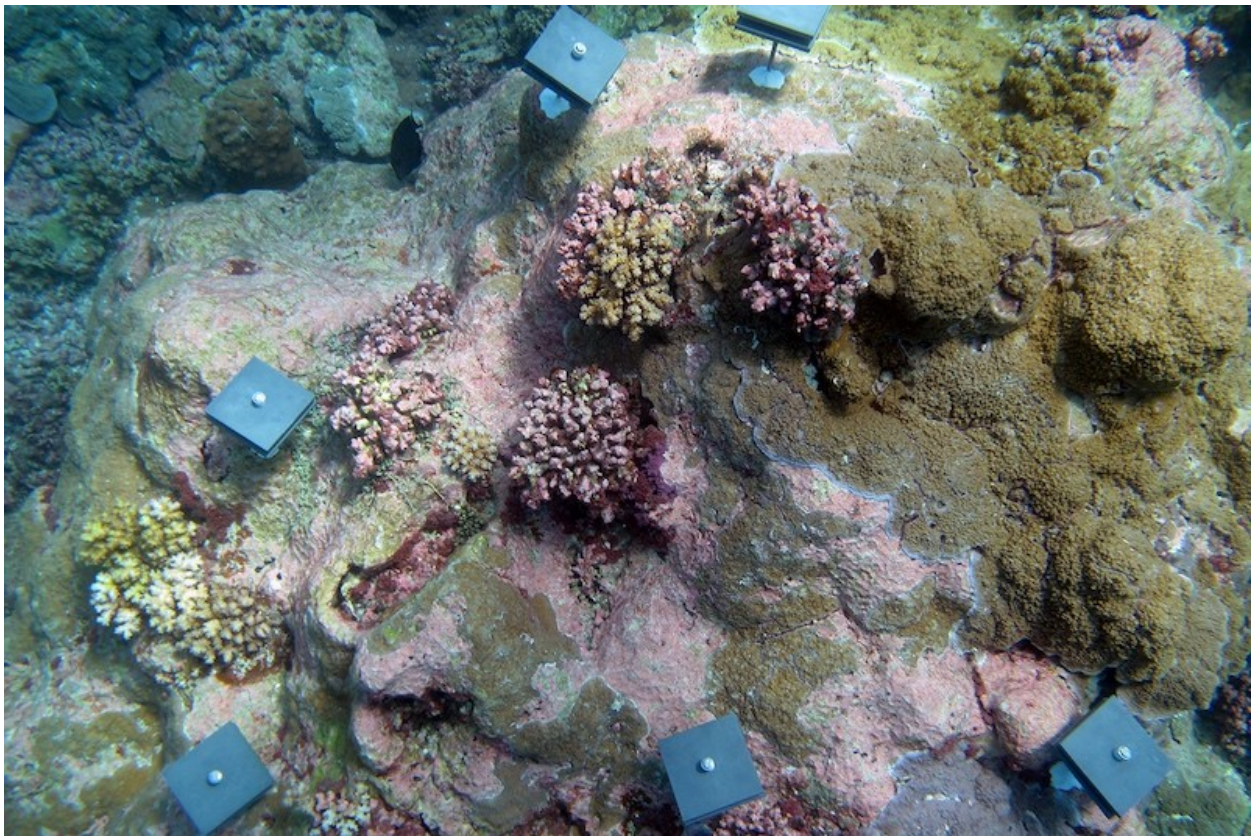
Large carnivores like Tigers, leopards and lions need inviolate space to breed. Such non-invasive techniques can be of big help in predicting and taking precautionary measures in the wildlife sanctuaries and National Parks as well. It would be important to include such testing into the regular protocols for wildlife managers so that they don't go through much red tape.

Conservation News -

Rising sea temperatures sees corals moving away from equator

With global warming our seas are also getting hotter. So corals have started moving away from the equatorial region. In the last 40 years coral reefs are declining in tropical regions and increasing in more cooler areas. This was found in a study "Global biogeography of coral recruitment: tropical decline and subtropical increase, Price et. al. DOI: https://doi.org/10.3354/meps12980" published in Marine Ecology Progress Series.

The authors of the study have said that "despite widespread climate-driven reductions of coral cover on tropical reefs, little attention has been paid to the possibility that changes in the geographic distribution of coral recruitment could facilitate beneficial responses to the changing climate through latitudinal range shifts.



To address this possibility, Nichole Price and his collaborating scientists from six countries and 17 institutions in their study examined coral settlement trends upto 35 degrees north and south of the equator.

"*we compiled a global database of normalized densities of coral recruits on settlement tiles (corals m-2) deployed from 1974 to 2012, and used the data therein to test for latitudinal range shifts in the distribution of coral recruits. In total, 92 studies provided 1253 records of coral recruitment, with 77% originating from settlement tiles immersed for 3-24 mo, herein defined as long-immersion tiles (LITs); the limited temporal and geographic coverage of data from short-immersion tiles (SITs; deployed for <3 mo) made them less suitable for the present purpose. The results from LITs show declines in coral recruitment, on a global scale (i.e. 82% from 1974 to 2012) and throughout the tropics (85% reduction at*

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<20° latitude), and increases in the sub-tropics (78% increase at >20° latitude)."

From these trends the scientists concluded that "a global decline in coral recruitment has occurred since 1974, and the persistent reduction in the densities of recruits in equatorial latitudes, coupled with increased densities in sub-tropical latitudes, suggests that coral recruitment may be shifting poleward."

"*Climate change seems to be redistributing coral reefs, the same way it is shifting many other marine species," said Nichole Price, a senior research scientist at Bigelow Laboratory for Ocean Sciences and lead author of the paper. "The clarity in this trend is stunning, but we don't yet know whether the new reefs can support the incredible diversity of tropical systems.*"

These subtropical reefs created by corals moving away from the tropics may provide refuge to species which are similarly escaping from the hot tropics. However the researchers believe that only certain types of coral are able to reach these new locations, based on how far the microscopic larvae can swim and drift on currents before they run out of their limited fat stores. The exact composition of most new reefs is currently unknown, due to the expense of collecting genetic and species diversity data. We hope more studies are sanctioned so that we can understand the impacts of our actions and how these tiny microorganisms are trying to cope up with Climate Crisis.

"*We are seeing ecosystems transition to new blends of species that have never coexisted, and it's not yet clear how long it takes for these systems to reach equilibrium*," said Satoshi Mitarai, an associate professor at Okinawa Institute of Science and Technology Graduate University and an author of the study. "*The lines are really starting to blur about what a native species is, and when ecosystems are functioning or falling apart*."

Coral reefs are also intricately interconnected systems, and they depend on each other for their healthy functioning. At the moment it is not clear which other species, such as coralline algae that facilitate the survival of vulnerable coral larvae, are also expanding into new areas - or how successful young corals can be without them. Nichole Price wants to investigate the relationships and diversity of species in new reefs to understand the dynamics of these evolving ecosystems.

"*So many questions remain about which species are and are not making it to these new locations, and we don't yet know the fate of these young corals over longer time frames," Price said. "The changes we are seeing in coral reef ecosystems are mind-boggling, and we need to work hard to document how these systems work and learn what we can do to save them before it's too late."*

With new species migrating on their own due to climate change, it is imperative that there are more studies to understand the ecological impact. Predicting the locations where new corals are moving in may help from a resource exploitation point of view as one can find out new fishing grounds and tourism revenues. Given that India has a long coastline and corals in many places, it is important for Indian scientists to get long term funding to continue work on these topics.

Conservation News -

Neem chemical can disable cotton pest in multiple ways

By Susheela Srinivas

Bengaluru, July 2 (India Science Wire): The neem plant, Azadirachta indica, is known to contain a potent phytochemical Azadirachtin-A (Aza-A) that can ward off several pests. Scientists from India and Germany have now deciphered the mechanism by which Aza-A does this. Their research on cotton bollworm reveals that the phytotoxin acts in multiple ways to suppress growth of the pest.
Cotton bollworm (Helicoverpa armigera) is a dreaded pest attacking several crops of economic value and has become resistant to most insecticides in use.

Unlike synthetic pesticides which target a single protein, Aza-A aims several proteins in pests. This, in turn, triggers actions that change their feeding habits and metabolism, thereby arresting their growth.
Two sets of the insect larvae were reared – one fed on a diet with Aza-A and the other without it. Aza-A was extracted from neem fruits. By using a technique called MALDI-TOF Imaging, researchers examined the distribution of Aza-A in the larvae of the pest.

It revealed that the neem extract vigorously attacked the worm's key enzyme JHE (Juvenile Hormone Esterase), which is involved in metabolism and its growth. The presence of the phytotoxin made worms engage in the detoxification process, changing the way they used their energy, which, in turn, affects their metabolism, feeding habits and growth.

Even a small amount of Aza-A could alter primary metabolism in the insect. Metabolomics analysis performed on the larvae showed that the worms underwent various changes in response to the toxin. In some, the moulting phase was arrested, while in others, there was stunted growth. The whole larvae burst upon ingesting Aza-A diet in some cases.

This suggested that Aza-A could have several targets for its toxic mode of action. Aza-A metabolites produced in *H. armigera* could also inhibit the activity of vital enzymes. In all, over 35 such metabolites have been identified. "Aza-A has a complex structure, and it has taken several years to understand it. Owing to this complexity, it cannot be synthesised in the laboratory. However, the metabolites can be. By exploiting this, we can develop broad-spectrum bioinsecticides," said Dr Vishal Dawkar, lead researcher of the study.

The team included Vishal V Dawkar, Ranjit S. Barbole, Vidya S. Gupta, Saikat Haldar, Hirekodathakallu V. Thulasiram and Ashok P. Giri (National Chemical Laboratory, Pune); Sagar H. Barage (Savitribai Phule Pune University); Amol Fatangare, Susana Grimalt and Aleš Svatoš (Max Planck Institute for Chemical Ecology). The study results are published in the journal ACS Omega.

Equipment Discussions -

Canon Announces Its First RF Telephoto Zoom Lens, The RF 24-240mm F4-6.3 IS USM

Canon has introduced a travel zoom telephoto lens for its new RF mount the Canon RF 24-240mm F4-6.3mm IS USM lens. This is the sixth RF lens to be announced.

This is a compact and lightweight 10x zoom lens designed for EOSR and EOSRP full frame mirrorless cameras as well as work with any future cameras to be launched in the EOS RF mount. This is meant to be a high quality as well as budget friendly option in the RF mirrorless cameras and will round up the needs of many amateurs who typically buy such a zoom for travel.

"*Providing photographers of all skill levels with the invaluable tools to help capture and create the images they desire has been and will continue to be a paramount goal for Canon," said Kazuto Ogawa, president and chief operating officer, Canon U.S.A., Inc. "The new RF 24-240mm is an excellent option as an all-around travel lens that provides attractive features for a wide variety of image capture.*"

The RF 24-240mm F4-6.3 IS USM lens is equipped with Nano USM, providing users quick, high-speed and precision auto focus (AF) when shooting video and capturing still images. With the powerful Nano USM, this lens allows photographers and videographers full time manual focusing making possible the fine tuning and adjusting of focus while in AF mode. This is the first Canon lens designed for full-frame cameras to feature Dynamic IS and utilizes a CIPA-standard, five-stop image stabilization system. The five-stop IS allows photographers to capture images and record videos with minimal shake, even

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during nighttime sightseeing or in dimly lit indoor events, without the need of a tripod.

When paired with the recently announced EOS RP full-frame mirrorless camera, the compact and lightweight portability of the RF 24-240mm rivals that of a Canon APS-C camera system with a comparable EF-S lens. The RF 24-240mm and EOS RP kitted together are only slightly heavier and longer than the EOS Rebel T7i when it is kitted with the EF-S 18-200mm f/3.5-5.6 IS. The diminished form factor of the new lens and EOS RP together, as compared to other full-frame mirrorless camera systems using a similar focal-length telephoto zoom lens, make the lens and camera the ideal kit for travelers who are constantly on the go.

Additional features of the Canon RF 24-240mm F4-6.3 IS USM include:

- Minimum focusing distance of 1.64 feet/0.50 meters at wide angle and 2.56 feet/0.78 meters at telephoto
- Maximum magnification of 0.26x at telephoto
- Approximate weight of 750 grams/26.4 ounces
- Customizable control ring that allows photographers to adjust exposure compensation, shutter speed, aperture or ISO
- 21 lens elements in 15 groups including one Aspheric and Two UD Lens
- 12-pin communication system

Pricing and Availability

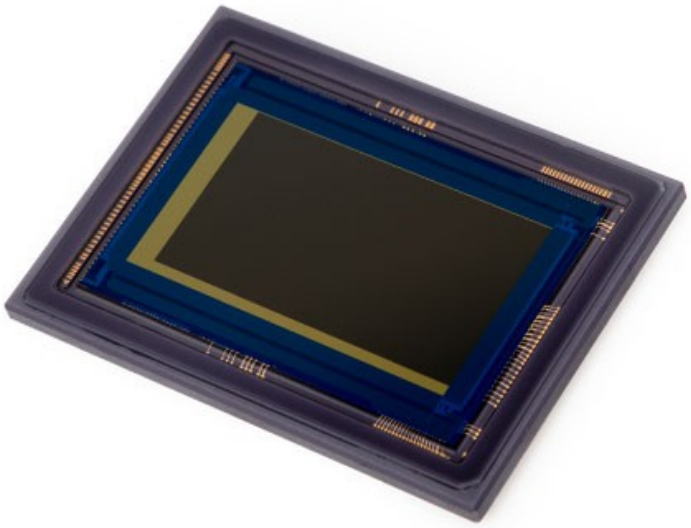
The Canon RF 24-240mm F4-6.3mm IS USM lens is scheduled to be available September 2019 for an estimated retail price of $899.99*. In addition, Canon will offer a new EOS RP kit that includes the RF-24-240mm for an estimated retail **price of $2199.00*.**

Equipment Discussions -

Canon Announces New 120 MP Ultra-High Resolution and 2.7 MP Ultra-High Sensitivity CMOS Sensors:

As image sensors are a driving force in innovating industries, Canon U.S.A., Inc., a leader in digital imaging solutions, has announced two new CMOS (complementary metal-oxide semiconductors) sensor products, the ultra-high resolution 120MXSI and ultra-high sensitivity 35MMFHDXSMA. These sensors help expand the company's lineup of industrial vision products, and offer integrators and end users additional capabilities when developing solutions in a variety of applications.

"*As a result of Canon's success in developing and manufacturing advanced CMOS sensors for our own purposes, we expanded to create a business platform offering select sensor capabilities for use in industrial vision applications," said Kazuto Ogawa, president and chief operating officer, Canon U.S.A., Inc. "These two new CMOS sensors reflect Canon's dedication to this new business, and reinforce our commitment to developing high-quality imaging solutions*."



120MXSI

The 120MXSI sensor is built with the ability to produce clear, high-quality images, making it a great fit for integrators and end users developing applications such as machine vision, security, robotics, precision agriculture and healthcare. This 120-megapixel sensor is capable of simultaneous and discrete image capture in both the visible and near-infrared spectrumsat a maximum frame rate of 9.4 frames per second.

Technical specifications of 120MXSI

Filter Type : RGB-NIR

Sensitivity (e/lx/sec) : 10,000

Resolution : 122 megapixels

Equipment Discussions -

Effective Pixels	**:**	**13272h x 9176v**
Sensor Size	**:**	**APS-H (29.22mm x 20.20mm)**
Pixel Size	**:**	**2.2µm x 2.2µm**
Maximum Frame Rate (All Pixels)	**:**	**9.4 fps**
Shutter Type	**:**	**Rolling**
Dark Random Noise	**:**	**2.3e rms @ gain x8, Room Temperature**

35MMFHDXSMA

The 35MMFHDXSMA sensor is capable of capturing monochrome imagery in extreme low-light environments where subjects would be near impossible to recognize with the naked eye. Removal of the color filter array doubles the sensitivity of the previously announced 35MMFHDXSCA sensor, providing even greater low-light capabilities. This sensor can meet a wide range of ultra-high-sensitivity needs when used as a component to support a multitude of applications developed by integrators and end users, including astrological observation, natural disaster monitoring, security and object detection, molecular and cell biology, and industrial vision.

Large Pixel Sizes With Minimal Noise

By using a progressively increasing electric field profile to efficiently transfer electrons off the large photodiode, Canon's 35MMFHDXS_A CMOS sensors can effectively leverage 19µm pixels while minimizing noise. Further, proprietary designs are leveraged to minimize dark current over long exposure times. These features, combined with a full area scan frame rate of 98fps at a resolution of 2160 x 1280, enable excellent imaging in applications requiring highly sensitive capture in low light.

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Technical Specifications:

	35MMFHDXSCA	35MMFHDXSMA
Filter type	RGB	Monochrome
Sensitivity (e/lx/sec @gain x1)	1,100,000 (green)	2,100,000
Resolution	2.76 megapixels	2.76 megapixels
Effective pixels	2160 x 1280 (Horizontal x Vertical)	2160 x 1280 (Horizontal x Vertical)
Sensor Size	41.04mm x 24.32mm (Full Frame)	41.04mm x 24.32mm (Full Frame)
Pixel Size	19µm x 19µm	19µm x 19µm
Maximum Frame Rate (All Pixels)	98 fps	98 fps
Shutter Type	Rolling	Rolling
Dark Random Noise	2.2e rms @ gain x16	2.2e rms @ gain x16

Equipment Discussions -

Sony announces 61 MP a7R IV camera

Sony has launched the a7R IV camera with a 61.0-megapixel full-frame Exmor R™ CMOS sensor combined with BIONZ X™ imaging engine to deliver unprecedented resolution, fine gradation and low noise to open an entirely new dimension of detail just as pro photographers expect.

The α7R IV captures the mood of each scene and the texture of aimed subjects.

The latest image processing engine

The latest BIONZ X image processing engine works in tandem with front-end LSI to maximize high-resolution sensor performance while achieving up to 15-stop3dynamic range at low ISO sensitivity.

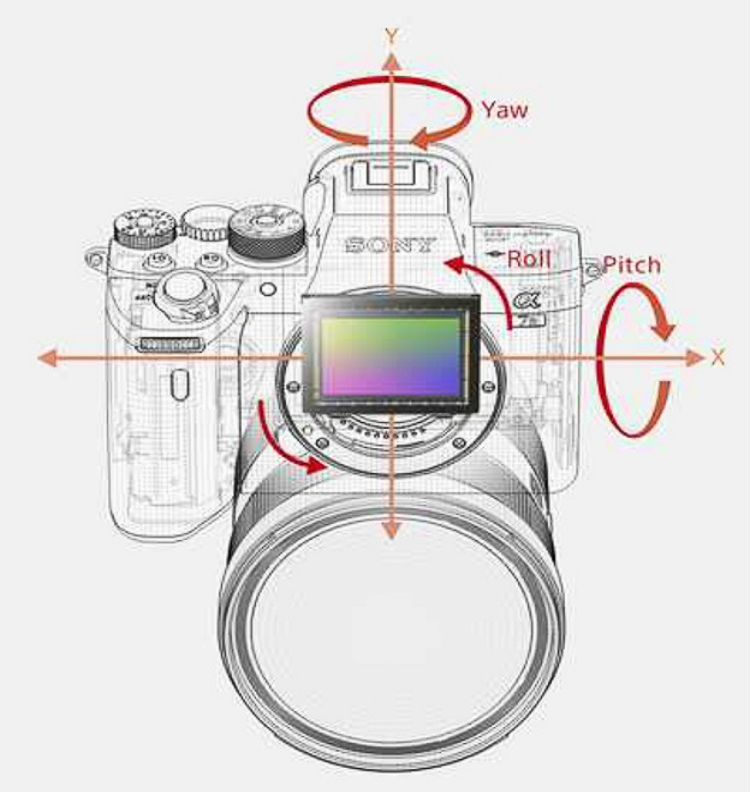
Equipment Discussions -

Wide standard ISO 100-32000 range

Regardless of increased pixels, the a7R IV delivers the highest standard ISO 320004 and reduces noise in the low- and mid-sensitivity ranges, achieving high-quality imagery.

In-body 5-axis image stabilization

The in-body 5-axis image stabilizer algorithm is optimized to maximize high-resolution 61.0-megapixel image sensor performance. This fully supports your handheld shooting for reliability as effective as 5.5-stop higher shutter speed.



Shoot in absolute silence

Silent shooting not only provides a useful advantage in venues where quiet is required but avoids vibration that can cause camera-shake blur. Vibration-free shutter maximizes extremely high a7R IV resolution for crisp clear images.

Blur reducing structure

A re-examined and redesigned mechanism infixes the shutter unit to suppress subtle camera shake and an enhanced image stabilizer algorithm effectively reduces image blur. Overall, the camera's high resolution is successfully maintained.

Shake-free remote shutter release

Remote camera operation using optional wireless remote controller (RMT-P1BT) allows you to shoot effective stills while

Equipment Discussions -

avoiding camera shake caused by pressing the shutter release. This maximizes the image sensor's high resolution.

5.76-million-dot UXGA OLED Tru-Finder

This 5.76-million-dot electronic viewfinder reproduces fine detail with approximately 1.6 times higher resolution than a7R III. You can select "High" quality mode for high-precision yet natural realism while suppressing moiré and jaggies for better concentration. Smoother image with a 120/100fps6frame rate makes it easy to track moving subjects.

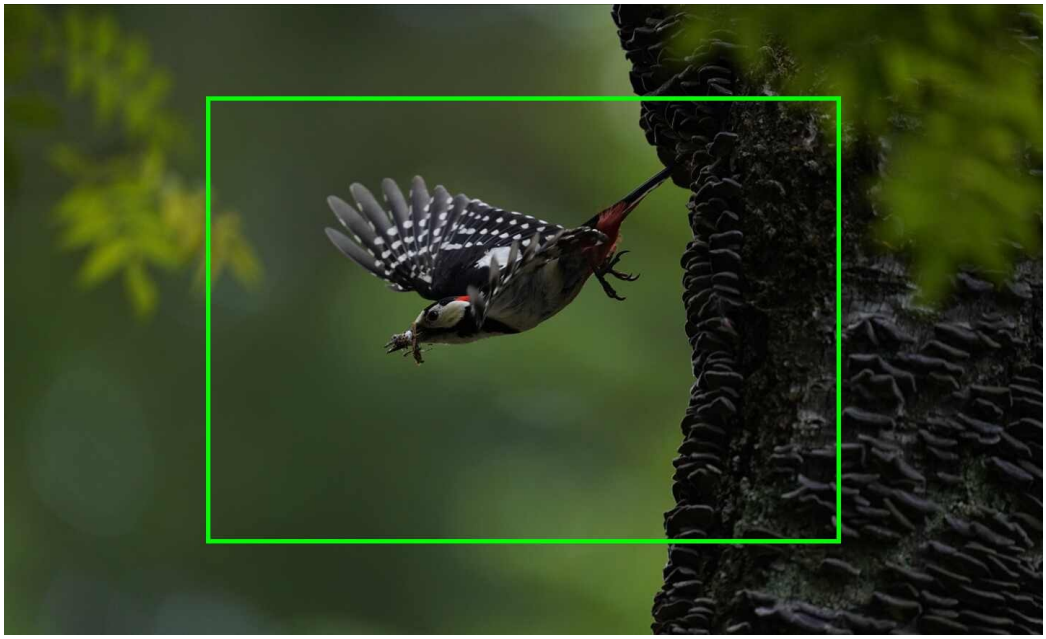
Burst speed:

Regardless of remarkable image resolution, the a7R IV maintains its shooting speed of up to 10fps with a mechanical shutter (up to 8fps in live-view continuous shooting mode). This allows you to capture decisive moments—such as motion of wild animals—with subtle details made possible only by the 61.0 MP high-resolution imaging capability.

Useful 26.2 MP with APS-C cropping:

Thanks to extraordinary image resolution, you can still maintain remarkable high-resolution images at approximately 26.2 megapixels even after cropping a full-frame image down to APS-C size. This means the a7R IV can help you proactively utilize 61.0-megapixel full-frame shooting, for example, in bird photography that tends to require cropping editing to magnify captured images.

Wide AF coverage:

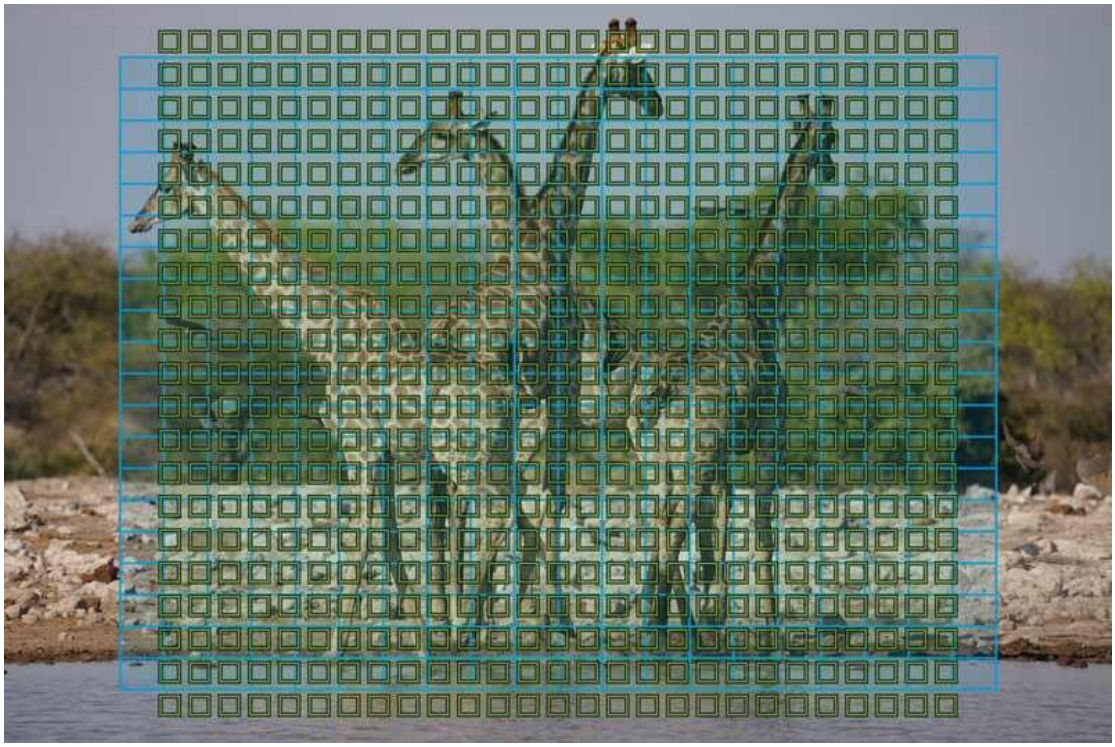


New image sensor supplies wide and high-density AF coverage with 567 phase-detection AF points (approx. 99.7% height and 74.0% width). 425-point contrast-detection AF supports precision focusing.

Equipment Discussions -

Fast AF despite higher resolution:

Thanks to responsive enhanced Fast Hybrid AF, despite its large data handling, the a7R IV delivers swift AF even under dim lighting conditions, with remarkable ability to capture an aimed subject.



Steadfast AF tracking further improved:

Increased AF points, widened coverage of AF sensor and improved AF algorithm have further enhanced subject-tracking performance for consistent shooting, even of complex or sudden movements.

High-precision AF in low-light conditions:

Advanced AF algorithms contribute to AF precision at light levels as low as EV-3. The 'Focus Priority in Aperture Drive' option is for more accurate focusing in dim lighting and when the aperture is stopped down.

Shoot up to 68 images continuously:

Because buffer memory size is 1.5 times larger10, the camera maintains a burst shooting speed of up to approx. 68 images. With APS-C shooting mode, you can shoot approximately three times more photos than with full-frame shooting mode.

Dual media slots, both supporting UHS-II:

Both SLOT 1 and SLOT 2 are compatible with UHS-I and UHS-II for fast mass-volume data writing. The a7R IV can simul-

Equipment Discussions -

taneously or relay record, separate RAW/JPEG data and stills/movies and copy data between cards.

Extend shooting to professional length:

The a7R IV uses a high-capacity NP-FZ100 battery. For longer hours of shooting, combine this with the optional VG-C4EM Vertical Grip holding up to two NP-FZ100 batteries, which allows you to shoot two times more shots than with a7R IV.

Rely on smart AI-based Real-time Tracking:

AI-based Real-time Tracking is newly featured to greatly increase your success rate in challenging shots. Simply designate a subject and press the shutter button halfway and rely on the camera to steadfastly track the subject. With "Face/Eye Priority in AF" function, the a7R IV seamlessly changes tracking targets between face and eye when the subject is a person.

Real-time Eye AF with animal eye tracking for more success:

Thanks to an improved algorithm, the a7R IV now supports animal eye in addition to human eye tracking, allowing fast, precise, automatic detection and tracking. This animal eye support will greatly increase your success in capturing images of animals in the wild or favorite pets at home when an obstacle comes into view or the camera's horizontal/vertical orientation often changes.

For Movies:

Full frame and Super 35mm* formats can be selected for 4K movie recording. Full pixel readout in the Super 35mm mode (approx. APS-C 16:9), without the need for pixel binning, makes it possible to condense approximately 2.4 times** the amount of data required for 4K movies (QFHD: 3840 x 2160), resulting in high-resolution, high-detail 4K with minimal moiré and jaggies. Furthermore, the advanced image processing system delivers more accurate skin tones as well as smoother highlight gradations. 4K recording employs the XAVC S*** format at bit rates as high as 100 Mbps.

Dimensions:

Approx. 128.9mm x 96.4mm x 77.5mm

Weight:

578 grams

Cost:

The Sony a7R IV camera body is priced at **$3498 US Dollars**

B&H Link: ***https://www.bhphotovideo.com/c/product/1494679-REG/sony_ilce7rm4_b_alpha_a7r_iv_mirrorless.html/BI/19990/KBID/13252/DFF/d10-v21-t1-x976805/SID/EZ***

Natural History -

COUNTRY NOTEBOOK: A King among Fishers : M.Krishnan:- 23 August 1970

The Sunday Statesman (shared by Shri. Saktipada Panigrahi)

PIED KINGFISHER

" EDWIN Arnold was never a major poet. Even in India and as author of THE LIGHT OF ASIA he is, probably unfamiliar to most people today. But in the course of his classic on the Buddha's life he describes many Indian birds rather prettily and among them the Pied Kingfisher which he calls " the Pied Fish-Tiger ".

Not a specially happy appellation, I think. There are other birds that hunt fish which have the power and predatory features and fierceness that would fit the name better, the Osprey and the Fish-Owl, for instance, though I concede they are not pied black and white.

However, the fish would probably agree with the poet for there are few more inveterate fish-hunters. Perhaps this bird is the most piscivorous of the kingfishers, though it does at times take other small fry from water, it lives almost entirely on fishes mainly on the smaller kinds. It is never found away from water, and while it frequents lakes ans estuaries as well it is typically a bird of broad, fast-flowing rivers. I have never seen it at a pond, as I have seen others of its tribe.

The manner of hunting too is much more active and predacious than that of other kingfishers. It does not sit perched on some bank or bough overlooking water keeping a sharp watch for approaching prey, but flies low and swift over the water, and when it spots a rising fish, it hovers above it on quick-beating wings, hanging in the air very much in the manner of a Kestrel, and then plummets straight down on its victim. It may plunge a foot or more into the water to reach the unlucky fish, and it is not often that it misses its aim.

On this point, however, I am unable to agree entirely with other observers, who say it rarely fails to come up with prey. I have seen it come up empty-billed many times. Recently at the Periyar Sanctuary of Kerala, I had the opportunity to watch four of these kingfishers (two pairs, I think - this bird is often to be seen in pairs, separated by some distance while hunting) for a whole hour, one afternoon. Naturally I was not able to watch all the birds all the time, because they were hunting a considerable stretch of water and I could not observe the other birds while watching one of them. But from 27 plunges, only 17 were successful. Incidentally the bird in my picture (one of the four birds I watched at Periyar) is a male. The female Pied Kingfisher lacks the double necklace, having only one incomplete band of black across the white chest."

- M. Krishnan

This was published on 23 August 1970.

Wildlife Photography -

Tiger Cub by Sabyasachi Patra

Leopard by Shyamala Kumar

Wildlife Photography -

Tiger Mating by Vipin Sharma

Tiger in Corbett by Jerin Dinesh

Wildlife Photography -

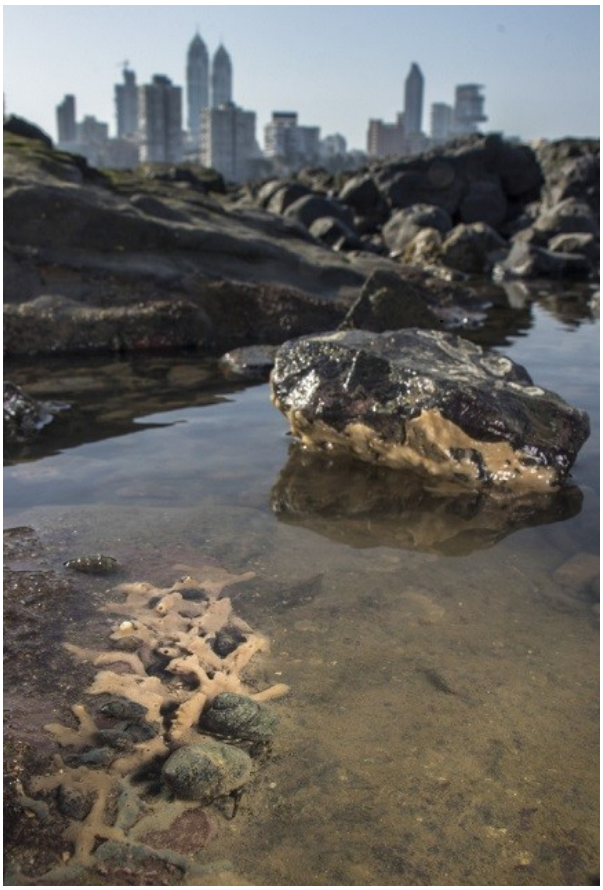
Spot Billed Pelican by Mrudul Godbole

Grey-Crested Tit by Sandipan Ghosh

Wildlife Photography -

Lynx spider with Grasshopper by Arun Acharjee

Hermit crabs around a sponge by Prajwal Ullal



This is the 127th issue of IndiaWilds. The cover page photo captures a predator with its prey. On first glance one can sight a Crested Serpent Eagle perched on a dead tree. On closer inspection one can sight the snake about two feet away hanging on the tree. Since the eagle was not immediately feeding on the snake tourists may not notice the snake and move away. Patience, a keen eye and curiosity helps in unraveling mysteries in the wild. This eagle didn't eat for an hour. And since it was time for the gate to close in Bandhavgarh National Park, we were forced to move away. Why did the eagle not eat immediately after killing the snake? What was it waiting for? At times their actions may appear to us as mystery. However, these eagles know what they are doing. At times you can sight an eastern imperial eagle eating the orchid vanda which has anti-venom uses. Deeper levels of observation and studies can unravel the actions of our wild denizens and perhaps can bring in more respect for their knowledge and intelligence.

The lead article in this issue talks about the problems of plastics and microplastics. Once hailed as wonder material, tiny plastic fragments have now reached our blood stream and are present in water, beer and in different foods. We should understand that our actions have resulted in a massive ecological crisis as well as threatening the survival of mankind. So it is time for shedding our ego as the most intelligent species on earth and start working to save our Planet Earth as well as ourselves from our stupid actions.

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

To post in the IndiaWilds forums, you can register free of cost using your Full Name as user id at -

http://www.indiawilds.com/forums/register.php

If you are already a member of IndiaWilds and have forgotten you user id and/or password you can mail administrator@indiawilds.com

Regards,
Sabyasachi Patra

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