Telangana Biodiversity

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A Newsletter of Centre for Biodiversity and Conservation Studies, Osmania University

Editorial

In this issue, we bring the news about scientists from Telangana describing a new species of bat, adding another jewel to the rich crown of Indian biodiversity. Our special feature takes you on a captivating journey through the Nehru Zoological Park, inform you about threatened species like *Cheilocostus speciosus* and *Echis carinatus*, and the ever-important Neem and enchanting Indian Giant Squirrel. Explore the inspiring story of Padma Shri Nek Ram Sharma, the organic farmer from Himachal Pradesh. His commitment to preserving indigenous seeds and promoting sustainable agriculture is a shining example for all. Education for Sustainable Development empowers individuals to make informed decisions that will safeguard the environment and foster a harmonious relationship with nature. Also know about Rama, the character from Rudyard Kipling's "The Jungle Book" and oil-yielding plants. This quarter we celebrated International Biodiversity Day, amidst a debate on the removal of Darwinism from academic curricula, we emphasize the importance of this revolutionary theory in understanding the evolution and interconnectedness of all life.

Let us take the theme "From Agreement to Action: Build Back Biodiversity" to heart and embrace the responsibility to safeguard and rebuild biodiversity. Together, we can work towards a future where nature thrives, and all living beings coexist in harmony. Remember, every action, no matter how small, counts toward building a sustainable and biodiverse world.

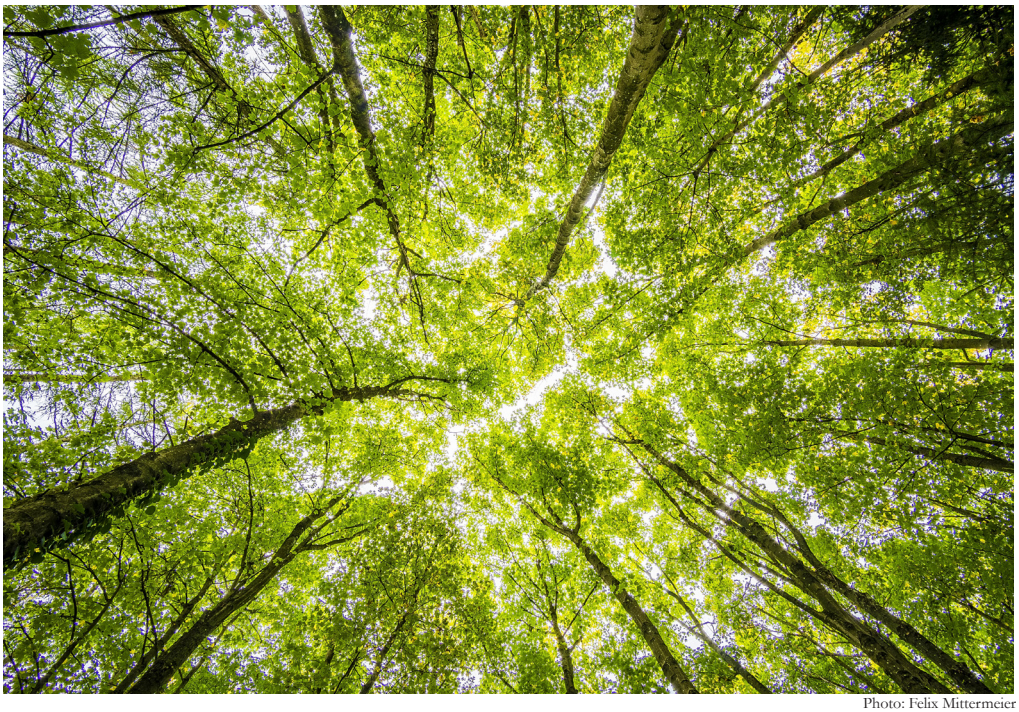

Photo: Felix Mittermeier

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Briefly

New species of bat discovered by Osmania Bat Biologist

Osmania University scientist Dr Bhargavi Srinivasulu and her son Aditya Srinivasulu from the University of Reading, UK have discovered a new species of bat in a cave in Makuta, Kodagu district, Karnataka. The new species named *Miniopetrus srinii* or Srini's bent-winged bat has been discovered by OU scientist Dr Bhargavi Srinivasulu and her son Aditya Srinivasulu. The discovery of Srini's Bent-winged Bats now takes the number of species of Bent-winged Bats known in India to five. Srini's bent-winged bat was found in a cave surrounded by "evergreen and semi-evergreen forest," the study said. Kodagu district is part of the Western Ghats mountain range and in the southwestern edge of Karnataka. Srini's bent-winged bat is a "small-sized" creature with "long," "golden brown" fur1. Bent-winged bats are typically small (total length c. 10 cm, wingspans 30–35 cm, mass less than 20 g). There are about 130 species of bats in India, and they are found in almost all parts of India except for the high-altitude Himalayas and the Thar desert. They are important pollinators and seed dispersers and play a crucial role in maintaining the ecological balance.

Photo: Bhargavi Srinivasulu

Special Feature
Nehru Zoological Park

Nehru Zoological Park, located in Hyderabad, India, is a prominent and well-established zoological park that has been captivating visitors with its diverse collection of animals since its inception. Spread across an expansive area of 350 acres, this park is a sanctuary for 1500 species of both captive and free-ranging animals, making it a popular destination for both locals and tourists alike. Established in the year 1959, Nehru Zoological Park holds the distinction of being one of the first zoos in India to adopt a more open and naturalistic approach to animal enclosures. Named after India's first Prime Minister, Jawaharlal Nehru, the park was envisioned as a center for education, conservation, and recreation. The park's extensive collection showcases a remarkable array of animal species from different corners of the world. Visitors can embark on a captivating journey through the various sections of the zoo, each designed to represent the native habitats of the animals.

One of the main highlights of the Nehru Zoological Park is its diversity of mammalian species. From majestic big cats like lions, tigers, leopards, and cheetahs to the gentle giants like elephants, rhinoceroses, and giraffes, the park offers a thrilling experience of witnessing these magnificent creatures up close. The zoo also houses an impressive assortment of herbivores such as deer, antelopes, and giraffes, contributing to the overall biodiversity and ecological balance of the park. The aviaries in the zoo are a treat for bird enthusiasts. The colorful and melodious inhabitants include peacocks, parrots, flamingos, ostriches, and various species of pheasants.

For reptile enthusiasts, the Reptile House at Nehru Zoological Park is a treasure trove of intriguing species. From slithering snakes like cobras and vipers to the slow-moving but fascinating crocodiles and turtles, the exhibit offers an opportunity to learn about these often-misunderstood creatures. Another feature of this park is the Nocturnal Animal House which artificially reverses night and day for the animals so that nocturnal animals are active while visitors are at the zoo. This exhibit includes fruit bats, slender loris, slow loris, civets, leopard cats, hedgehogs, barn owls, mottled wood owls, fishing owls, and great horned owls.

Courtesy: Internet Resource

Apart from its captivating collection of animals, Nehru Zoological Park actively participates in conservation efforts, breeding programs, and wildlife research. In addition to its animal exhibits, the zoo offers amenities like battery-operated vehicles and a toy train that take visitors on an enjoyable tour of the vast premises. The park also features a butterfly park and a nocturnal animal house, adding to the unique experiences it offers to its visitors.

With its commitment to providing a safe and comfortable environment for its animal residents and an enriching experience for its visitors, Nehru Zoological Park continues to be a beloved institution in Hyderabad. Whether you are a nature enthusiast, an animal lover, or simply seeking an enjoyable day out with family, a visit to this remarkable zoo promises to be an unforgettable experience filled with wonder and appreciation for the beauty of the natural world.

Courtesy: Internet Resource

Threatened Taxa

Plant - *Cheilocostus speciosus* (J.Koenig) C.D.Specht.

Photo: C. Sudhakar Reddy

Taxonomy Order Zingiberales; Family Costaceae

Geographic Range Widespread species, found throughout South and Southeast Asia. It has been introduced elsewhere across the world. In India, it is distributed throughout.

State Distribution Occasional; found in Bhadradri Kothagudem, Jangaon, Jayashankar Bhupalapalli, Mahabubabad, Nagarkurnool, and Siddipet districts.

Population Nothing is known about its population status or trends.

Habitat & Ecology Tall plant found in areas with good rainfall, within proximity to moist localities or riverine ecosystems in deciduous forests.

Major Threats Threatened due to habitat loss and destruction; extensively harvested for medicinal purposes and for preparation of perfumes.

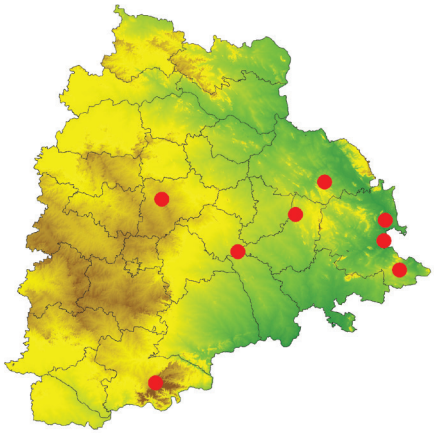
Use & Trade This species is not in trade, but is collected for medicinal and cosmetic industries.

Conservation Measures No species-specific conservation measures are in place. This species is reported from Amrabad Tiger Reserve.

Remarks

This species is found in dry deciduous forests. It occurs in Amrabad TR. It is threatened by habitat destruction, and over-harvesting for medicinal and cosmetic purposes. It is listed under Appendix II of CITES. The estimated number of localities is 8; the estimated extent of occurrence (EOO) in Telangana State is >20,000 km², and the area of occupancy (AOO) is <100 km². There is an inferred continuing decline in the area, extent, and quality of suitable habitat. At the global level, this species has not been assessed. In Telangana State, this species is assessed as Vulnerable, with the criteria A2d+B1ab(iii,iv)+2ab(iii,iv).

Distribution in Telangana State



Animal - *Echis carinatus* (Schneider, 1801)

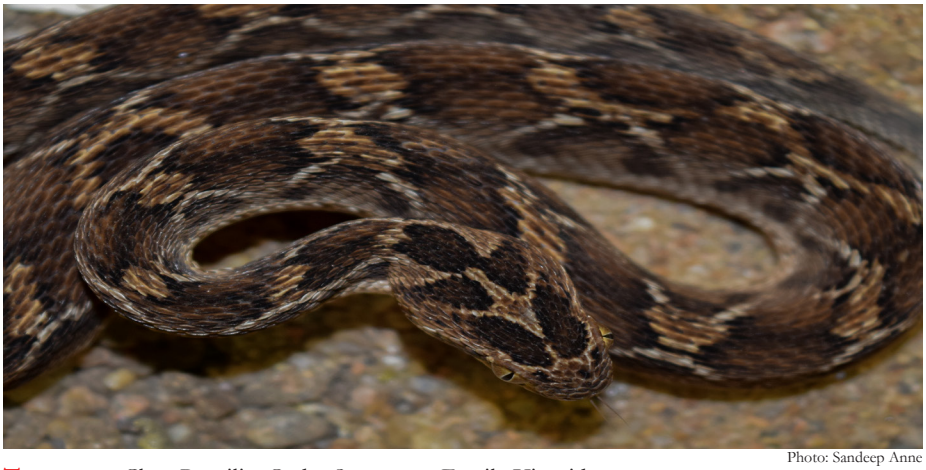


Photo: Sandeep Anne

Taxonomy Class Reptilia; Order Squamata; Family Viperidae

Geographic Range This is a wide spread species distributed from Iran through Arabian Peninsula and South Asia. In India, found throughout.

State Distribution Occasional; known from a few districts.

Population Nothing is known about its population status. A decline in sightings has been observed.

Habitat & Ecology Nocturnal, found among vegetation in dry scrub to moderately dense forests, and in the proximity of human habitation. Found under rocks and in small bushes. It is ovoviviparous and gives birth to up to 23 young.

Major Threats Threatened due to encroachment leading to loss of habitat and habitat fragmentation. It is also killed due to human apathy and fear.

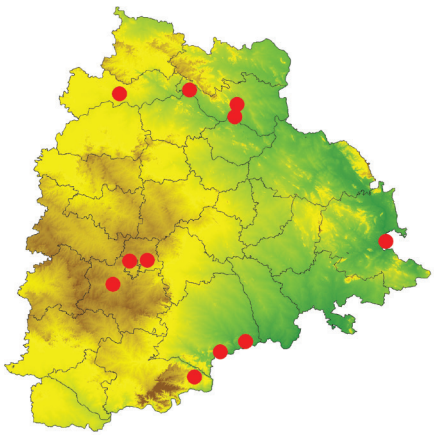
Use & Trade This species is not in trade.

Conservation Measures It is included under Schedule II of the Wildlife (Protection) Act, 1972. This species is reported from Kawal Tiger Reserve.

Remarks

This taxon is found among vegetation in dry scrub to moderately dense forests and human habitations. It is known from Kawal TR. It is threatened by habitat encroachment, habitat loss, killing due to fear and human apathy. It is occasional in occurrence. It is known from many localities. The estimated extent of occurrence (EOO) in Telangana State is >20000 km², and the area of occupancy (AOO) is <2000 km². There is an inferred continuing decline in the area, extent, and quality of suitable habitat. At the global level, this species has been assessed as Least Concern. In Telangana State, this species is assessed as Vulnerable, with the criteria B1ab(iii)+2ab(iii).

Distribution in Telangana State



Pioneers in Conservation
Padma Shri Nek Ram Sharma

Inset Photo Courtesy: Juhi Jindal, Tractor News

Photo Courtesy : The Better India

Nek Ram Sharma, a Padma Shri awardee, hails from Mandi District, Himachal Pradesh. Unable to secure a government job, he decided to turn his family's 13.6 acres of land into an organic farming venture. In his pursuit of sustainable and environmentally-friendly agriculture, he delved into the wisdom of ancient and traditional farming methods. Sharma successfully reintroduced the *nau-anaj* (nine crops) system which involves cultivating a diverse mixture of crops, including vegetables, cereals, lentils, creepers, and legumes, all intermingled in a pattern. This system not only fosters healthier soils but also leads to reduced water consumption and increased crop yields. Sharma's keen observation and concern for the decline of native and indigenous seeds in the market, which are known to be more nutritious, prompted him to take action. Among the various crops he cultivates, Sharma pays special attention to millets like finger millet and foxtail millet which are known for their exceptional nutritional value. In a selfless and visionary move, Sharma set up a seed bank consisting of 40 indigenous seed varieties. He not only collects and preserves these seeds but also generously shares them with other farmers. Striving to empower fellow agriculturists, he distributes these seeds for free, under the condition that the recipients return an equivalent amount of seeds from their harvests. Through his dedication to organic farming, reinvigoration of traditional practices, and preservation of indigenous seeds, Nek Ram Sharma stands as an inspiring example of how a single individual can create a positive and sustainable impact on agriculture and the environment.

Environment Education
Education for Sustainable Development

Education for Sustainable Development (ESD) plays a vital role in equipping learners of all ages with the knowledge, skills, values, and agency to tackle complex global challenges. These challenges include climate change, biodiversity loss, unsustainable resource consumption, and inequality. ESD empowers individuals to make informed decisions and take collective action, fostering a sense of responsibility towards society and the environment. As a lifelong learning process, ESD is an integral part of quality education, enhancing cognitive, socio-emotional, and behavioral aspects of learning. At the forefront of promoting ESD is UNESCO, the leading agency within the United Nations. UNESCO is responsible for implementing ESD for 2030, the current global framework that builds upon the achievements of the United Nations Decade of Education for Sustainable Development (2005-2014) and the Global Action Programme (GAP) on ESD (2015-2019).

By working on these five focal areas - Advancing policy, Transforming learning environments, Building capacities of educators, Empowering and mobilizing youth, and Accelerating local level action - UNESCO strives to promote ESD as a transformative force in education, empowering learners to be proactive contributors to a sustainable and equitable world. Through collective efforts and partnerships, ESD plays a vital role in shaping a brighter and more sustainable future for all.

Courtesy: Encyclopedia Britannica

Nature for Kids

Rama

Rama in Rudyard Kipling's "The Jungle Book" is inspired by the real-life Wolf (*Canis lupus*). *Rama* is a character depicted as the wise and noble leader of the wolf pack. He is the father of *Mowgli*, the protagonist of the story, and is a significant presence throughout the narrative. *Rama* exemplifies the traits of a strong and protective father figure, as well as a fair and just leader of the wolf pack. *Rama* is introduced as the leader of the *Seeonee* wolf pack, residing in the jungles of India. He is depicted as a massive and powerful wolf, respected and admired by all the animals in the jungle. His strength, wisdom, and keen sense of responsibility make him an essential character in the book. As a father to *Mowgli*, *Rama* is fiercely protective of the "man-cub," despite the challenges posed by the law of the jungle.

Rama's role as a leader is evident during the assembly of the wolf pack and the Council Rock, where he maintains order and resolves conflicts among the animals. He upholds the principles of the jungle and enforces the laws that govern the animal community. *Rama*'s leadership is characterized by fairness, compassion, and the ability to make difficult decisions for the well-being of his pack.

The gray wolf is a highly intelligent and social animal belonging to the Canidae family, which also includes domestic dogs and other wild canids. Gray wolves are known for their intricate social structure, living in tight-knit family units called packs. These packs are led by an alpha pair, typically the dominant male and female, who are responsible for making decisions for the pack and ensuring its survival. The pack's hierarchy is maintained through various behaviors, including body language, vocalizations, and posturing. Wolves play a crucial role in their ecosystems, helping to control the populations of prey species and influencing the distribution of other animals in the food chain.

Photo: Disney Films

Our Biodiversity

Oil-yielding plants of Telangana State

Oil-yielding plants play a vital role in the agricultural landscape of Telangana State, India. Some of the prominent oil-yielding plants found in the State include groundnut, sunflower, sesame, mustard, castor, safflower, linseed, pongame oil tree, and jatropha oil tree.

Groundnut is one of the primary oilseeds cultivated in Telangana. The bright and vibrant sunflower fields are a common sight in Telangana. Sunflower oil, known for its health benefits and culinary versatility, is derived from these sunny blossoms. Telangana is renowned for its sesame cultivation. The oil extracted from sesame seeds is highly esteemed for its nutty flavor and is widely used in traditional Telugu cuisine.

Mustard cultivation is prevalent in various parts of the state, particularly during the winter season. Mustard oil is not only a staple in cooking but also used for its therapeutic properties. Castor oil is obtained from the castor bean plant, and Telangana is a significant contributor to its production. This multi-purpose oil finds use in various industries, including pharmaceuticals and cosmetics. The safflower plant is grown in the arid regions of Telangana. The oil extracted from its seeds has both edible and industrial applications. Although less widespread, linseed is cultivated in some regions of Telangana. The oil derived from linseeds is known for its nutritional value and health benefits. Pongame or Kanuga yields pongame oil which is used as lamp oil, in soapmaking, and as a lubricant. Jatropha has been cultivated at very small scale for its oil which is used as biodeisel.

The cultivation of these oil-yielding plants not only provides a source of income for farmers but also contributes to the state's economy and enhances its agricultural diversity. Additionally, the oil extracted from these plants caters to the culinary and industrial needs of both the local population and national markets.

Courtesy: Telangana Today

Photo: J.M. Garg

Feature - Flora

Neem - *Azadirachta indica* A. Juss.

Classification

Kingdom: Plantae
Division: Tracheophyta
Class: Magnoliopsida
Order: Sapindales
Family: Meliaceae
Genus: *Azadirachta*
Species: *indica*
Authority: A. Juss.

Azardirachta indica is a medically important tree of the family Meliaceae. Found in tropical and subtropical areas around the world, it grows to a height of 15-20 meters, sometimes upto 40 m, with evergreen bitter leaves, white fragrant flowers and olive-like fruits. Medicinally this tree is considered important as it has been used for centuries in traditional medicine such as Ayurveda and Unani to treat many conditions, such as skin related problems and rheumatism. Shoots of the tree were widely used to clean teeth in olden days. Each part of the tree is used for various purposes such as cooking to make dishes such as veppam pu caru (margosa flower rasam) of Tamil Nadu, nim begun bhaja (brinjal and neem leaves) of Bengal, pickled neem leaves with tomato and fish sauce in Myanmar, etc. Traditionally, leaves have been used for reducing tooth plaque and to clear lice as they have been proved to have cilinal properties such as anti-inflammatory, antimalarial, immunomodulatory, antifungal, antihyperglycaemic, antioxidant, antiulcer, antibacterial, antiviral, anticarcinogenic and antimutagenic properties. Neem oil has been used as a pesticide and fungicide. Due to it's wide range of uses this tree is considered important and is a part of many religious rituals.

Photo Courtesy: Britannica.com

Feature - Fauna

Indian Giant Squirrel - *Ratufa indica* (Erxleben, 1777)

Classification

Kingdom: Animalia
Phylum: Chordata
Class: Mammalia
Order: Rodentia
Family: Sciuridae
Genus: *Ratufa*
Species: *indica*
Authority: (Erxleben, 1777)

Ratufa indica (Indian Giant Squirrel/Malabar Giant Squirrel) is endemic to India, distributed mostly in Western Ghats, Eastern Ghats and Satpura range. It is a large squirrel about 20-50 cm head to body and tail can be of same length or longer, with multicolored appearance-maroon, brown, whitish, creamy or black coloured back, underpart and belly are usually light coloured and ears have distinctive white spot between them. It has pink lips and nose with dark or light brown colored eyes. Its habitat includes deciduous and evergreen forests, prefers to nest in tall trees which are globe shaped made out of twigs. Mostly solitary except during mating season, It spends most of it's time in trees, active at dawn and dusk while rests during afternoons. Most of it's diet includes fruits, nuts, flowers etc. It is an important seed disperser and hence ecologically important organism. They breed between October to January, with a single pup born after a gestation period of 21-25 days. Though classified as Least Concern by the IUCN Red List, their populations are dropping due to logging, construction of dams, habitat loss, monoculture farming etc.. Being a conspicuous species they are unable to cope up with rapid human interactions.

Photo: Manoj Ashok Kumar

Events

IBD 2023 Celebrated at State Level

Courtesy: Internet Resource

Telangana State Biodiversity Board celebrated International Day for Biological Diversity 2023 on 23rd May at Bhaskara Auditorium, B.M. Birla Center, Hyderabad. The Hon'ble Chief Guest for the event was Dr. Rajat Kumar, IAS, Special Chief Secretary to Government of Telangana, Irrigation and Environment Science and Technology Department, Chairman, Telangana State Biodiversity Board. The International Day for Biological Diversity is commemorating on 22nd May every year, to raise the awareness of biodiversity and deduce threats to biodiversity. The celebration theme for this year's biodiversity day is "From Agreement to Action: Build Back Biodiversity". The theme focuses on the adoption of the "Kunming-Montreal Global Biodiversity Framework." in order to achieve the targets of the Framework and actions taken to implement them for the betterment of biodiversity and reducing threats to it. Prizes and certificates to winners of various competitions too were distributed.

News

Academics oppose removal of 'Evolution' chapters

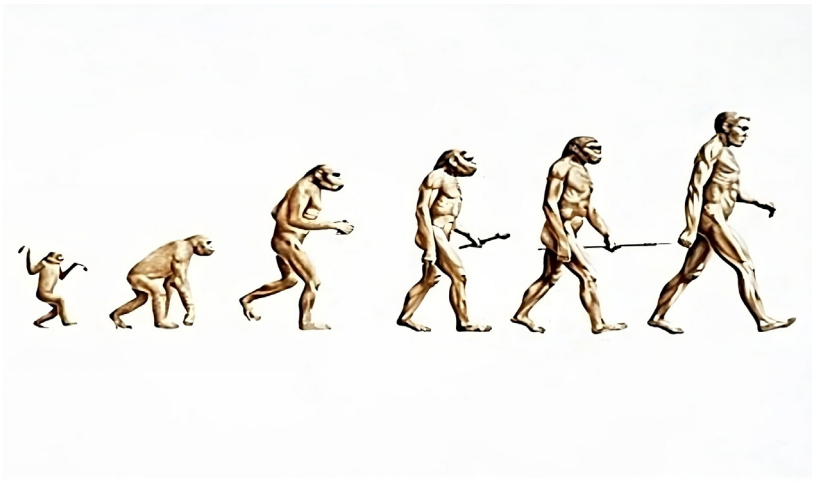


Photo: Internet Resource

Science educators in India are voicing concerns over the removal of material on Darwinian evolution from science textbooks in the aftermath of the COVID-19 pandemic. The theory, proposed by 19th-century English naturalist Charles Darwin, is a fundamental concept in our understanding of the biological world, as it explains how species adapt and evolve over time through natural selection. The decision to delete material related to evolution was taken by the National Council for Education, Research and Training (NCERT), citing the need to lighten the study load on schoolchildren during these challenging times. Consequently, from the start of the current academic year, material on evolution is no longer included in grade nine and ten science textbooks. Furthermore, the chapter on 'Evolution and Heredity' taught to grade 11 and 12 students has been reduced to merely 'Heredity,' and the section on Charles Darwin and his work has been entirely erased.

Signing Off

Why Darwinism is important?

Darwinism is important because it is considered as the best available explanation of the way life on this planet developed. The theory of evolution by natural selection was first put forward by Darwin in On the Origin of Species, published in 1859. It stated that the first cellular forms of life existed on the earth about 2000 million years ago, and later single-celled, multicellular, and invertebrates were formed. Darwinism is now almost unanimously accepted by knowledgeable evolutionists and has become the basic component of the new philosophy of biology.

Opposition to the teaching of evolution in public schools arises because many people mistakenly believe that accepting evolution is incompatible with their religious faith. Proponents of banning the teaching of evolution in public schools often argue that it is a religious belief, and therefore should not be taught in a public school setting. However, many scientists believe that evolution is a scientific fact, and should be taught in public schools as part of a comprehensive science education. To teach biology without explaining evolution deprives students of a powerful concept that brings great order and coherence to our understanding of life. The teaching of evolution also has great practical value for students. Directly or indirectly, evolutionary biology has made many contributions to society.

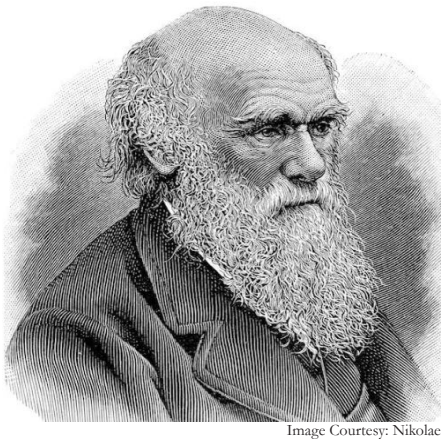


Image Courtesy: Nikolae

We hope you have enjoyed this issue... If you wish to share any information, please do not hesitate to contact us.

Centre for Biodiversity and Conservation Studies

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