

VISIT REPORT TO National Zoological Park

SUBJECT - Comparative Anatomy
of Vertebrates

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I certainly extend my heartfelt gratitude to Shivaji College, University of Delhi for organizing the enriching and educational trip to National Zoological Park, Delhi, special thanks to Zoology department for meticulous planning and coordination that made this excursion possible.

I appreciate efforts of professor 'Dr. Nidhi garg' who provided valuable insight, enhancing our understanding of wildlife conservation and biodiversity.

Thank you

Nidhee kumari

Nidhi
01/05/2024

Introduction to National Zoological Park, New Delhi.

⊗ HISTORY

In India, at the time of independence, there was no zoo in Delhi. The Indian board of wildlife, which was constituted in 1951 laid stress on establishment of zoos in larger cities of the country in its first meeting 1952.

Accordingly, an ad-hoc committee of some prominent nature lovers of Delhi, including Smt. Indira Gandhi was constituted under the chairmanship of Chief Commissioner, to formulate a proposal for establishment of Zoological Park for Delhi.

Central Government was to provide necessary finance and get the project executed through Delhi State Govt. Delhi state however expressed its inability to undertake the scheme and suggested that the park be developed by Central government, and shall be handed over to them in running condition to the Delhi government.

The park was formally inaugurated on 1st November, 1959 by Mr Punjab Rao Deshmukh, Hon'ble minister, Government of India.

Here at the National Zoological Park, birds & animals live in an environment that in many ways resemble their natural habitat. The National Zoological Park not only provides a home for endangered species, but also helps them to breed in captivity.

❁ VISION ⇒

In twenty year, time of Master Plan Period, the visitor experience will be far more rewarding and enriching than it is today. Quality of animal care exhibits, conservation education and sustainable management practices will take the zoo to the next level. The 'National Zoological Park' will truly be the Nation's zoo in terms of state of art facilities and management practices.

❁ OBJECTIVE OF VISIT

Visiting a national zoological park offers a unique opportunity to explore the fascinating world of comparative anatomy in vertebrates. Observing diverse species up close allows us to compare and contrast anatomical structure across different classes such as mammals, birds, reptiles, amphibians and fish.

By studying skeletal, muscular and organ systems, we gain insights into evolutionary adaptations, functional similarities and specialized features that have enabled these animals to thrive in their respective habitats.

Such visits not only deepen our understanding of biodiversity but also highlight the interconnectedness of life forms on Earth.



Students of Zoology department,
2nd year at National Zoological
Park, New Delhi



Observation techniques utilized for studying Comparative Anatomy $\Rightarrow$

Study Comparative anatomy involves employing range of observation technique to examine anatomical structures across different vertebrate species. These techniques may include dissection of specimens to analyse skeletal and organ systems, microscopic examination of tissues to study cellular morphology, and imaging technologies like CT Scans and MRI to visualize internal structures in living organisms. Comparative dissections enables researchers to identify homologous structure and evolutionary adaptations, while histological analysis provides insights to tissue composition and function. These observation methods collectively contribute to a comprehensive understanding of vertebrate anatomy and its evolutionary significance.

⊗ Comparative Anatomy of Mammals $\Rightarrow$

It Involves studying the anatomical structures across different species within the class Mammalia. This field explores similarities and differences in skeletal, muscular, nervous, circulatory, respiratory, digestive and reproductive systems among mammals.

One key aspect of comparative mammalian anatomy is the presence of common anatomical features such as mammary glands for milk production, hair/fur for insulation, specialized teeth for various diets, and a four-chambered hearts for efficient circulation.

MAMMALS at National Zoological Park

① ASIATIC LION

① Scientific name $\Rightarrow$ Parthera leo

② Classification: $\Rightarrow$

Kingdom - Animalia

Phylum - Chordata

Class - Mammalia

Order - Carnivora

Family - Felidae

Genus - Parthera

The Asiatic lion was once widespread throughout southwest Asia. Today the species only found in a single location in the wild, the Gir forest (Gujarat) in India.

The Asiatic lions are lazy and indolent creatures that prey on the sambar, chital, nilgai, wild pig and occasionally on goats and camels. Lion males often live in pairs that last a lifetime. However in the pride it is the females who go out hunting in packs and bring back prey, which is first devoured by the male.

② BROW ANTLERED DEER

① Scientific Name $\Rightarrow$ Cervus eldi

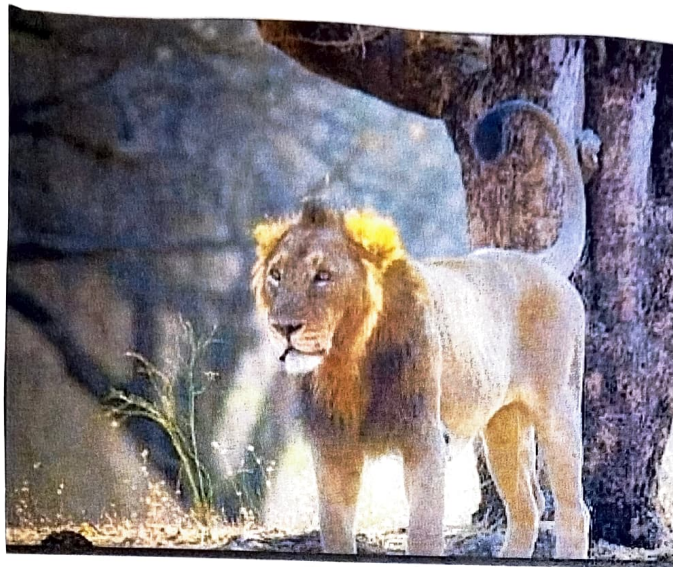
② Classification

Kingdom - Animalia

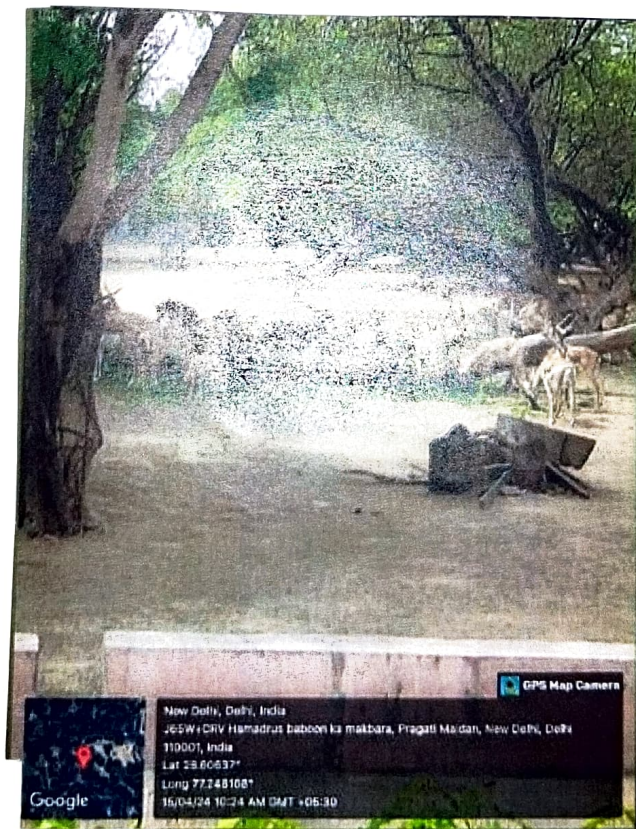
Phylum - Chordata

Class - Mammalia

Order - Artiodactyla



Parthura leo
(Asiatic lion)



Cervus eldi
(Brow Antlered deer)



Bos gaurus
(gaur)



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Family - Cervidae
Genus - Cervus

Brow-antlered deer have unique antlers that justify their name. From the tip of the brow to the point of the beam the antlers sweep in one continuous graceful curve.

Popularly known as Sangai, brow-antlered deer is also known as Thamin deer of India or Manipuri deer.

Keibul Langaj National Park in Manipur is the only place where they survive in the wild.

③ GAUR

● Scientific name → Bos gaurus

● Classification

Kingdom - Animalia

Phylum - Chordata

Class - Mammalia

Order - Artiodactyla

Family - Bovidae

Genus - Bos.

An endangered animal, Gaur is the largest bovine in the world. It has acute sense of smell and hearing but has less developed visual senses.

The hind and forelegs of the gaur has white or slightly yellow colour making it look like stocking. It spends 15-18 hours on an average everyday in feeding.

The diet of gaur in delhi zoo consist of green fodder, Mash (wheat, Bengal gram, maize, barley, Oats and ground nut oil cake) and Tree fodder.

⑨ COMMON PALM CIVET

● Scientific name → Paradoxurus hermaphroditus

● Classification

Kingdom - Animalia

Phylum - Chordata

Class - Mammalia

Order - Carnivora

Family - Viverridae

Genus - Paradoxurus

Popularly known as toddy Cat or tree civet. The palm civet is different from true civet in several ways. True civets are at home on land and rarely climb trees. The common palm civet is abs arboreal. It climbs trees with ease and live there. It has broad hairless soles, unlike the well cushioned, hairy soles of true civets.

The civet is very fond of palm soap. It is known to drink the sweet sap of palm that collect overnight in the pots tied by human beings.



Paradoxurus hemionodites
(Common Palm civet)





COMPARATIVE ANATOMY OF AVES.

Comparative anatomy of birds, or aves, offers a rich insight into the unique adaptations and evolutionary history of these fascinating creatures. One notable feature of birds is their lightweight yet strong skeleton, characterized by fused bones and pneumaticity (hollow bones filled with air sacs), which aids in flight while maintaining structural integrity.

Birds also possess a highly efficient respiratory system, with air flowing in one direction through specialized air sacs and lungs, facilitating increased oxygen uptake necessary for sustained flight. Their muscular system is adapted for flight, with powerful breast muscles responsible for wing movement.

Furthermore, avian digestive systems vary widely dependent on diet, showcasing adaptations such as gizzards for grinding tough food for seed-eating birds or crop storage in granivores and nectar-feeders. Their reproductive anatomy also reflects adaptation for egg-laying, with unique features like the absence of urinary bladders and specialized egg-laying structures.

① Blue and Yellow Macaw

● Scientific name $\rightarrow$ *Ara ararauna*

● Classification -

Kingdom - Animalia

Phylum - Chordata

Class - Aves

Order - Psittaciformes

Family - Psittacidae

Genus - Ara

They are one of the biggest parrots in the world. They are very beautiful, intelligent and social. They live in less dense rainforests and prefer to make their nests in hollowed trees. Their striking colours make them popular pets. Macaws have extremely powerful beaks that are used to break open seeds and also as a third foot for climbing.

They have good vocalization skills. Blue and yellow macaws seem to mate for life. Macaws make their nests in the hollows of dead trees, where they lay 2-3 eggs. The mother will incubate the eggs while being fed and cared for by the father.

② Bare-eyed Cockatoo

● Scientific name $\rightarrow$ *Cacatua sulphurea*

● Classification -

Kingdom - Animalia

Phylum - Chordata



Ara ararauna
(Blue & yellow macaw)



✓ Cacatus sulphurea
(Bare-eyed cockatoos)



Ratlocus nithocus
(African grey parrot)



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Class - Aves

Order - Psittaciformes

Family - Cacatidae

Genus - ~~Lo~~ Psittacus

Bare-eyed Cockatoos is also known as short-billed corella. It is very mischievous, inquisitive and a quick learner. It has good talking ability and may acquire a very good vocabulary.

Bare-eyed Cockatoos are sociable, sweet and playful, but they can also be demanding and require plenty of interaction and cuddle time. They are smart and known for solving puzzle and other games.

③ AFRICAN GREY PARROT

① Scientific name → Psittacus erithacus

② Classification

Kingdom - Animalia

Phylum - Chordata

Class - Aves

Order - Psittaciformes

Family - Psittacidae

Grey parrots are medium sized parrot. They are predominately grey in colour with red under tail coverts. They make their nests in tree cavities and are monogamous breeders. They love to chew and

destroy things not just for the fun, but also to condition their break. Grey parrot often with their head tucked under their wings. The hen lays 3-5 eggs, which she incubates for 30 days while being fed by her mate.

④ Khalij Pheasant

- ① Scientific name → Lophura luconellana
- ② Classification
 - Kingdom - Animalia
 - Phylum - Chordata
 - Class - Aves
 - Order - Galliformes
 - Family - Phasianidae
 - Genus - Lophura.

The Khalij Pheasant live in pairs or small groups in forest undergrowth. Day is spent eating seeds, insects with small lizards on-ground while it roasts on trees at night. It spends most of its time doing & searching for food on the ground. Many of the juvenile males stay with the parents and help raise the next brood.

They are capable of flying but they prefer to run. It is very difficult to see them in their natural habitat.



Lophura leucostriata
(Blue Pheasant)



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Date _____

⊗ Comparative anatomy of Reptiles.

It explores the structural similarities and differences among various reptilian species. Reptiles, including snakes, lizards, turtles and crocodiles, share common characteristics such as scaled skin, ectothermic metabolism, and typically lay amniotic eggs. However, their anatomical features vary based on their evolutionary adaptations and ecological niches.

One notable aspect of reptilian anatomy is their skeletal system. Most reptiles have a well-developed skull with fenestrae in the temporal region, which distinguishes them from other vertebrates. Their limbs, when present, are adapted for different modes of locomotion, such as the sprawling gait of lizards or the powerful limbs of crocodiles for aquatic propulsion.

The integumentary system of reptiles, characterized by tough and keratinized scales, serves as protection against environmental hazards and water loss. Additionally, many reptiles possess specialized glands for scent marking, defense, or thermoregulation.

Digestive systems also reflect adaptations to different diets, with herbivorous reptiles featuring longer intestines for plant digestion.

Reptiles in National Zoological Park

① Marsh Crocodile.

② Scientific name → Crocodylus palustris

③ Classification →

Kingdom - Animalia

Phylum - Chordata

Class - Reptilia

Order - Crocodylia

Family - Crocodylidae.

The female Crocodile makes an exceptionally good mother. She digs a hole to lay eggs. After that, she keeps an eye on the nest for the two months that are required for the eggs to hatch.

At the times she does not even eat for those 2 months. She waits anxiously for the sound of the baby crocodile from inside the egg. Upon hearing the first sounds, she scrapes the earth away from the nest.

② Indian Python

Scientific name → Python molurus

Classification

Kingdom - Animalia

Phylum - Chordata

Class - Reptilia.

Order - Squamata

Family - Pythonidae



Crocodylus palustris
(marsh crocodile)



Python molurus (python)

The Indian python is a large, nonvenomous snake belonging to the python family, *Pythonidae*. It is also called the Indian rock python or black-tailed python. Pythons are constrictors, which means that they kill prey by squeezing it. The Indian python inhabits rainforests, grassy marshes, and woodlands on the Indian subcontinent. Its average adult length is 13 feet, but individuals can grow to more than 20 feet. The Indian python is one of the largest snakes in the world.

The Indian python has been extremely exploited for the leather and pet trades.

Nithi
21/09/2024