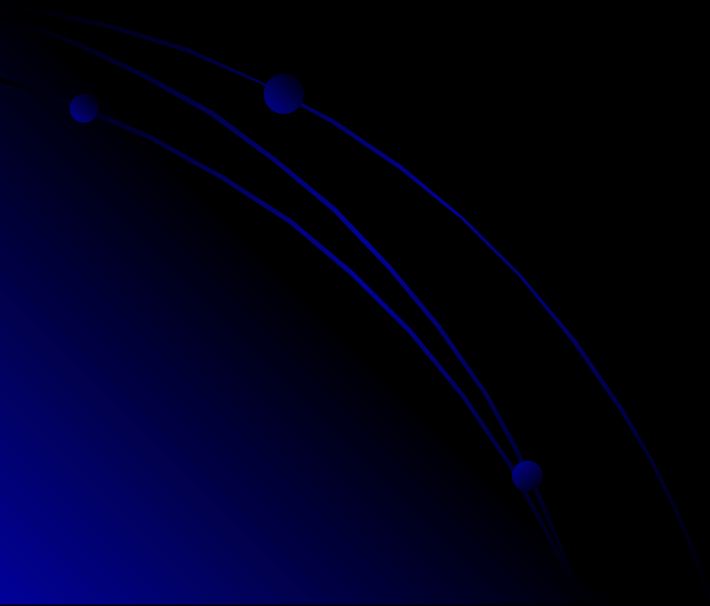



BIOLOGY OF INDIAN MAMMALS



Characteristics of Mammals

- Presence of **Mammae** or mammary glands
- Presence of **hair**.
- Only animal which **nourish their young ones**.
- Heart & lung are separated from stomach & intestine by a muscular portion – **Diaphragm**
- Except crocodile other species have no diaphragm

Mammals

- Class: Mammalia
 - 3 sub classes – Prototheria, Metatheria
Eutheria (Modern mammals)
 - Eutheria - 19 Orders
- 

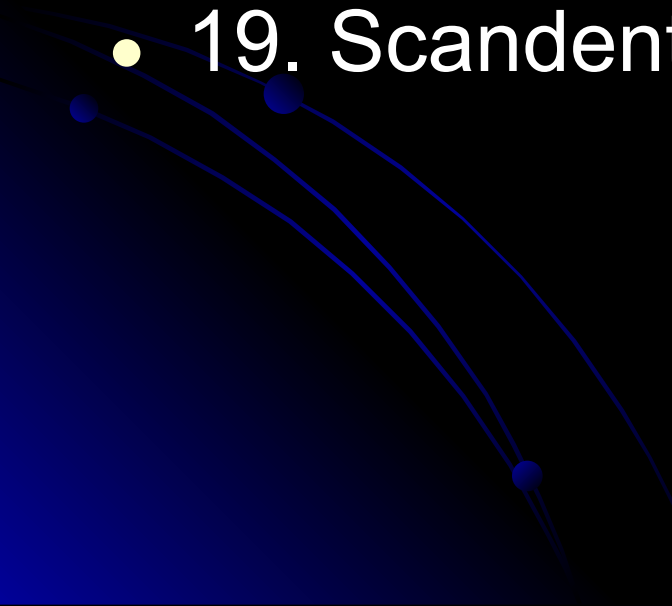
Mammalian Orders (n=19)

- 1. Insectivora – Shrews
- 2. Chiroptera – Bats
- 3. Dermoptera – Flying lemurs (SE Asia)
- 4. Xenarthra - Anteaters, Sloths (S.Am.)
- 5. Pholidota – Pangolin
- 6. Tubulidentata – Aardvarks (Africa)
- 7. Rodentia – Rats, squirrels

Mammalian Orders

- 8. Carnivora – Cat, bear, wolf
- 9. Artiodactyla – Deer, antelope
- 10. Perissodactyla – Horse, rhino
- 11. Hyracoidea – Hyraxes (S.W.Asia, Afr.)
- 12. Proboscidea – Elephants
- 13. Sirenia – sea cow
- 14. Cetacea – Whale, dolphin

Mammalian Orders


- 15. Primata – Macaque, langur, ape
 - 16. Macrosceliea – Elephant Shrews (Afr.)
 - 17. Lagomorpha – Pika, rabbit, hare
 - 18. Pinnipedia – Seals, walrus
 - 19. Scandentia – Tree shrew (S.E.Asia)
- 

Why Biology is important for Management?

- `Cheek Pouch' in Macaques.
- `Musth' in Elephants.



CARNIVORES

- In India – 7 Families, 26 Genera, 55 Species
 - 24% of total carnivore species in the world
- 

Felidae: 1.TIGER (*Panthera tigris*)

- World wide 6 races
- Royal Bengal tiger (*P.t.tigris*), FOUND IN INDIA
- **Status – Endangered**
- Distribution – throughout India except J&K, Haryana, Punjab, Pondicherry, Andamans
- Habitats – Thorn, dry, moist-deciduous, semi-evergreen, mangrove forests
- Himalayas up to 12000 ft.



Tiger

- **POPULATION**

- Beginning of the century: 40,000

- 1970s – 2500

- 1973 – Project Tiger

- 1984 – 4000

- **2008 – 1400+ : 2011-1706+**

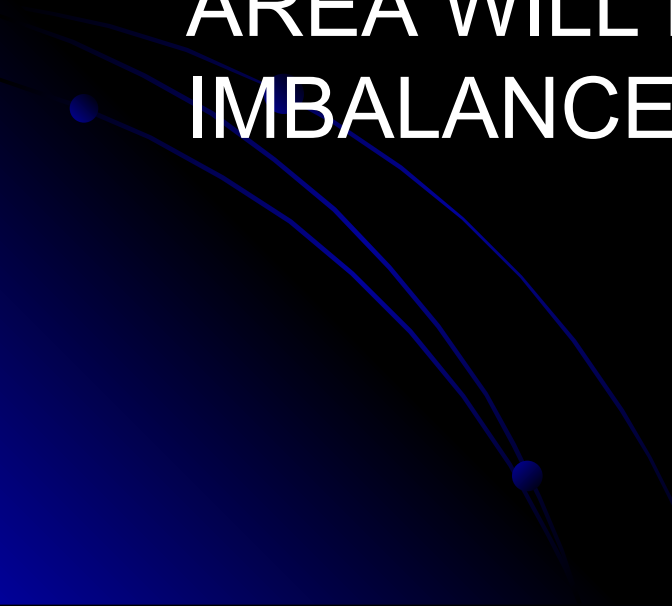
- **2015 – 2226+**

- WII's new approach for tiger census

- **Causes of decline:** Poaching, trade in bones & pelt, TCM, poisoning of kills, habitat loss, depletion of prey base



TIGER

- TOP CARNIVORE
 - OCCUPY TOP MOST LEVEL IN THE ECOLOGICAL PYRAMID
 - EXTINCTION OF TIGER FROM ANY AREA WILL LEAD TO ECOLOGICAL IMBALANCE IN THE ECOSYSTEM
- 

Tiger

- **HABITS**

- Crepuscular, stalking predator, drink water regularly, swim with ease, climb trees, mating November-January, gestation 15-16 weeks, 2-4 cubs, up to 1.5 years the cubs are accompanied by the mother, sexual maturity (3 years for females, 4 years for males), life span-20 years. Home range (17 to 300 km²). Body weight (120 to 240 kg).



Tiger

- **PREY SPECIES**
- Chital, sambar, langur, pigs, livestock
- Occasionally-gaur, elephant calves, peafowl, porcupine, pangolin, soil, grass, *Zizyphus* fruits



2. Leopard (*Panthera pardus*)

- **Status – Endangered**
- Distribution – Throughout the country, all habitat types.
- Most successful predator
- Ability to climb, catch food on trees, survive on small prey, hunt even in thin cover, survive with less water
- Population – 6000?
- Pelt Trade and poisoning of kills



Leopard



- **HABITS**
- Largely nocturnal
- Feed on – Chital, sambar, nilgai, langur, macaque, livestock, dogs, goats, sheep, young cattle, rodents etc.
- Tiger and lions are their chief enemy
- Breeds throughout the year, Nov. to Jan. peak mating period in North India
- Females attain sexual maturity at 2.5 years

Leopard

- Males attain sexual maturity at 3 years
- 2-4 cubs are born. Cub mortality.
- Home range (60 to 180 km²).
- Body weight (60 kg).
- Leopard conflicts with human is the major cause of concern.
- Studies in India (Gir, Sariska).



3. Lion (*P. leo persica*)

- Status – **Endangered**
- Distribution – Gir forest, Gujarat
- Past distribution – North & central India up to Narmada River
- Over hunting, conversion of natural forests in to agriculture lands, loss of scrub forests, decline of prey base



Lion

- **Habits**
- Group living, prefers open forest with sparse trees & shrubs.
- Present population - >400 in Gir: >70 outside GIR
- Mean group size = 3
- In 1972 – 75% of their diet was buffaloes (Paul Joslin)
- 1990 – 60% of their diet was chital, sambar (Ravi Chellem)



Lion

- Alternate home – Kuno-Palpur Sanctuary in Madhya Pradesh.
- Prey species – chital, sambar, livestock, nilgai, peafowl
- Mating – Oct.-Nov.
- Young are born in Jan.-Feb.
- Gestation period – 116 days
- Female attains sexual maturity – 2.5 to 3 years
- Males - > 4 years
- Litter size – 3 to 4.
- WII's ongoing study in Gir.



4. Snow leopard (*P. uncia*)

- Distribution: Higher slopes of Himalayan Chain
- Status : **Endangered**
- Habits: Solitary, occur in low densities, feeds on blue sheep, Himalayan tahr, livestock.
- One male had a home range of <100 sq.km in Nepal (Rodney Jackson)
- WII's research in Ladakh – 1990's (Raghu Chundawat).
One male snow leopard was radio-collared.
Blue sheep was the major prey.



Snow leopard (*P. uncia*)

- **Threat to population:** Pelt trade, poaching
- More studies required
- Project Snow Leopard



Family: Canidae (5 species)

1. Wolf (*Canis lupus*)

- Status: **Endangered**
- **Distribution:** Andhra Pradesh, Maharashtra, Madhya Pradesh, Rajasthan, Gujarat, Bihar, Tamil Nadu, Uttar Pradesh
- **Habits:** Solitary, some times small packs, feeds on black buck, chinkara, livestock
- **Threats to population:** Loss of natural habitats, depletion of its prey base, killing of this species due to child lifting/cattle lifting
- WII's study in Kutch



3. The Indian wild dog or dhole (*Cuon alpinus*)

- **Status:** Not endangered, **Schedule-II**
- **Distribution:** North-east, north India, central India, to south India
- **Habits:** Group living, communication through whistle, feeds on chital, sambar, livestock, langur
- **Threats to population:**
Domestic dog transmitted diseases, canine distemper, rabies, mange, pup mortality, stealing of kills, disturbance in den sites
- WII's study in Pench TR, M.P.



Family Ursidae: Bears (4 species)

1. Sloth bear (*Melursus ursinus*)

- **Status:** Endangered, Schedule-I
- **Distribution:** Wide distribution in the country, except high altitudes, arid zone
- **Habits:** Omnivores, feed on insects, fruits, honey, grass, tubers, flowers
- **Threats to population:** Habitat destruction, forest fires, cattle grazing, and other anthropogenic pressures, cub trade, smoking of dens
- Bear-human conflicts, bear bile trade



2. Himalayan black bear (*Selenarctos thibatanus*)

- **Status:** Endangered
- Smoother and shorter coat, black claws
- **Distribution:** 3000 to 3700 mts, Kashmir, Himachal Pradesh, Uttar Pradesh, Uttarakhand, Assam, Arunachal Pradesh
- **Habits:** Hibernates in winter, omnivore, kills livestock, Dachigam WLS seen in winter
- **Threats to population:** Loss of habitat, conflict with people, killing for its gall bladder & skin



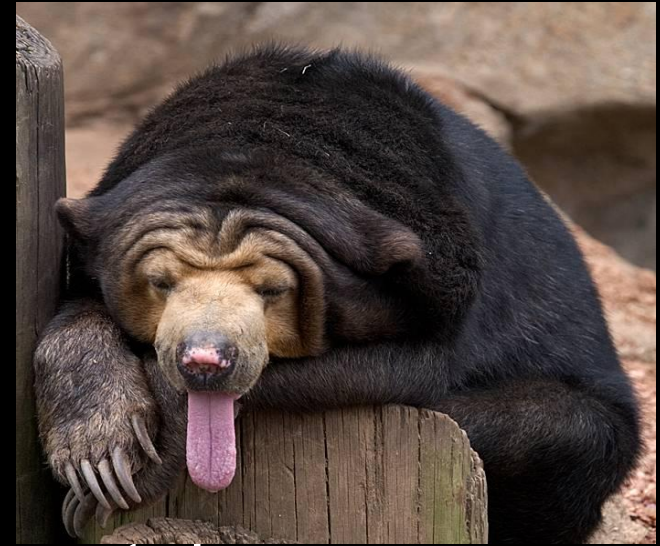
3. Brown bear (*Ursus arctos*)

- **Status:** Endangered
- **Distribution:** High altitudes of north western & north central India, Bhutan
- **Habits:** Omnivores, kills livestock, hibernate in winter
- **Threats to population:**
Pelt trade, conflicts with local people, bear bile trade



4. Malayan sun bear *Halarctos megaspila*)

- **Status:** Endangered
- **Distribution:** Hills of north east India, south of Bharamaputra river
- **Habits:** Nocturnal, omnivores, least dangerous of all bears, prey species?
- **Threats to population:** Shifting cultivation, bear bile trade



Family: Hyaenidae - 1 species



- Striped hyena - *Hyaena hyaena*
- **Status:** Schedule III
- **Distribution:** Throughout India, except J&K and North East
- **Habits:** Nocturnal, Scavenger, kills small animals (goats, dogs, fawns)
- **Threats to population:** Road kills, Poisoning of carcass
- WII's study in Kutch & Sariska (25/100 km²)