

Indicator Species

OBJECTIVE: To communicate the concept that India's forests and natural wealth are at the core of the country's ecological health and that by saving the tiger, we are saving our forests, our water supplies and India's ecological foundation.

AIM: To help children understand how apex species (top carnivores) are always the first to be affected by any change in their ecosystems and therefore, how their numbers indicate the health of the ecosystem.

INTRODUCTION: Pick symptoms that indicate the health of a person or the possibility of disease.

METHODOLOGY:

- 🐾 Depict a scene in a doctor's clinic and let children guess the disease.
- 🐾 In the same way, reduction in the numbers of top carnivores is a 'symptom' of the health of the forest.
- 🐾 Refer to the food pyramid introduced in Lesson 1 to show how deforestation first affects the numbers of the top carnivores.
- 🐾 Connect to the lesson on biogeographic zones. Give names of various top carnivores (e.g. tiger) in each zone. Find out whether they are endangered and explain why.
- 🐾 Get children to suggest methods to protect these species.
- 🐾 Show how you save entire ecosystems while saving the 'indicators'.
- 🐾 Emphasise that the numbers of these animals is one of the signs of health of the ecosystems in which they live.

AIDS: Pictures of various animals, interactive pyramid.

BLACKBOARD: Chart of animals, their distribution and their numbers.

EVALUATION: Quiz on the zone to which each animal belongs and their numbers. Make children understand some of their everyday activities that reduce forest cover and therefore contribute to pressure on the tiger. Review how incorporating small changes in lifestyle can help offset this threat.

Lesson 4

Indicator Species

Animals such as tigers are known as ‘**indicator species**’ because their presence indicates that the habitat is brimming with health. If they disappear, then it means that something is very wrong.

Tiger

The Bengal tiger’s domain ranges over most of the Indian subcontinent. From its westernmost range in Ranthambhore to the mangrove swamps of the Sundarbans and the evergreen forests of the northeast, from the rainforests of the south to the moist deciduous forests of Madhya Pradesh and right up to the Himalayan ranges, the tiger is the best indicator of the health of India’s natural heritage.

Threats: Loss of habitat, indiscriminate poaching.

Snow leopard

The Himalaya is considered to be the land of the snow leopard. It is extremely rare and its numbers are decreasing further. A little smaller than the common leopard, it is found at altitudes of 3,000 m. and above. The snow leopard is at the top of the food chain, just as the tiger is. It indicates the health of the ecosystem because its presence means that its prey species such as hare, bharal and yak are abundant, and the prey in turn are thriving because their habitat is healthy.

Threats: The fragmentation and degradation of mountains and lack of prey species has forced the snow leopard to prey on livestock. This results in conflict with locals.



Vultures

Vultures lay small clutches of eggs and their reproductive rate is slow. Though they are mainly scavengers, vultures also hunt and kill small animals. They feed on dead or weak animals that are small or very close to death. The numbers of the White-backed Vulture *Gyps bengalensis* and the Long-billed Vulture *G. indicus* have been found to be declining in many parts of India.

Threats: Vultures have always been trapped and killed out of ignorance (because some people believe that they snatch lambs and even small babies). Loss of habitat, illegal shooting and poisoning are other major threats.

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Sharks

Cartilaginous ocean-dwelling fishes, sharks are the top predators in their biome, the seas. They are also scavengers. This means that they are at the apex of the marine food pyramid, regulating imbalances that occur down the chain.

Threats: The biggest threat to sharks continues to be posed by man. India has just recently banned the fishing of the whale shark and this is a welcome move for the largest fish on the earth. Marine pollution is another problem that is affecting the survival of sharks in the waters.

Frogs and toads

These water-loving creatures are among the best indicators of the health of wetland habitats such as marshes and lakes. They serve the critical function of keeping insect populations in check.

Threats: Evolutionary adaptation to their watery habitats makes them particularly vulnerable to habitat alterations such as those that occur when wetlands are filled for construction or polluted by industry.



Activities based on Lesson Plan on Indicator Species

- ◆ Form an interactive 'Green Activity' class, where you award points to each house or division of a class for any 'green' action such as switching off fans, cleaning the classroom, etc.
- ◆ The Red Data Book: Create charts on species and numbers. Learn about extinct species. Investigate the causes of extinction and learn how you can prevent other species from becoming extinct.
- ◆ Place pictures of various species on the web. Mark 'indicators' and create a threat map showing the various pressures on these species and how you can overcome these.