KGS IAS

KHAN GLOBAL STUDIES

Most Trusted Learning Platform

KHAN SIR

Most Trusted Learning Platform

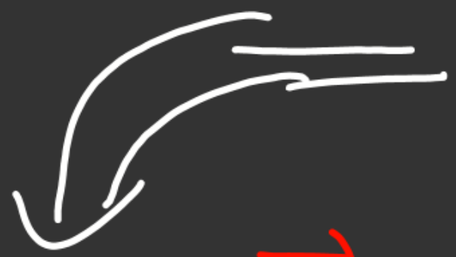
Environment

Kinshuk Sir

सारणी 13.1 समष्टियों की पारस्परिक क्रिया

जाति अ	जाति ब	पारस्परिक क्रिया का नाम
+	+	सहोपकारिता Mutualism
–	–	स्पर्धा Competition
+	–	परभक्षण Predation
+	–	परजीविता Parasitism
+	0	सहभोजिता (कमन्सेलिज्म) Comensalism
–	0	अंतरजातीय परजीविता (एमेन्सेलिज्म) Amensalism

Reasons of Adaptation / अनुकूलन के कारक



long duration process ⇒ for food / भोजन के लिए

लम्बी समय अवधि की प्रक्रिया ⇒ for protection / सुरक्षा के लिए

⇒ for changing climate/ environment पर्यावरण में बदलाव के जलवायु कारण

Physiological Adaptation

आकारिकीय - उदाहरण →

कारिकीय

व्यवहारिक

Hibernation

Estivation

→ Morphological Adaptation.

→ Thorns instead of leaves in desert plants

→

migrate
from polar areas
to warmer place

जीवों का समूह जो आपस में प्रजनन करके एक ऐसे शिशु को जन्म दे जो वंश आगे बढ़ा सके

प्रजाति / Species

Leopard

Snow leopard

Clouded leopard

= ⇒ A group of organism who are able to produce fertile offspring

Population / समष्टि

⇒ group of organism belonging to same species

→ एक ही प्रजाति के जीवों का एक समूह

Biotic Interaction

① Predation

⇒ One organism is benefitted, other is harmed

→ Called predator

→ Maintains a balance in ecosystem

परभक्षण

→ एक जीव को फायदा मिलता है, दूसरे को नुकसान

⇒ परभक्षी कहा जाता है।

⇒ पारिंतत्र मे संतुलन बनाता है।

Predation

⇒ Prey > Predator
Population

⇒ Predator is prudent

परभक्षण

⇒ शिकार > परभक्षी
जनसंख्या

⇒ परभक्षी बुद्धिमान होते हैं।

Competition

⇒ Both organisms are harmed to some extent

→ Survival of fittest

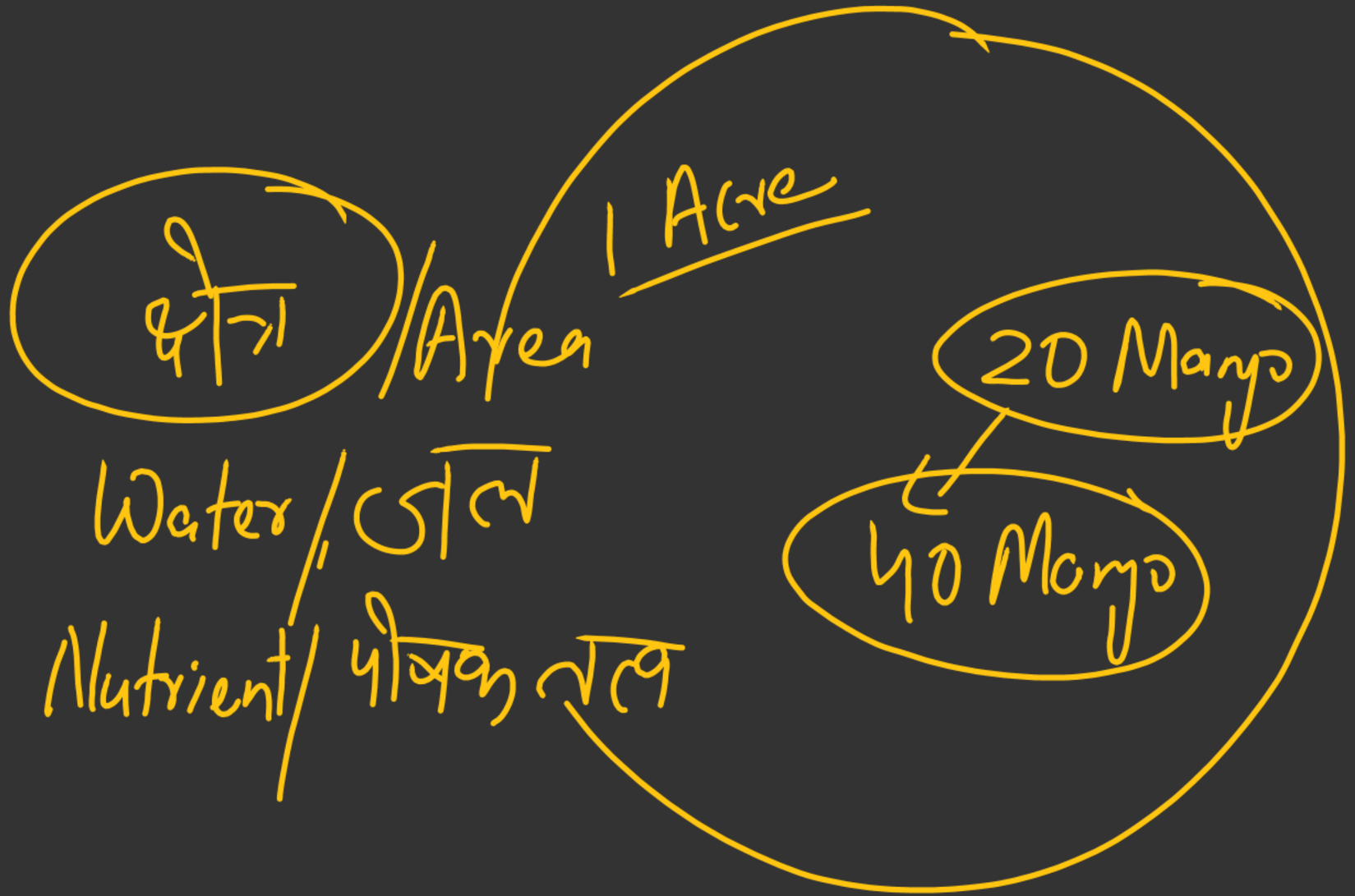
→ Competition may exist between population of one species.

स्पर्धा

⇒ दोनो जीवों को कुछ हद तक नुकसान होता है।

⇒ सबसे योग्य की उत्तरजीविता

→ स्पर्धा एक ही प्रजाति की समष्टियों के बीच हो सकती है।

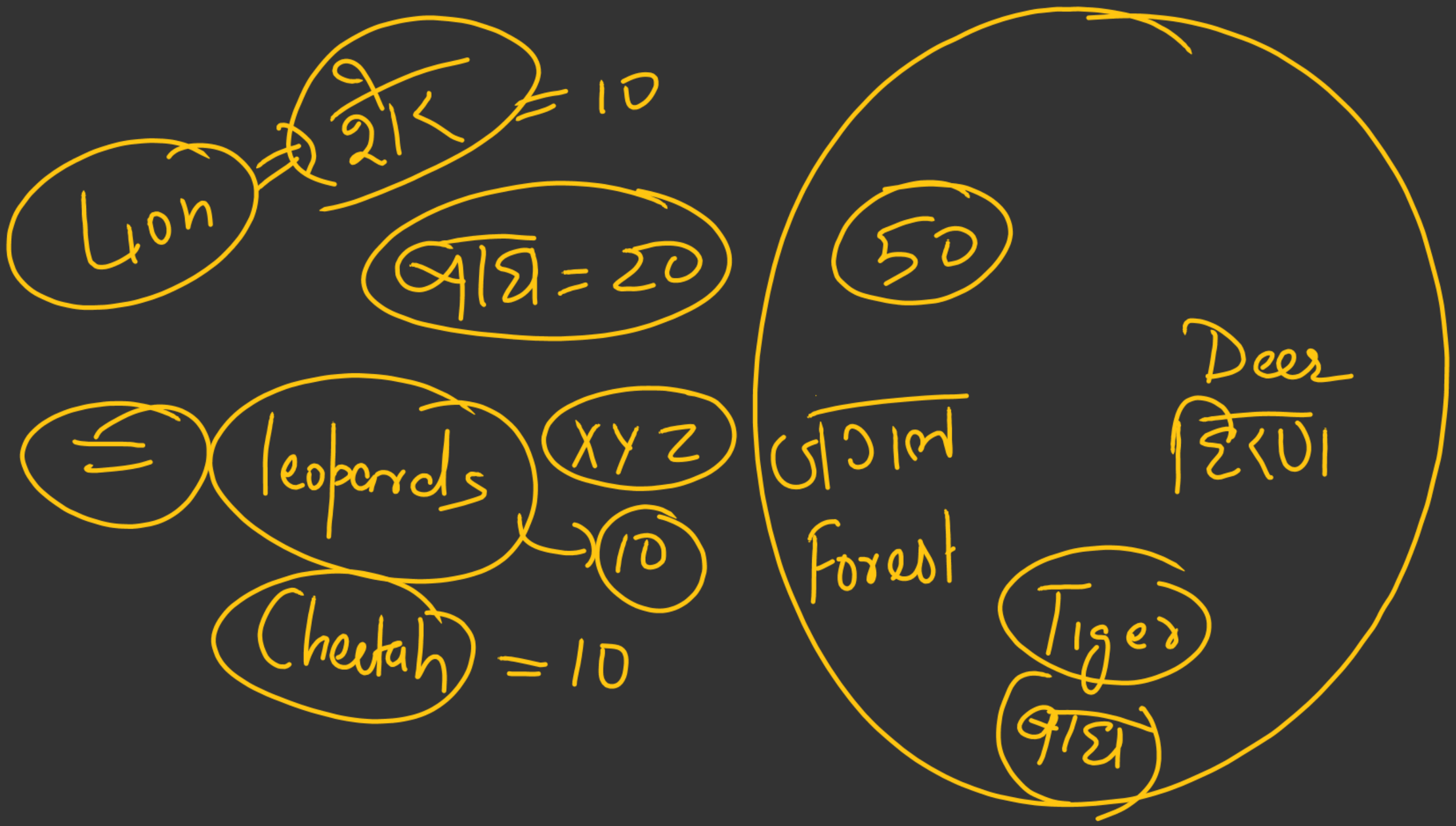

क्षेत्रा /Area
1 Acre
Water / जल
Nutrient / पोषक तत्व
20 Mango
40 Mango

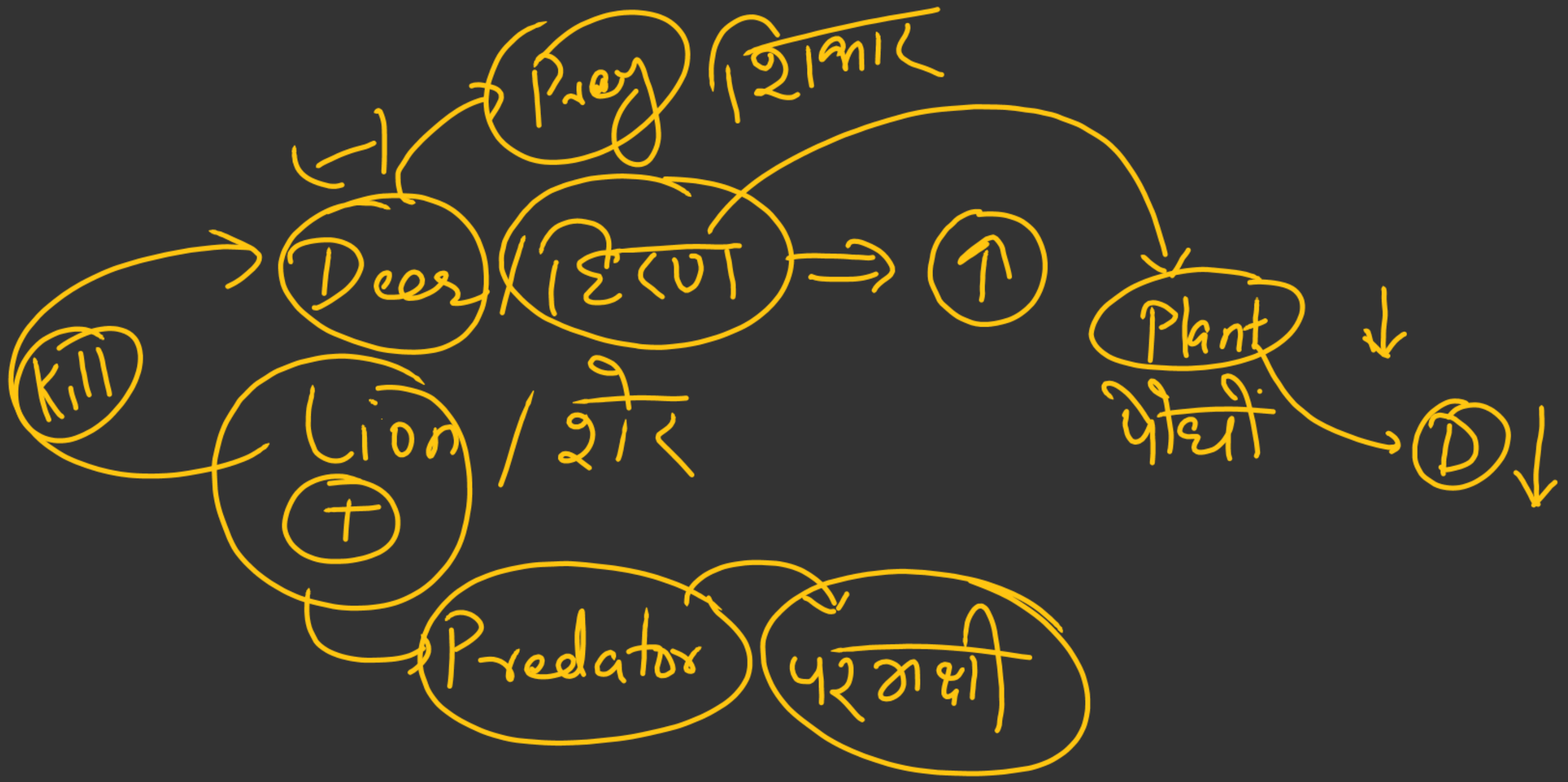
Gause's Competitive exclusion principle

गॉसे स्पर्धी अपवर्जन नियम

Competitively inferior

⇒ . स्पर्धीरूप


Lion
शेर
= 10
बाघ = 20
50
Deer
हिरण
जंगल
Forest
Tiger
बाघ
=
leopards
XYZ
10
Cheetah
= 10


Prey
शिकार
Deer
हिरण
Kill
Lion
शेर
+
Plant
पेड़ों
D
Predator
परभक्षी

Predation

- Predators acts as ‘conduits’ for energy transfer across trophic levels
- They keep prey populations under control
- Biological control methods adopted in agricultural pest control are based on the ability of the predator to regulate prey population
- If a predator is too efficient and overexploits its prey, then the prey might become extinct and following it, the predator will also become extinct for lack of food.

Predation

- Prey species have evolved various defenses to lessen the impact of predation. Some species of insects and frogs are cryptically-coloured (camouflaged) to avoid being detected easily by the predator.
- The Monarch butterfly is highly distasteful to its predator (bird) because of a special chemical present in its body. Interestingly, the butterfly acquires this chemical during its caterpillar stage by feeding on a poisonous weed
- Nearly 25 per cent of all insects are known to be phytophagous (feeding on plant sap and other parts of plants).

Predation

आक का पेड़

- Calotropis plant produces highly poisonous cardiac glycosides and that is why you never see any cattle or goats browsing on this plant.

Competition:

- Competition occurs when closely related species compete for the same resources that are limiting
- Totally unrelated species could also compete for the same resource.
- Gause's 'Competitive Exclusion Principle' states that two closely related species competing for the same resources cannot co-exist indefinitely and the competitively inferior one will be eliminated eventually

Parasitism

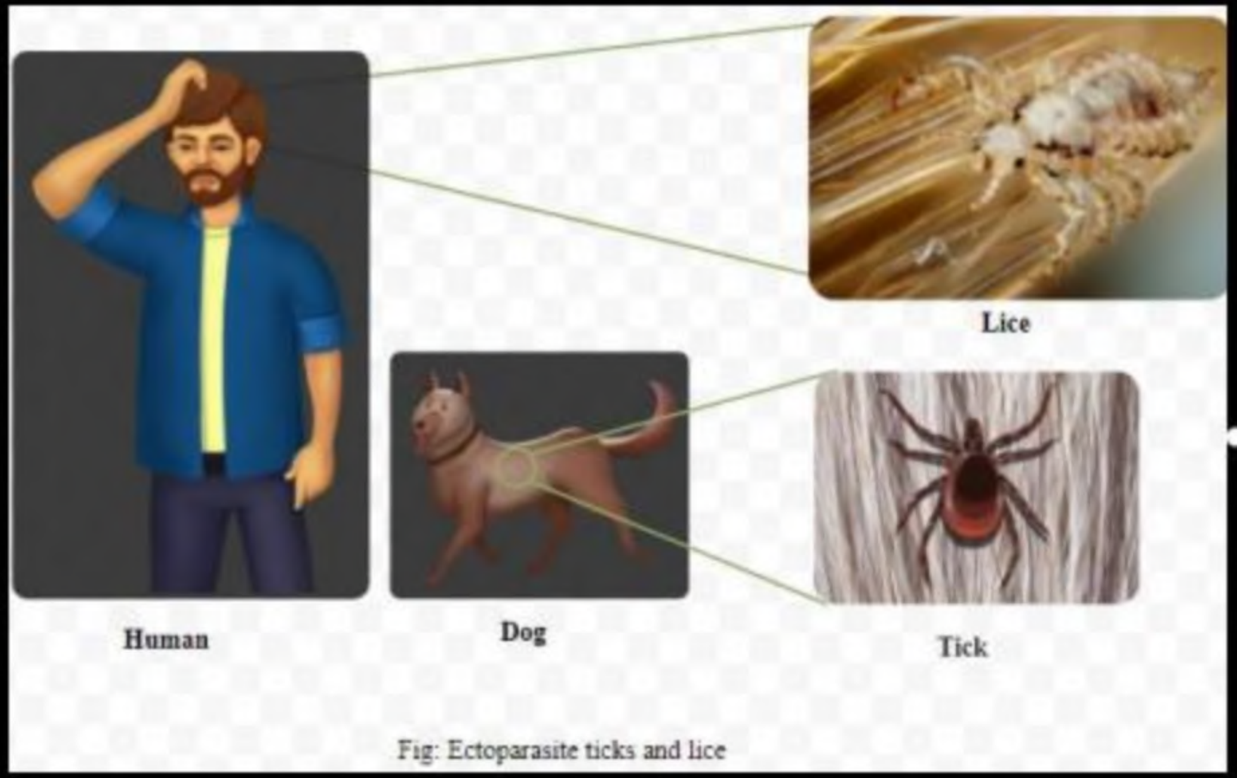
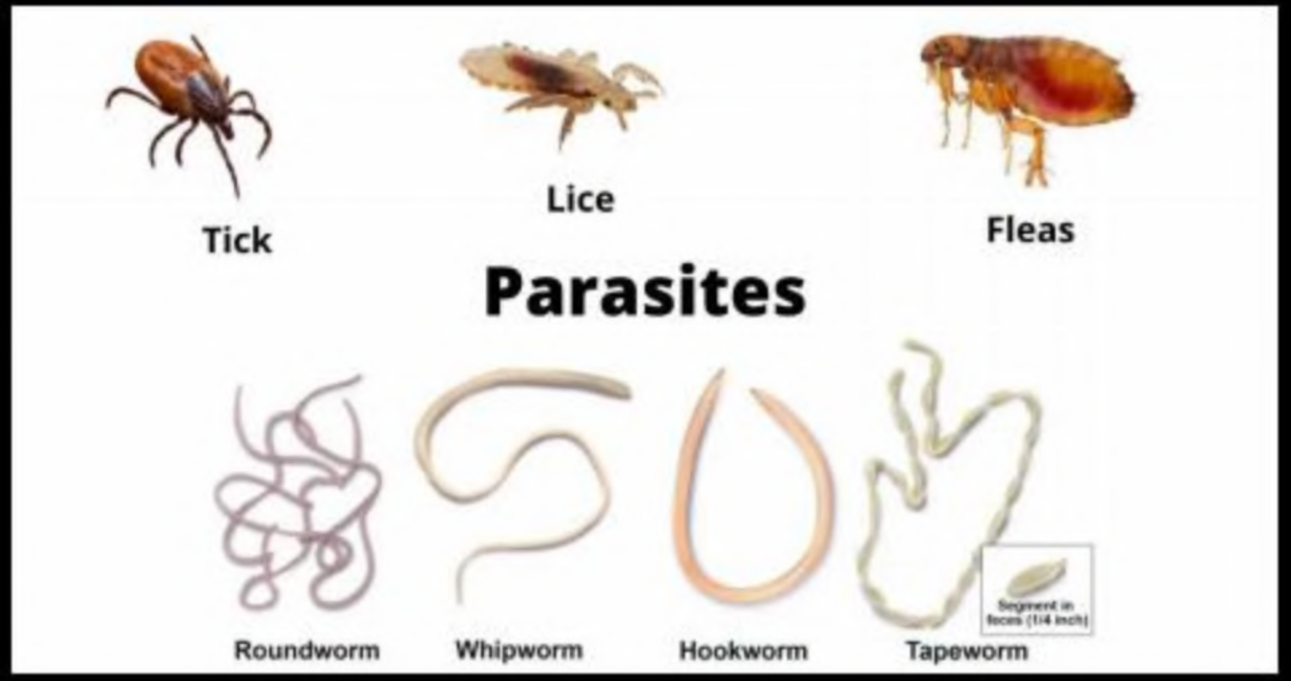


Fig: Ectoparasite ticks and lice

- Majority of the parasites harm the host; they may reduce the survival, growth and reproduction of the host and reduce its population density. They might render the host more vulnerable to predation by making it physically weak.
- Parasites that feed on the external surface of the host organism are called ectoparasites. The most familiar examples of this group are the lice on humans and ticks on dogs. Many marine fish are infested with ectoparasitic copepods

Parasitism

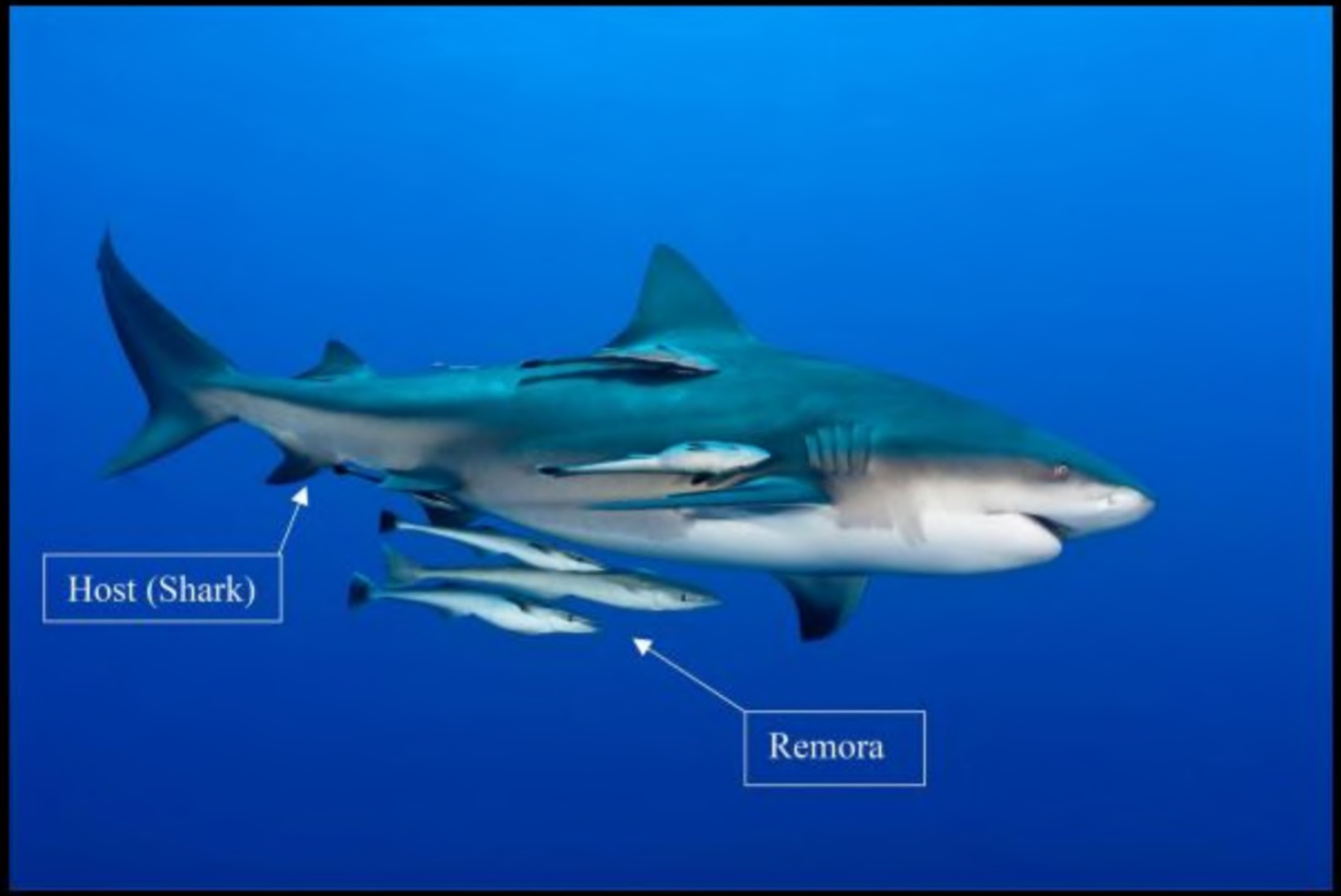
- Endoparasites are those that live inside the host body at different sites (liver, kidney, lungs, red blood cells, etc.).



Commensalism

- This is the interaction in which one species benefits and the other is neither harmed nor benefited.
- An orchid growing as an epiphyte on a mango branch, and barnacles growing on the back of a whale benefit while neither the mango tree nor the whale derives any apparent benefit.
- The cattle egret and grazing cattle in close association, a sight you are most likely to catch if you live in farmed rural areas, is a classic example of commensalism

Commensalism



(a)

(b)

Figure 13.6 Mutual relationship between fig tree and wasp: (a) Fig flower is pollinated by wasp; (b) Wasp laying eggs in a fig fruit

Amensalism

- This is the interaction in which one species is harmed and other is having no impact

Mutualism

Figure 13.7 Showing bee-a pollinator on orchid flower

- This interaction confers benefits on both the interacting species.
- Lichens represent an intimate mutualistic relationship between a fungus and photosynthesizing algae or cyanobacteria.
- Similarly, the mycorrhizae are associations between fungi and the roots of higher plants.
- The fungi help the plant in the absorption of essential nutrients from the soil while the plant in turn provides the fungi with energy-yielding carbohydrates.

UPSC

UPSC

KHAN GLOBAL STUDIES

Most Trusted Learning Platform

THANKS FOR WATCHING