**Types of keystone species:**

**Keystone Mutualists, Keystone Modifiers/Engineers, Keystone Hosts, Keystone Preys.**

**Mutualists:**

Hummingbirds are referred to as Keystone Mutualists because they influence the success of several plant species through pollination, resulting in **mutually beneficial** interactions**.**

Some species have been considered to be keystone because they are critical to mutualistic relationships. Gilbert(1980) introduced the term mobile links to describe ‘animals that are significant factors in the persistence of several plant species which, in turn, support otherwise separate food webs”. The implication was that mobile links are a kind of keystone species, and mobile links since been frequently cited as example of keystone species. In addition to the mobile-link pollinatos and seed dispersers described by gilbert, other examples of this type of keystone species include Hummingbird pollinator and mammalian dispersers of mycorrhizal fungi (wildcox and murphy 1985)**.**

**Predators:**

The importance of keystone predator derived from two requisites paine and pimm. The predators preferentially ate and controlled the density of a primary consumer, and the consumer was capable of excluding through competition or predation) other species from the community.

Predator have also been labelled keystone when they control the densities of other types of ecologically significant prey species. For ex- sea otters have often been referred as keystone predators because they limit density of sea urchins, which in turn eat kelp and other fleshy macroalgae that form the basis of a different community than is present in their absence. Thus, otter removal has community-level influences, by releasing from predation a primary consumer that eats a plant that harbors other organisms.

Fire ants are keystone predators because their absence increases the number of individuals and species of arthropods potentially harmful to agriculture. The ants are generalist species preying on herbivores, which in turn are not highly competitive, hence, neither of the original requisites for keystone predators apply.

**Prey**

Keystone prey are species that can maintain their numbers despite being **preyed upon**, therefore controlling the density of a predator**.**

A predator-prey species that is able to maintain its abundance in the face of predations can affect community structure by sustaining the density of predators, thus reducing density of other prey.

**Modifiers/Engineers**

On the other hand, Keystone Modifiers, such as the North American beaver, determine the prevalence and activities of many other species by **dramatically altering the environment**.

**Hosts**

Species like the Saguaro cactus in desert environments and palm and fig trees in tropical forests are called Keystone Hosts because they **provide habitat** for a variety of other species.

If mobile links, or keystone mutualists, depend critically or ecologically important host plants, then it follows that these hosts also receive the label keystone. Included in this group are those plants that support generalist pollinators and those trait dispersers that are considered critical mobile links. Terborgh considered palms nuts, figs, and nectar to be keystone resources because they are critical to tropical forest nectar or fruit eaters, including primates, squirrels, rodents, and many birds. Together, these vertibrates account for as much as three-quarters of forest bird and

**Conservation of keystone species:**

**Keystone species**

A keystone species is a species that does a task that cannot be replicated by other animals, thereby making them unique; when this species goes extinct, it forces the ecosystem to change rapidly. Humans are the ultimate keystone species on the planet**.**

A keystone species is an animal that other species in an ecosystem largely depend on if it were removed the ecosystem would change drastically. Keystone species help define the entire ecosystem and without them, there would be a dramatic difference in the ecosystem leading all the way up to it ceasing to exist**.**

a keystone species is a species that plays an unique role in the way ecosystem

functions the activity of keystone species determine community structure now who introduced the concept or the term of keystone species well it was discovered by an

american ecologist robert t payne in the year 1969.

**Influence of keystone species**

**On food web-**

 usually keystone species have huge influence on food web so despite not being abundant it can play and very important role in an ecosystem.

so what are the habited needs-

usually keystone species may not require large habitats so they remain confined to the ecosystem.

where they stay the geographical range of these keystone species-

well keystone species usually are non-migratory and influence a particular environment or habitat.

what are the examples of keystone species they include beavers sea otters african elephants fig trees etc .

Keystone species:

A keystone species is a creature that supports defining an entire ecosystem. In absence of keystone species, the ecosystem would be intensely diverse or cease to exist in total. Keystone species have low practical redundancy. This implies that if the species were to vanish from the environment, no other species would be capable to fill its biological function. The ecosystem would be obligatory to completely change, allowing new and probably invasive species to inhabit the habitation.

Any creature, from plants to bacteria, can be termed as a keystone species. They are not at all times the major or most plentiful species in an ecosystem. However, almost all instances of keystone species are creatures that have a huge impact on food networks. The way these animals impact food networks differs from environment to environment.

**MEANING OF KEYSTONE SPECIES**

A keystone species is a class of organisms that has an unreasonably great influence on its natural surroundings compared to its abundance. This idea was introduced in 1969 by the zoologist Robert T. Paine. Keystone species play an important part in sustaining the structure of an environmental community, moving many other organisms in an ecosystem, and serving them to identify the categories and numbers of several other species in the community. Without keystone species, the ecosystem would be theatrically changed or end to occur altogether. Some keystone species, such as the wolf, bear, tigers, and others are also top predators.

**EXAMPLES OF KEYSTONE SPECIES**

There are various examples of keystones around us in the ecosystem. Some of such are the following:

Sea Stars: Sea stars consume mussels and keep their figures in the notice. A lot of mussels will mass out other species, and since mussels have no other ordinary predators, sea stars are irreplaceable for keeping the ecosystem varied.

Bees: By the method of pollinating the plants, bees donate to their existence. The plants are an accommodation for insects, which are then consumed by other species, like birds.

Elephants: By intake of small trees, elephants help in preserving the plains. As the grasses need an adequate amount of sunlight to endure. If elephants cease to exist, the grassland would turn into a forest or wild.

Alligators: Alligators with the help of their tails make holes to keep themselves warm and when they depart, these holes fill with water which is used by other organisms. Alligators are also killers, keeping the figures of other species in their notice.

Bears: As hunters, bears control the records of several species, like moose and elk. They also transport and submit seeds throughout the environment. Bears that consume salmon leave their residuals and the incompletely consumed leftovers in the soil that deliver nutrients such as sulfur, nitrogen, and carbon to the soil.

**TYPES OF KEYSTONE SPECIES**

**The various types of keystone species are discussed below:**

**Predator**

By keeping a track of the inhabitants and variety of their target in the notice, keystone predators, like wolves and sea otters, influence other predators as well as other physical and herbal species at a very lower place in the food chain. Eliminate a keystone predator, and the inhabitants of creatures it once hunted can shatter the environment, which will lead to destructing other organisms and reduce the variety of organisms in the ecosystem. This strange result is known as a trophic cascade.

**Prey**

Keystone prey is the type of keystone species that includes animals extending from Antarctic krill to Canadian snowshoe hares, and have a large part to play in the environment. They serve as an important source of food for populations of hunters. They are additionally strong and tough creatures, unlike some other types of prey species that are more prone to turn out to be rare or extinct within an ecosystem.

**Ecosystem engineer**

Beavers, African savanna elephants, and other ecosystem engineers produce, change, or preserve the landscape around them rather than affecting the food supply. They affect the occurrence and actions of other organisms and assist them to define the complete biodiversity of their habitation.

**Mutualist**

Keystone mutualists are two or greater than two species that are involved in mutually important relations. The interruption of one species influences the other and, eventually, the whole ecosystem is affected by such disturbance. These duos are generally pollinators, for example, hummingbirds, that depend on particular plants for nutrition, and plants that depend on those pollinators to reproduce.

**Plants**

Keystone plants, like the saguaro cactus of the Sonoran Desert, are those species that offer an important cause of food and accommodation for other varieties of organisms.

**IMPORTANCE OF KEYSTONE SPECIES**

Keystone species are an important and integral part of the ecosystem. There are many important roles of the keystone species in the environment. Some of them are stated below:

* Keystone species are exclusively accountable for preserving the variety of domestic organisms. In the absence of keystone predators, one inhabitant of the prey will shatter and lead to the destruction of other inhabitants, as in the case of the mussels in islands.
* They form positions and ranks that other organisms can arrive at. For example, if the elephants of the Savannah became non-existent, it would result in the loss of all the classes of plants that rest on them for the scattering of their seeds. In the same manner, populations of zebras would decrease severely, because, deprived of elephants, there would be rarer water resources for them.
* Keystone species which are food possessions, like figs, would disturb the population of animals that are reliant on them for diet and nutrition. This would again lead to extreme rivalry and the destruction of many varieties of organisms in that ecosystem.

**CONCLUSION**

Introduced in 1969 by the zoologist Robert T. Paine, a keystone species is a class of organisms that has an unreasonably great influence on its natural surroundings compared to its abundance. Keystone species are exclusively accountable for preserving the variety of domestic organisms. In the absence of keystone predators, one inhabitant of the prey will shatter and lead to the destruction of other inhabitants.

There are various types of keystone species like predators, who feed themselves on other organisms. There are also various examples of keystone species around us, for example, the elephants. The elephants help in preserving the plains by consuming small trees. As the grasses need an adequate amount of sunlight to endure. If elephants cease to exist, the grassland would turn into a forest or wild.

**So, where did the name ‘keystone’ come from?**

Coined in 1966 by the American ecologist, by, he used the term ‘keystone species’ to describe the relationship between. In architecture, the ‘keystone’ refers to the wedge-shaped stone located at the top of an archway. While its presence within the structure appears relatively minor, if removed, the whole arch would collapse as it locks the structure in place.

### ****Types of Keystone Species****

**The first type of keystone species are PREDATORS.**As a vital part of ecosystems, they help “control the population of prey species,” according to  This in turn impacts the whole food web. One of the most well-known keystone species are the grey wolves in Yellowstone National Park. In the 1920s, their population was completely depleted as a result of years of overhunting. Without their presence, the population of prey species exploded. This resulted in a massive decline in vegetation and aspen trees, which in turn degraded parts of the ecosystem. However, grey wolves from Jasper National

**The second type of keystone species are ECOSYSTEM ENGINEERS**. Beavers are a great example of this keystone since they create and modify habitats. To build their dams, they typically use old or dead trees along riverbanks, which helps encourage new tree growth. Their dams also divert the flow of rivers, establishing rich wetland habitat.

**The third type of keystone species are MUTUALISTS**. Bees are a great example of this type of keystone since their interactions with plants is mutually beneficial. For example, as they collect their primary food source of nectar and pollen, they enhance plant growth and potential for fertilization.