

Beetles : As A Bioindicator



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ABSTRACT

Bioindicators are very essential for environmental monitoring due to having significant characteristics. Especially arthropods are useful to assess the effect on anthropogenic activities on the terrestrial ecosystem, because they are in close contact with toxic elements present in soil and leaf litter.

Keywords : Natural Indicator, Anthropogenic-Activity, Afforestation, Hibernation, Toxic, Ecosystem.

INTRODUCTION

- Bioindicators are also known as Natural Indicator.
- Bioindicators are living organisms whose status, population, function, behavior and changes in its morphology can reveal the qualitative status of the environment.
- Bioindicators are very sensitive to the environmental pollution. A change appears first in bioindicator species, if any change occurs in climatic-condition due to several pollution of the environment.
- Many planktons, plants, animals and microbes are used as bioindicator to assess the health of natural ecosystem.
 - Algae blooms bioindicator detects the water-quality of lake or river.
 - Lichens are used for air-quality.
 - Earthworms are used for soil-quality.
 - Certain plants may not be able to grow in toxic area etc.

BETTERLES USED AS A BIOINDICATOR

- Beetles belong to the phylum – Arthropoda and class-insecta has so many reliable features for being a good bioindicator.

Like : Easy handling.

Richness in availability.

Have a species diversity

Fragility to small environment changes.

- Beetles species are very useful to assess the anthropogenic activities on aquatic ecosystem as well as terrestrial ecosystem. Such as :

- Vegetation removal , chemical-explosion , surface-mining , afforestation etc.
- Beetles are in close contact with toxic elements present in soil-surface. They eat plants and dirt during their biological-cycle (rest , shelter , egg-laying , embryonic development , hibernation) that takes place in the ground. They are able to absorb toxic elements. These criteria make the beetle excellent indicator of terrestrial ecosystem.
- Presence of beetles in aquatic ecosystem indicate its healthy environment due to its voracic appetite for the prey and carrion along with canniblastic food habit.

CONCLUSION

- Beetles species are extremely sensitive to several ecological parameters that react quickly to environmental- modifications.
- All these criteria make *Dytiscus marginalis* beetle as a excellent bioindicator of aquatic as well as terrestrial ecosystem.