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An ecological community is an aggregation of populations that occur at the same time and place as a distinctive group, and that physical, chemical and / or behavioral interact. The study of the relationship between species within the communities is known as Sinecology. Strictly speaking, a community consists of all vegetable, animal and microbial populations that occur together on a site. Each species of a community exploits the environment and interacts with other species in a particular way. Ecologists use the word niche to describe the role of a species in their community, which can also be seen as their "occupation" or livelihood. Some niches are relatively narrow and specialized, such as the murcation that are fed only from flying insects of a certain size, or wasps that only one or some plant species. Other niches, however, are much broader, such as those of bears and humans, which feed on an extremely wide range and affect their ecosystem in various ways. The so-called fundamental niche is determined by the rank of tolerance of a species to environmental conditions. These tolerances are reflected in the way in which a species obtains its nutrition and in nature interacts with other species, and are mediated by aspects of behavior, morphology and physiology. In comparison, the niche realized reflects the range of environmental conditions that a species manage to explode in nature. The niche realized is smaller than the fundamental niche because all species are up to a point limited by biological interactions such as competition, depredation and diseases. Due to its complexity, entire communities are rarely examined by ecologists. Ecological studies are usually limited by the amount of financing and the amplitude of the available specialized knowledge. Instead, the At Community level, it generally involves the examination of groups selected from similar organisms, such as «communities» of insects, fish, birds, plants or microbes. Microbes The scope of this work is limited, allows ecologists to investigate important aspects of community ecology. Forest communities, for example, contain a wide range of organisms from various species and sizes, including plants, animals and microorganisms. The populations of the various species interact by innumerable ways. The trees, for example, provide the physical structure of the HABITAT, provide food to herbivores and drop litter that decomposes by species of the detrimental food network. Other interactions within a forestry community include depredation, parasitism and diseases, as well as symbiosis as a pollination, seed dispersion and mycorrhiza. Due to the intrinsic complexity of forest communities, most ecologic studies only investigate selected components. This pragmatial approach to research at Community level can be illustrated in studies on the ecological effects of forestry carried out in the Maritimes by the author and several students. To carry out this work we divide the community into the following functional groups: trees, which we define as plants lighters with a diameter greater than 10 cm, shrubs with a diameter below 10 cm but greater than 1 m, including young guys of bush of arboreal species, as well as shrubs A «True» Terrestrial vegetation, including all plants, mosses and labels, epiffites that grow on other plants, such as logs and mosses on crust covered surfaces of The small mammalian trees such as mice, mammals, flies and large mammalian squirrels such as deer, bears and birds reptile coyotes and amphibians insects fungi and other microorganisms on the ground. From birds, a specific work was performed with species that nest in the cavities of the trees. These include an element A «that requires cavity» from the most wide avian community. Of the same work with insects and other invertebrates has involved functional groups that live on the ground, on decaying deadwood or on foliage. But even with Of these (and others) functional groups, we can not examine all the elements of the forest communities that we were studying. Factors that influence communities Ecological communities are affected by various environmental factors, particularly those described below. Obviously present species, only those species present in a habitat, or capable of dispersing in it, can play a role in the community that is developed. The ability of a species to colonize an available habitat is influenced by its biology, intervening barriers such as a mountain or ocean, the ridge of disturbances and other factors. Human beings increasingly influence the composition of communities species, often introducing non-native species outside their natural distribution area. Habitat appropriate If a HABITAT is not appropriate, then a particular species will not be able to use it even if it is capable of dispersing on the site. There are many aspects of Habitat's suitability, and all of them must be satisfied within the tolerance limits of a species so that it becomes a component of a community. Biological Interactions Species interact through herbivoria, depredation, competition, illness and symbiosis, is ultimate including mutualism, commensalism and parasitism. All these interactions can influence the presence and abundance of species within the communities. The following examples illustrate these influences. The herbivora "is produced when animals feed on vegetable biomass. The bumblebee larvae (Lambdina fatellaria) feed voraciously in the foliage of fir trees, fir trees and other confector trees. When conditions are adequate, this moth can proliferate rapidly, causing harm on a large forest surface, as it happens periodically in eastern Canada. The defoliated positions during years have many dead trees, which is an important element of community change. Loss of much forest cover has indirect effects, such as allowing underground plants to grow more Changes in vegetation affect the habitat available for species of insects, birds and other animals. Microorganisms and other harmful organisms are also affected because large amounts of biomass from dead trees are available for decomposition. Predation involves killing one animal and eating another animal. Predators can greatly reduce the abundance of their prey, thus changing the structure of the community. For example, during the summer, most forest birds feed on insects, spiders, and other invertebrates, which are nutritious food for both adults and their fast-growing chicks. Avian predation can change the invertebrate community, as studies in which small areas of forest were enclosed with nets have shown. This excluded avian predators, but invertebrates could enter or leave. Under these conditions, the abundance of many insects and spiders increased, and species vulnerable to avian predation benefited the most. Image 9.4. Species interact with each other in various ways, such as herbivorous, predation, competition, disease, and symbiosis. This photo shows caribou (Rangifer tarandus) grazing on a tundra meadow in the Nunavik region of northern Quebec. Source: B. Freedman. Competition "occurs when the biological demand for an ecological resource exceeds the supply, causing organisms to interfere with each other. Plants, for example, often compete for access to limited sources of sunlight, water, nutrients and space. Animals can compete for food, nesting sites, mates, and other resources. Intra-specific competition occurs when individuals of the same species compete for access to resources, while inter-specific competition occurs if a species is particularly effective at co-opting resources for its own may displace other species, a phenomenon known as competitive displacement (or, in extreme cases, competitive exclusion). This affects the presence and relative abundance of species in the community. For example, for example, Maple (Acer Saccharum) is a highly competitive tree in the eastern hardwood forests of Canada. Where environmental conditions are suitable for this species, it can master mature positions. If the large sugar maple trees of a stand are removed, perhaps through a selective wooden harvest, other species of trees (as well as small Azucar maples) will benefit from reduced competition And they will grow more vigorously. Disease: It is a pathological relationship in which the health of plants or animals suffers from an infestation of another species, generally a microbe. Virulent diseases can cause enormous changes in the composition of ecologic communities. At the beginning of the DA © each of 1900, the American Chestnut (Castanea dentata) was afflicted by the plague of chestnut (parasitic endothia), an introduced figenic pathogen. Because the chestnuts have little immunity to this disease, the species was virtually eliminated from the eastern forest of Northern America in the DA © catercase. This change launched other species of competition trees With the previously dominant chestnut, and quickly filled the gaps in the canopy created by its disappearance. SIMBIOSIS: It refers to intimate relationships that can occur between species. This may involve a mandatory relationship in which the symbiors can not live separated, but more commonly the association is something flexible. Symbiosis can greatly influence the performance of species in particular environments improving their competitive capacity and reducing their vulnerability to depredation, disease or other tensions. The main types of symbiosis are mutualism, in which both partners benefit; Parasitism, in which an organism benefits and the other is damaged; and commensalism, in which an organism benefits without harming the other. While the symbiosis are critical for one or both partners, it also indirectly affect the habitat and resources available to other members of the community. Lichens are a familiar example of a mutualism. They are a mandatory association between a fungus, fungus. Whether it's an algae or a blue-green bacterium. The fungus benefits from the productivity of the photosynthetic partner, while this last obtains a relatively hiro microhabitat and better access to inorganic nutrients. Another mutualism, called myrrhiz, is an intimate association between fungi and roots of vascular plants. The plant benefits from better access to nutrients, especially phosphate, while the fungus receives nutritious exudates from the roots. This mutualism also provides a broad profit at the community level by increasing primary productivity. Many species of legumes live in mutualism with the bacterium Rhizobium Japonicum, which sets nitrogen gas (N2) in ammonia, a critical nutrient. Another mutualism involves species of dinoflagellates (unicellular algae) that live within the corals (small colonial animals), where they receive protection and access to nutrients. Corals benefit thanks to access to photosynthetic productivity of algae. Many animals eat vegetable biomass, but few are capable, by Sa alone, to digest complex polymeric biochemics such as cellulose and lignin. Consequently, many herbivists live in a mutualism with microorganisms, which inhabit their intestine and secrete enzymes that digest cellulose and lignin, by providing the animal those abundant sources of nutrition. Cows, deer and sheep harbor their digestive microorganisms in a specialized bag of its aldtcestrnago, called the rumen. Humans also house a diverse community of microorganisms in their intestine, many of which are important for our nutrition. Other mutualism includes the many species of flowers that are pollinated by certain types of insects. The pollination is crucial for the reproductive success of the plants, while the insects benefit from an abundant source of néctar or pollen. Also, community herbivores benefit from the fruits that are produced due to pollination, and in turn can help disperse plant seeds. One One. comensalism is the epiphytic community of plants, lichen and mosses that often grow in large trees. Epiphytes gain a benefit from the relationship due to increased access to sunlight, but host trees are not significantly affected. There are many known examples of parasitism, including fleas in a dog and tapeworms in humans. The parasite benefits from taking nutrition from the host, but the host usually suffers, and may even die from a severe infestation. Image 9.5. A mutualism is an intimate symbiosis in which both partners benefit from the relationship. Lichens, like the Parmelia saxatilis in the photo, are an obligatory mutualism between a fungus and an algae, which means that the two species cannot live separately in nature. Therefore, taxonomies treat them as a single "species." Source: B. Freedman. The disturbance is an event of destruction of a part of a community, an event that is followed by a period of ecological recovery, sometimes marked, called succession. All communities are dynamic, changing over time in their species composition and functional attributes (such as productivity, decomposition, and nutrient cycles). However, the pace of change depends on the stability of environmental conditions, which is greatest in communities near the end point of a succession. On the other hand, the more dynamic communities are associated with the younger stages of the succession. Disturbances can occur on two spatial scales. Fool replacement disturbances are caused by forest fires, a disease epidemic, tree cutting and other cataclysmic events. This type of disturbance is extensive and results in the immediate replacement of one community by another, followed by a period of succession recovery. Over time, the succession can regenerate a community similar to the one that existed before Disruption, or it may be another different. The youngest stages of a sere (successional sequence) are especially dynamic in terms of community change. Community In the first years of recovery, competition is not intense, and rudder species, selected with r+, predominate. Later stages of succession are much less dynamic, and K-selected species predominate. Microdisturbances are local disturbances that affect small areas within an otherwise intact community. A microdisturbance may, for example, be associated with the death of an individual large tree, resulting in a gap in the canopy, below which community change is relatively dynamic, as species compete for extra sunlight. Similarly, the death of an individual coral head represents a microdisturbance within a community of tropical reefs. Although the ecological changes are dynamic within a gap created by a recent microdisturbance, at the stand level the community is relatively stable. Intermediate community dynamics occur in all ecosystems, but they are particularly important during the later stages of succession, such as in older growth forests. Image 9.6. Sometimes, ecosystems are subject to catastrophic disturbances, such as the 2002 forest fires in the boreal forest of northern Quebec. Individual fires are marked with a red dot, and their smoke columns are blowing southward. The large white mass at the bottom right is the cloud cover. Source: NASA Photo ID 751 339; The spatial variation of the environment reflects the fact that conditions change constantly from place to place, and sometimes in extreme ways. These spatial variations influence the character of ecological communities in gradual or faster ways: Gradual changes Environmental conditions are associated with different on a mountain, climatic differences over long distances between continents and other relatively continuous gradients. This type of spatial change is reflected in gradual variations of communities because individual species have different but overlapping tolerances and and environmental conditions. These biological differences lead to overlaps in the distribution of species, which may make it difficult for ecologists to determine the boundaries (ecotons) between types of communities. Rapid changes in environmental conditions occur at the boundaries between different types of soil or bedrock, at the interfaces between aquatic and terrestrial habitats, and at sites affected by disturbance. This latter influence may occur, for example, between a burned and unburned forest, or between an ecological reserve and its environment, which may be affected by agriculture or forestry. Relatively discrete changes in environmental conditions favour large differences between types of communities, with clear boundaries between them.

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