Chapter 1 : Concept of Biodiversity And Its Conservation

The Western Ghats are home to thousands of species, including globally threatened species. These species include mammals like lion-tailed macaque, Indian elephants [endangered species]. Reptile includes various snake population and vulnerable Mugger crocodiles. Amphibians of the Ghats are diverse and unique that includes endangered species of purple frog. Moreover, it is home to many caecilian species. A variety of fishes are present in the rivers of the Western Ghats including threatened, vulnerable and endangered fishes. Bird population includes more than species like Nilgiri Wood Pigeon, broad-tailed grass bird etc. Apart from these the Ghats homes to various insects, mollusks, and fauna. The significance of conserving The Western Ghats It is clear from the data that these Ghats play a pivotal role in maintaining ecological balance. Moreover maintaining ecological balance, it also conserves natural biodiversity. However, overpopulation and industrialization put a huge burden on the Western Ghats. Due to these reasons, deforestation has increased at an alarming rate thereby creating a threat to ecology and species. The single reason behind the complete protection of the Western Ghats is the phenomenon of endemism. There are around species of flowering plants, species of fishes, amphibians, reptiles, and mammals according to various studies. Recent Sensitive issues The major challenge nowadays is the construction of two controversial dams-Athirapally in Kerala and Gundia in Karnataka. The ministry of environment and forest should take prompt actions to reject environmental clearance. The proposed sites are in close proximity to the environmentally sensitive areas. Apart from these issues, another concern is the mining problems in Goa. The panel rejected for proposals of new mining sites from the sensitive areas. These guidelines sound good in the overall view. Gadgil committee and Kasturirangan committee Gadgil committee, headed by ecologist Madhav Gadgil, appointed by union ministry in The committee recommended to declare the whole of Western Ghats as an ecologically sensitive area[ESA]. Only limited developments allowed in graded zones. These recommendations waved widespread protests from the states. The reason for such oppositions is due to the fact that it affects the agricultural production, the livelihood of the major inhabitants. Furthermore, according to Gadgil committee suggestions, local inhabitants should leave their dwellings. Because of these reasons, the state governments forced the center to delay imposing ESA restrictions. Different Aspects of budgetary approach to environmental protection in India Kasturi Rangan committee: The central government appointed this committee in view of string oppositions from public and state governments. A significant reduction in figures when compared to the Gadgil committee. However, Kerala managed to reduce the ESA in response to all party protests. Kerala applied to the ministry of environment and forests[MoEF] to exclude 3, square km of settlements. Overall, the recent issues can be viewed as a tag of war between development and conservation. It is undeniable fact that western ghats play a seminal role in mediating role over the monsoon in the country. Furthermore, the country is undergoing the worst drought of the century. In this context, the preservation of the ghats deserves at most importance. A speedy action is necessary from the government side beyond the development of wildlife sanctuaries and national parks. Otherwise, huge environmental problems will arise in near future, for instance, drying up of many rivers. Industrialization is the major hurdle in the demarcation of ESA, however, it cannot be delayed. The enforcement of various laws to prevent exploitation of this environmental hotspot cannot be delayed.

Chapter 2 : www.nxgvision.com: What Is Biodiversity? (): James Maclaurin, Kim Sterelny: Books

Biodiversity And Its Conservation. 15 Questions The parliament passed the Biodiversity Act of India in: A. B. The Red data book lists species which are.

Still, the process of extinction is happening at a much faster pace, few species are added to the endangered list. Every organism is interdependent on each other. Thus existence and extinction of one organism affect the other. This thought leads to the idea of conservation of biodiversity. The biosphere is the life-supporting portion of the earth. The diversity of living organisms exist in this sphere and their relationship with other biotic and abiotic elements altogether define the biodiversity. O Wilson coined the term. Biodiversity is of three types specifically genetic diversity, species diversity, and ecosystem diversity. It is the reservoir of food, habitat, shelter, clothes, etc. The day to day increased demand has exploited it and has posed many threats to the biodiversity. Habitat destruction and partition, over-exploitation, pollution, poaching of wildlife and the introduction of exotic species by horticulture, agriculture, accidental transport, and diseases are some threats to biodiversity. Conservation Biodiversity conservation is a critical action that has to be taken because resources used by humans come from this. Conservation is the responsibility of each individual of society and government. As a part of the personal effort, individuals can save paper, water and be more eco-friendly. The government has taken steps to protect the wildlife and their environment. Protected areas like the zoo, national parks, biosphere reserves, and sanctuaries are the sealed areas and are under the control of the government. Every human activity like agriculture, deforestation, and hunting are banned here. Biosphere reserves are large areas which conserve biodiversity and civilization of that region. They preserve and protect tribal groups in addition to wildlife. They include sanctuaries, national parks etc. A famous biosphere reserve of India is Pachmarhi Biosphere Reserve. Zoological parks are establishments where wild animals are kept for research, preservation and also for public exhibition and tourism. Mysore zoo, Indira Gandhi zoological park. These are reserved habitats for both flora and fauna especially endangered species. National parks cover large areas where animals can freely move around. Overall they protect the ecosystem. Gir forest national park, Periyar national park. Sanctuaries are largely protected habitats for animals. Here animals are not caged and reserved for a particular type of animal. Kerosene is one of the forest product. Forest acts as a natural absorber of rain. Forest does not provide habitat to a large number of animals. Forest does not provide habitat to a large number of plants.

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Chapter 3 : Biodiversity Conservation: Edited By: MS Binoj Kumar and PK Gopalakrishnan | NHBS Book S

*Biodiversity and Its Conservation in India [S. S. Negi] on www.nxgvision.com *FREE* shipping on qualifying offers. DESCRIBES INDIA'S BIOLOGICAL DIVERSITY AND THE MEASURES TO CONSERVE IT.*

Overview Main Description Results of regular monitoring of the species diversity and structure of plant communities is used by conservation biologists to help understand impacts of perturbations caused by humans and other environmental factors on ecosystems worldwide. Changes in plant communities can, for example, be a reflection of increased levels of pollution, a response to long-term climate change, or the result of shifts in land-use practices by the human population. This book presents a series of essays on the application of plant biodiversity monitoring and assessment to help prevent species extinction, ecosystem collapse, and solve problems in biodiversity conservation. It has been written by a large international team of researchers and uses case studies and examples from all over the world, and from a broad range of terrestrial and aquatic ecosystems. The book is aimed at any graduate students and researchers with a strong interest in plant biodiversity monitoring and assessment, plant community ecology, biodiversity conservation, and the environmental impacts of human activities on ecosystems. Table of Contents Part I: Plant Biodiversity â€" An Overview 1: Asteraceae of India and its Diversity and Phytogeographical Affinity 4: Plant Biodiversity and Ethnobotany 5: Role in Human Health and Food Security 6: Plant Biodiversity and Biochemical Parameters 7: Plant Biodiversity and Climatic Factors 9: Plant Biodiversity and Environmental Studies Cross Talk between Plant and Microbial Biodiversity Diversity of Plant Parasitic Nematodes in Pulses Plant Associated Endophytic Plethora: Monitoring and Assessment Biodiversity, Bioindicators and Biogeography of Freshwater Algae Onion and Related Taxa: Ecogeographical Distribution and Genetic Resources in India

Chapter 4 : Biodiversity - Wikipedia

Biodiversity is not evenly distributed, rather it varies greatly across the globe as well as within regions. Among other factors, the diversity of all living things depends on temperature, precipitation, altitude, soils, geography and the presence of other species.

But it also traces the study of aspects of biodiversity back as far as Aristotle. To some extent, biodiversity merely offers a new, emotive, term for some older ideas and programs. On the one hand, workers taking advantage of the acknowledged importance of the term have expanded its meaning to capture concerns at a fine scale, such as that focussing on a favourite single species. In fact, Norton claims that any increase in our understanding of biodiversity will make it less likely that there will be a single objective measure. This perspective is in accord with recognition of functional-compositional perspectives on biodiversity. One cannot aggregate all these different versions of biodiversity. They argue that biodiversity conservation is rooted primarily in ethics and we must not continue to back away from values and advocacy. The idea that the choice of a measure of biodiversity depends on values finds support in Sarkar He argues that biodiversity operationally amounts to whatever is the valued target of conservation priority setting for different localities. Wilson describes this change in perspective as a realization that biological diversity is disappearing and, unlike other threatened things, is irreversible. Ehrenfeld similarly reinforces this idea of the value of diversity in the aggregate. He argues that diversity previously was never regarded in itself to be in danger, but that biodiversity now is recognised as endangered in its own right. Takacs reviews cases where the definition of biodiversity is wrapped up in the idea of strategies needed to preserve variation. In accord with this perspective is a shift to a focus on valuing ecosystem processes. This focus arguably will ensure maintenance and ongoing evolution of these systems, and therefore all of biodiversity. Holistic perspectives on biodiversity have emerged also through another important focus. These arguments suggest that core biodiversity values might be based more on what we do not know than what we do know. Biodiversity can be viewed as primarily capturing the two-fold challenge of unknown variety, having unknown value. A species, or other element of biodiversity, has option value when its continued existence retains the possibility of future uses and benefits. Option value corresponds not just to unknown future values of known species, but also to the unknown values of unknown species or other components of variation. Estimating and quantifying the largely unknown variation that makes up biodiversity is one and the same as quantifying corresponding option values of biodiversity. According to this emphasis, a basic definition of biodiversity might be expanded as: These possibilities are discussed further in the section on Integrating Process and Elements Perspectives. Given that holistic approaches may integrate functional and compositional aspects, the following sections address these different biodiversity perspectives. A later section, Alternatives to Unit-species , presents attempts to address some weaknesses of this initial approach. Commodity value and other direct use values have intuitive appeal because they reflect known values. But a key problem is that species need to be preserved for reasons other than any known value as resources for human use Sober Callicott discusses philosophical arguments regarding non-utilitarian value and concludes that there is no easy argument to be made except a moral one. A philosophical issue is whether such species values depend on a human-centered perspective. Norton sees all species as collectively embraced by an environmental ethic that is anthropocentric. Preferences-based approaches to valuation can provide economic dollar estimates of value. This valuation process may include methods for assessing and quantifying option values. A claimed advantage of such approaches is that the only good way to protect species is to place an economic value on them. Randall argues that such quantification is advantageous because the species preservation option will fare well when the full range of values is included in conservation priority setting. The context for many of these arguments has been a consideration of various criteria for placing priorities among species for conservation efforts. Triage recalls the medical context in which priorities are set for investments in saving patients. Applied to conservation, individual species are differentially valued and assessed relative to differential opportunity costs. The best conservation package is to be found through a process of calculating costs and benefits of protection of individual species. Philosophical

issues arise in the debate as to whether biodiversity should be approached through the process of differentially valuing species, so that choices could be made in the face of a budget, or regarding species as the fundamental unit and trying to protect them all. The latter option is arguably more holistic and in accord with a focus on all of biodiversity the individual species focus is sometimes viewed as the first of three phases of growth in biological resources assessment; see the section on The Shift from Elements to Processes. This book documents an attempt to move from values of species to some overall value of biodiversity, rejecting typical triage arguments based on benefits versus costs for individual species. He argues that every species arguably has utilitarian value and that species perceived values are hard to estimate. This is directly in preference to a cost-benefit approach, characterized as examining single species and their properties and deciding how much to invest. These vary with philosophical perspectives about the nature of values. These methods address the idea that a species that is taxonomically or phylogenetically distinctive may deserve a higher priority for biodiversity conservation see World Conservation Union Takacs joins others in arguing that we do not know enough about species to assign different values for further review, see Faith As an alternative to such a triage approach, an SMS-style approach again is advocated based on the number of unit-species saved within a budget. The SMS approach, however, arguably suffers from a double-barrelled arbitrariness of its own, in the choice of a level of variation species and the choice of a threshold on costs. Alternative approaches are considered in the next section. Alternatives to Unit-species We can recognize two alternatives to the use of species as equal-weight units for an SMS. One of these see the section on The Shift from Elements to Processes consciously moves further away from units or items of any kind. Here, the valuation of species is seen as problematic, with arbitrary solutions. Valuation is to encompass all of biodiversity but through a functional perspective, shifting the focus to ecosystems processes Norton , The other alternative [see the section on Option Value and Hierarchy of Variation] might be viewed as going to the other extreme. Units or elements of biodiversity are seen at least implicitly at every level of biological variation, and the quantification of variation is to provide relative valuations e. These two perspectives provide different responses to the issues concerning taxonomic distinctiveness valuations on species â€” so providing one benchmark for comparisons. In the ecosystem processes case, this has provided a prototype example of problems with attempts to value species-units. In the hierarchical variation case, it has provided a prototype example of the quantification of unknown variation and option value at one nominated scale of biodiversity. The first was the focus on individual species. The focus is on maintaining functions of healthy ecosystems, such as provision of clean air and water. This process orientation is compatible with much recent work internationally on ecosystem services [Takacs ; and Millennium Ecosystem Assessment in Other Internet Resources]. The processes perspective is to determine how we look at biodiversity: Biological integrity is primarily concerned with the persistence of biogeographic, evolutionary, and ecosystem processes, such as those relating to energy flows. The unit-species perspective has been justified through option values and a response to a lack of knowledge â€” we do not know enough to differentially value species. But consideration of option values also has been used to justify a move away from a species-as-units approach, to embrace a whole hierarchy of possible units. Suppose, for example, that the units of interest are features of species a feature might be some morphological characteristic shared by all members of that species. These features in general have unknown future values. It follows that total option value would be increased by having more features protected. If we apply the rationale that all these features should be treated as units of equal value, then some species those that are phylogenetically distinctive; see below will make larger contributions to the overall feature diversity represented by a set of species. We see that the same argument used to justify species as equal-value units can be used to justify differential valuation of species Faith Feature diversity can provide a basis for valuation, but it raises measurement challenges. Not only do we not know, in general, the future value of different features, but also we cannot even list the features for most species. Phylogenetic pattern provides one way to estimate and quantify variation at the feature level. A species complements others in representing additional evolutionary history Faith , as depicted in the branches of an estimated phylogeny. The degree of complementarity reflects the relative number of additional features contributed by that species. For example, given some subset of species that are well-protected, and two species in that taxonomic group that are endangered, the priority for

conservation investment may depend on the relative gains in feature diversity the complementarity values expected for each species. We do not know in practice what all the actual features are, but can make a prediction about relative gains and losses. Priorities for conservation efforts for endangered species then can respond to both threat and the potential loss of PD. A nice illustration of the contrast between biodiversity assessments at the species and features levels is found in the recent study of Yesson and Culham They showed that, while many cyclamen plant species are likely to be impacted by expected climate change, the expected loss of cyclamen PD nevertheless would be relatively low. The set of cyclamen species resistant to climate change would retain high PD because they are dispersed throughout the phylogenetic tree. Such a potential retention of feature diversity, and corresponding evolutionary potential for discussion, see Forest et al. This link from option values to processes is discussed further below in the section Integrating Process and Elements Perspectives. Some proposed taxonomic distinctiveness methods indeed simply have been species-based attempts to assign differential values. But when the focus is on biodiversity units at a lower level, it is not an attempt to apply differential values to species as fundamental units of biodiversity, but equal values to those lower-level units. The focus on these units rather than conventional species is highlighted by the fact that for subsequent priority setting on places, species sometimes are ignored altogether Faith We return to this issue below, in discussing ways to side-step contentious species designations in DNA barcoding see the section on Biodiversity and DNA barcoding. Features of species quantified in this way are just one part of a whole hierarchy of variation. Sarkar and Margules emphasize that, when we speak of genes, species, and ecosystems, it is not that these form the specific entities of interest but instead are benchmarks for the full hierarchy of variation: The value of all of biodiversity is in this full hierarchy of variation â€" measuring one measures the other. These values may also encompass intrinsic values of biodiversity. This suggest that any calculus of relative option values indicating relative value contributions made by species, places, etc is also a calculus of relative intrinsic values. For conservation priority setting, each new place for example adds some biodiversity to the total for a set of places. However, this comparison among places is arguably made easier also because we only require complementarity â€" marginal gains in variation â€" rather than total amounts. Sarkar and Margules , p. Sarkar and Margules describe biodiversity as rooted in place, but this is just one scale of decision making. We can apply the same complementarity principle to species not places, as in the example of complementarity values at the underlying feature level estimated from phylogenetic pattern a general conceptual model for complementarity at different levels of biodiversity is found in Faith These issues are addressed in the section on Biodiversity and Growth of Knowledge. An appealing property of unit-species approaches was that quantification of option values allowed the political process to balance these with other values of society.

Chapter 5 : Biodiversity and its Conservation :Types and Conservation Methods

Describe biodiversity at the global, national and local levels. Define hotspots in diversity and explain why India is a megadiversity nation. Identify and describe threats to biodiversity, such as habitat loss, poaching of wildlife, man-wildlife conflicts and list some endangered and endemic species of India.

The total number of genes, species and different ecosystems in a particular region is known as Biodiversity. It is also known as Biological Diversity. Keystone species- In every biodiversity , there are some species on which rest of the species are dependent to exist in the community. These species are known as Keystone Species. The term was coined by Paine. In case of conservation of a biodiversity more importance is generally given to these species as loss of keystone species can cause loss of several other species. Types of Biodiversity- There are 3 types of Biodiversity. Genetic Diversity- It consists the genetic variation within species. Species Diversity- It consists of all species of plants, animals and micro organisms in a particular area at the basic level. Ecosystem Diversity- It consists of various biological communities with lots of different species interacting with each other. Hot Spots In Biodiversity- The areas which has faced several threats from human activities and has a unique biodiversity, are known as Biodiversity Hot Spots. These are geographical zones which have large number of unique endemic species. Norman Myers identified Biodiversity Hot spots in North East India- In this biodiversity hot spot the highest biodiversity of birds of India is seen. Threats To Biodiversity- Mono culture to meet the demand of food grains. Excessive Exploitation of available natural resources like over fishing, poaching, over hunting etc. Random Deforestation leads to environmental pollution. Habitat Destruction and Over Population. Conservation of Biodiversity- To maintain the balance between Human and the environment Biodiversity Conservation is very important. The protective measures are following- Protection of Natural habitats and limited exploitation of species. Recognition of ecosystems along with its species. To create mass awareness for environmental protection. To maintain the endangered species in protected ares like Sanctuary, National Parks etc.

Chapter 6 : Biodiversity (Stanford Encyclopedia of Philosophy)

biodiversity and its conservation DEFINITION â€¢ Biodiversity or biological diversity is the variation of taxonomic life forms within a given ecosystem, biome or for the entire Earth.

Etymology[edit] The term biological diversity was used first by wildlife scientist and conservationist Raymond F. Dasmann in the year lay book A Different Kind of Country [41] advocating conservation. The term was widely adopted only after more than a decade, when in the s it came into common usage in science and environmental policy. Thomas Lovejoy , in the foreword to the book Conservation Biology, [42] introduced the term to the scientific community. Jenkins, [43] Lovejoy and other leading conservation scientists at the time in America advocated the use of the term "biological diversity". It first appeared in a publication in when sociobiologist E. Wilson used it as the title of the proceedings [44] of that forum. A similar term in the United States is "natural heritage. Broader than biodiversity, it includes geology and landforms. Biologists most often define biodiversity as the "totality of genes, species and ecosystems of a region". An explicit definition consistent with this interpretation was first given in a paper by Bruce A. They study processes such as mutation and gene transfer that drive evolution. However, tetrapod terrestrial vertebrates taxonomic and ecological diversity shows a very close correlation. Among other factors, the diversity of all living things biota depends on temperature, precipitation, altitude, soils , geography and the presence of other species. The study of the spatial distribution of organisms , species and ecosystems , is the science of biogeography. Diversity consistently measures higher in the tropics and in other localized regions such as the Cape Floristic Region and lower in polar regions generally. Latitudinal gradients in species diversity Generally, there is an increase in biodiversity from the poles to the tropics. Thus localities at lower latitudes have more species than localities at higher latitudes. This is often referred to as the latitudinal gradient in species diversity. Several ecological mechanisms may contribute to the gradient, but the ultimate factor behind many of them is the greater mean temperature at the equator compared to that of the poles. This hypothesis considers temperature , moisture , and net primary production NPP as the main variables of an ecosystem niche and as the axis of the ecological hypervolume. In this way, it is possible to build fractal hypervolumes, whose fractal dimension rises up to three moving towards the equator. Hotspots[edit] A biodiversity hotspot is a region with a high level of endemic species that have experienced great habitat loss. Colombia is characterized by high biodiversity, with the highest rate of species by area unit worldwide and it has the largest number of endemics species that are not found naturally anywhere else of any country. Selection bias amongst researchers may contribute to biased empirical research for modern estimates of biodiversity. Gilbert White succinctly observed of his Selborne, Hampshire "all nature is so full, that that district produces the most variety which is the most examined. Evolution Apparent marine fossil diversity during the Phanerozoic [76] Biodiversity is the result of 3. The origin of life has not been definitely established by science, however some evidence suggests that life may already have been well-established only a few hundred million years after the formation of the Earth. Until approximately million years ago, all life consisted of microorganisms â€” archaea , bacteria , and single-celled protozoans and protists. The history of biodiversity during the Phanerozoic the last million years , starts with rapid growth during the Cambrian explosion â€”a period during which nearly every phylum of multicellular organisms first appeared. Over the next million years or so, invertebrate diversity showed little overall trend and vertebrate diversity shows an overall exponential trend. Vertebrates took 30 million years to recover from this event. Some scientists believe that corrected for sampling artifacts, modern biodiversity may not be much different from biodiversity million years ago. While records of life in the sea shows a logistic pattern of growth, life on land insects, plants and tetrapods shows an exponential rise in diversity. As one author states, "Tetrapods have not yet invaded 64 per cent of potentially habitable modes and it could be that without human influence the ecological and taxonomic diversity of tetrapods would continue to increase in an exponential fashion until most or all of the available ecospace is filled. Hyperbolic model implies a second-order positive feedback. The hyperbolic pattern of the world population growth arises from a second-order positive feedback between the population size and the rate

of technological growth. The similarity between the curves of biodiversity and human population probably comes from the fact that both are derived from the interference of the hyperbolic trend with cyclical and stochastic dynamics. This view offers a possible answer to the fundamental question of why so many species can coexist in the same ecosystem. The blue flowers are Centaurea cyanus and the red are Papaver rhoeas. It is as if the natural world is an enormous bank account of capital assets capable of paying life sustaining dividends indefinitely, but only if the capital is maintained. Provisioning services which involve the production of renewable resources e.

Chapter 7 : Popular Biodiversity Books

Get this from a library! The biodiversity of Missouri: definition, status, and recommendations for its conservation. [Timothy A Nigh; Missouri. Biodiversity Task Force.].

Chapter 8 : What Is Biodiversity?, Maclaurin, Sterelny

Biodiversity and its conservation are among the main global topics in science and politics and perhaps the major challenge for the present and coming generations. This book written by international experts from different disciplines comprises general chapters on diversity and its measurement, human.

Chapter 9 : Plant Biodiversity: Monitoring, Assessment and Conservation

biodiversity and conservation Although India h as only per cent of the world's land area, its share of the global species diversity is an impressive per cent.