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Nurturing Biodiversity: Individual Responsibilities in Conservation Efforts

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Abstract:

This article explores how individuals can make meaningful contributions to biodiversity conservation efforts, instead of viewing it as solely the responsibility of governments or corporations. The article advocates for instilling a habit of observing and identifying local biodiversity, especially in children, through education and nature-related activities. Gardening practices are highlighted as crucial for supporting pollinators and native species, while minimizing waste through mindful consumption is emphasized. Moreover, agricultural practices are discussed, urging farmers to adopt multiple cropping systems over monocropping to mitigate habitat loss. Informed consumer choices, minimalistic lifestyles, and dietary diversity are promoted as means to reduce ecological footprint. Additionally, the article addresses the ethical implications of taxonomic killings and the importance of educating the public about invasive species. In conclusion, it stresses the need for individuals to embrace their role as stewards of the environment, advocating for sustainable practices to ensure a harmonious coexistence with nature.

Key words: Biodiversity conservation, Individual responsibility, invasive species, sustainability

One man's right is another man's responsibility. This axiom holds true for any cause, wherein individuals often seek to transfer their responsibility onto others. Without actively supporting a cause, individuals often resort to blaming others, as if it were solely others duty to work towards it. This tendency is evident in biodiversity conservation as well. Biodiversity conservation, afforestation, wildlife protection, and sustainable environmental practices are frequently discussed topics, yet many believe it is solely the responsibility of governments,

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agencies, or corporations, neglecting their own role in the process. However, the reality is that every individual possesses the power to contribute meaningfully to conserve biodiversity. Simple actions such as mindful consumption, waste reduction, and supporting sustainable practices across all facets of life can yield significant positive impacts. By advocating environmental protection measures and active participation in local conservation initiatives, the common person can play a crucial role in safeguarding biodiversity. In this article, we explore the various possibilities and ideas through which individuals can contribute to the conservation of biodiversity.

Teaching children and students to observe and identify the life surrounding us:

It all begins with recognizing plants, animals, birds, fishes, insects, and more. Without knowing their names, be it common or vernacular, one cannot fully grasp the biodiversity and its conservation. The journey commences with identification and acknowledging the birds, animals, insects, and other organisms that inhabit our surroundings. Many youngsters fail to notice spiders weaving webs in their own homes. Some do not recognize the chirping sounds of cicadas at night. Others struggle to identify the calls of birds like the *Red Wattled Lapwing* during night time. Some cannot even identify the trees in front of their homes or the plants in their gardens.

Everyone needs to develop a thirst for understanding what exists in our surroundings, how natural sounds manifest during the day and night, and what these organisms are doing in our proximity. Despite the noise of our modern world, we can slowly cultivate the habit of observing, identifying and comprehending them. This will foster a strong attachment and bond with the environment, allowing us to truly appreciate their role in our ecosystem, their significance, and how we impact their unnoticed lives, both positively and negatively. Therefore, we firmly believe that biodiversity conservation can only begin with observing and identifying the life around us.

This identification and observation can be facilitated through various means, including nurturing a child, developing nature-related hobbies, organizing nature walks in schools and colleges, labeling plants and trees on school/college/office premises (government and corporate), displaying commonly found birds, animals, and insects in such places with their images, and seeking assistance in identification from local support groups.

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a. Nurturing a child:

Know your surrounding should become the way of life for kids. It starts with parents and teachers: Cultivating an awareness of one's surroundings should be instilled as a fundamental aspect of children's upbringing. Parents and teachers play a crucial role in nurturing children's curiosity about the natural world and fostering a sense of responsibility towards environmental stewardship. Encouraging outdoor exploration, environmental education, and hands-on learning experiences empowers children to become informed and engaged advocates for biodiversity conservation (The Royal Society, 2024).

b. Nature-related hobbies:

Engaging in activities such as birdwatching, fishing, wildlife observation, trekking and nature exploration can foster a deeper appreciation for biodiversity. These hobbies not only provide personal enjoyment but also promote awareness and understanding of diverse ecosystems, contrasting with our digital pastimes (Townsend & Ebden, 2006; McClain, 2022; Ibrahim et al., 2023).

c. Nature walks in educational institutes:

Dedicating a 45-minute period once a week to a nature walk can be immensely beneficial. During these walks, students can explore the campus while teachers help them identify plants, birds, insects, animals, and more in an interactive manner. It's essential to teach students to observe nature without disturbing the animals. These teachings should take place in open fields and natural settings, as classroom-based learning may not be as effective. By instilling a love for nature and promoting active observation, we can cultivate a generation that values and works towards preserving biodiversity. By organizing hands-on experiences, field trips, and interactive sessions, educators can inspire students to develop a deeper understanding of ecological concepts and conservation principles.

d. Naming the plants and trees:

Naming the trees with a common name in all public places enhances accessibility and promotes connection to nature and also encourages visitors to learn about local flora. This practice fosters environmental education and promotes appreciation for the ecological value of trees within urban landscapes.

e. **Display boards:**

Display boards featuring commonly found birds, animals, and insects with images, in public places, will encourage the general public to develop a habit of identifying and observing

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them. These display boards, supplemented with brief and engaging information such as "Did you know? The color of the rose finch (Fig 1) turns pinkish only during the breeding season," will further pique interest among the public.

Figure 1: Rose finches feeding wheat in Nilgiris

Gardening:

Gardening an age-old practice but with a little tweak, one can help in conservation of biodiversity.

a. Gardens supporting insect/birds/animal activity:

Having garden plants that support pollinators, such as honey-friendly species like *Salvia leucantha*, rangoon creeper or any plants with yellow-flowering, contributes to biodiversity conservation (Yan et al., 2016**)**. Pollinators play a vital role in ecosystem functioning and food production, and planting nectar-rich flowers provides essential resources for their survival (Katumo et al., 2022). Creating pollinator-friendly habitats enhances biodiversity and promotes ecosystem resilience (Maggi et al., 2023). Similarly, planting species that support butterflies, spiders and squirrels in the garden can also be beneficial.

b) Letting the fruit for nature:

When we have fruit trees in our home garden, it's important to consider the broader impact of our actions. By allowing some fruits to remain on the tree and eventually return to nature, we provide sustenance for various organisms (Fig 2). It's advisable to pluck only what we can consume and leave the rest for wildlife or natural decomposition. Harvesting more than we need and allowing the excess to go to waste not only squanders valuable resources but also deprives other organisms of potential nourishment. That wasted fruit could have served as a lifeline for insects, birds, or other creatures in our vicinity. Therefore, by being mindful of our

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consumption and minimizing waste, we not only benefit ourselves but also contribute to the well-being of the ecosystem around us.

Figure 2: Pair of parakeets feeding on guava fruit in a garden

c) Mandatory planting of forests trees or plants:

Twenty years ago, trees such as the rain tree (*Albizia saman*), jamun (*Syzygium cumini*), and tamarind were commonly found in all public places. However, they were gradually replaced with species like *Polyalthia* sp. and bottle palms, which have little to no environmental value. Therefore, implementing a policy that requires involvement of public and private parties to allocate a portion of their land for planting "***Native trees***" could yield significant conservation benefits. This initiative would not only contribute to reforestation efforts but also serve as a model for sustainable land management practices. Government institutions can set an example by prioritizing it within their premises. Individuals can also enhance their gardens by incorporating both exotic and native plants, thus supporting local biodiversity without compromising their aesthetic preferences (Andres et al., 2022).

d) Gardens without Lawn:

Lawns are commonly preferred garden plants because of the scenic beauty we got from them. However, they are the least contributors for conservation of local biodiversity. Hence, opting for native plants or forest trees with ornamental value like amaltas (*Cassia fistula amaltas*) in gardens can enhance biodiversity without compromising the beauty. Native trees provide essential habitat and food sources for local wildlife, support ecosystem health, and contribute to overall landscape resilience. By cultivating native vegetation, individuals can create biodiverse green spaces within their own properties.

e) Avoiding monocropping in Agriculture:

The UN's Global Biodiversity Outlook 2014 highlights the significant impact of agricultural activities on terrestrial biodiversity loss. With agriculture accounting for a

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substantial portion of land use, addressing feasible changes in agricultural practices is crucial for mitigating habitat destruction and conserving biodiversity on a global scale. Besides, monocropping also has negative impact on pollinators (Aizen et al., 2019). There exists an inverse relationship between monocropping practices and biodiversity conservation. Hence, farmers, by adopting a multiple cropping system or integrated farming system instead of monocropping (cultivation of a single crop over large areas), can contribute to mitigating habitat loss, species diversity loss, and preventing ecosystem degradation. This practice not only helps conserve biodiversity but also aids in preserving the natural enemies of agricultural pests.

Informed Consumer Choices:

Making informed consumer choices by purchasing products sourced from sustainable and biodiversity-friendly practices can contribute to conservation efforts. Supporting eco-friendly and ethically produced goods, such as certified organic products, certified pesticide free products, responsibly grown or harvested materials, helps to reduce the negative impact of consumption on biodiversity. For instance, the company should certify that weather the raw material was sourced for their products are from organically produced field or pesticide free field or pesticide used at recommended level. Further this has to be strictly monitored by certification agencies.

Minimalistic lifestyle:

Embracing minimalism as a lifestyle can alleviate the strain on ecosystems by reducing resource consumption and waste generation. Simplifying one's possessions, consumption patterns, and overall lifestyle not only conserves natural resources but also minimizes environmental footprint. Adopting minimalist principles promotes sustainability and nurtures a harmonious relationship with the planet.

Diversity in Food habit:

Embracing dietary diversity contributes to biodiversity conservation by reducing pressure on specific food sources and ecosystems. Incorporating a variety of foods into one's diet promotes sustainable agriculture, preserves culinary traditions, and supports biodiversity-friendly farming practices. By diversifying food choices, individuals can help protect the richness and resilience of ecosystems.

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Educating the locals about invasive species:

The knowledge of invasive species remains largely confined to students, researchers, and individuals involved in environmental, ecosystem, and biodiversity conservation. The general public often lacks awareness of what invasive species are and how to respond when encountering them. For example, in the villages of Ramanathapuram district, Tamil Nadu, native fishes such as snakeheads, barbs, loaches, and orange chromides in large irrigation tanks have been displaced by invasive species like gouramis and catfish.

Similarly, *Parthenium hysterophorus* (Fig 3), a noxious weed species, is spreading in the high altitudes of Nilgiris through contaminated Farm Yard Manures (FYM) imported from the plains. However, people are not groomed to play their part in preventing the spread of invasive species. Hence, efforts have to be made by educating the public through mass and social media and providing clear guidelines on how to respond when encountering invasive species are essential steps. Thus, one should understand that preventing invasive species from introduction, establishment and spread is vital for protecting native biodiversity and ecosystem integrity.

Figure 3: *Parthenium hysterophorus* observed in one of the fields at high altitudes in the Nilgiris district.

Taxonomic killings

When collecting organisms for identification and other study purposes, it's essential to consider the impact of our actions on the environment. Each specimen we gather could potentially be the last of its kind in its habitat. Therefore, it's crucial to exercise restraint and collect only what is necessary for our research. Over-collection not only disrupts ecosystems but also endangers the survival of species. We must remember that every organism plays a vital role in its ecosystem, and indiscriminate collection could threaten the delicate balance of

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nature. So, let's collect and, if necessary, sacrifice organisms responsibly, ensuring that we minimize our impact and preserve the diversity of life for future generations.

Conclusion:

In conclusion, fostering a deeper connection with our surroundings and understanding the importance of biodiversity conservation should be integral to our daily lives. By educating ourselves and others about the impact of our actions on the environment, we can take meaningful steps towards preserving biodiversity. From promoting nature-related hobbies and gardening practices to advocating for sustainable consumer choices and embracing minimalistic lifestyles, every individual has the power to make a positive difference. Through collaborative efforts and collective responsibility, we can safeguard our ecosystems, protect native species, and ensure a sustainable future for generations to come. Let us embrace the opportunity to be stewards of our planet and work together towards a harmonious coexistence with nature.

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