

Spatial Data Analysis and Study of Wildlife Conservation Organization for Species Extinction

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Abstract

Wildlife is a vital part of an ecological community as wildlife plays an important role in the environment. Wildlife Conservation is not just important for animals, but to all living things to prevent damages in biosphere and for the sustainability of life on planet earth. The biosphere and human living is endangered, because of environmental changes due to species extinction. Biodiversity loss can have significant direct impacts to human health if ecosystem services are no longer adequate to meet social needs. Conserving as much as species possible is important for the benefit of humans, ecosystems of an environment. It remains a challenge in species conservation and identification of the geographical patterns in underlying environmental associations of species with unique ecological niches and distinct behaviors. The objective is to analyze species extinction and conservation organization of different working groups. Worldwide numbers of governmental and non-governmental organization are employed to conserve species and nature. The IUCN (International Union for Conservation of Nature) Red List to become a more complete "Barometer of Life". The IUCN Red List shows where action needs to be taken to save the species of nature from extinction. This paper delivers the complete knowledge about species extinction and methodologies utilized by various organizations to protect the species from extinction and evaluation of species risk status.

Keywords- Ecosystem, Biosphere IUCN, RedList, geographical Pattern, categories and classification

I. Introduction

The word extinction, make us to think of the plight of the rhino, tiger, panda or blue whale and some unseen species. But these are only small pieces of the extinction puzzle. The overall numbers are terrifying. The scientist from the IUCN (international union for conservation of nature) have assessed, out of one from four mammals, one bird in eight bird species, one in three amphibians, one in three conifers and other gymnosperms are at risk of extinction[4] [9]. The environment status are very complicated and most threatened to living organism. An ecosystem is a combination of living organisms and the non-living components of their environment interacting as a system.

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An ecosystem [6] conservation is the management of natural resources, protecting or restoring the forest, and species structure of an ecosystem using system wide perceptions to ensure that all vegetation and animals in the ecosystem are maintained at sustainable levels in native habitats. Another important aspect of an ecosystem approach to conservation is the ability to integrate ecosystem conservation and restoration with human beings tenets and needs to be strengthen the connection between economic prosperity and environmental well-being.

Biodiversity affects ecosystem function, as do the processes of disruption and succession. Biodiversity describes the diversity of life from genes to ecosystems and extents every level of biological organization.

Biodiversity comprises of species diversity, ecosystem diversity, and genetic diversity and scientists are interested in the way that this diversity affects the complex ecological [7] processes operating at and among these respective levels. Biodiversity plays a vital part in ecosystem services which by definition maintain and improve human quality of life. Averting species extinctions is one way to preserve biodiversity and that goal rests on techniques that conserve genetic diversity, habitat and the capacity for species to migrate Conservation priorities and management techniques require different methods and considerations to address the full ecological scope of biodiversity. There are many reasons for wildlife conservation [12] in both emotional and practical. Conservation can have powerful, direct effects on the daily lives of people around the world, as well as on plant and animal life and the environment as a whole.

For species conservation a number of organization involved worldwide to protect them and ecosystem maintenance for better environmental health. There are thousands of national, international and regional level conservation in both governmental and non-governmental working groups. The few of the worldwide species conservation organization for taken for study here are Wildlife conservation society (WCS), Wildlife alliance (WA), World Wildlife Fund (WWF), International Fund for Animal Welfare (IFAW), International union for conservation of nature (IUCN). This paper is organized as follows: Section 2 provides various wildlife protection organization activities. Section 3 discusses the working area of the organization. In Section 4 we conclude that the species conservation actions to be considered by humans to live future health environment and describes direction of the future work.

II. Species Conservation Organizations

This section provides the details about the organizations and its efforts to conserve species and management of an ecosystem along with environmental factors.

A. *Wildlife Conservation Society:*

The WCS (Wildlife Conservation Society) is an organization with an amazing breadth of activities and audiences. WCS was founded in 1895 as the New York Zoological Society (NYZS) and currently works to preserve more than two million square miles of wild places around the world. WCS saves wildlife and wild places worldwide through science, conservation action, education, and inspiring people to value nature. WCS uses science to discover and understand the natural world. This knowledge helps us engage and inspire decision-makers, communities, and millions of supporters to take action with us to protect the wildlife and wild places.

WCS has been instrumental in the development and adoption of the Spatial Monitoring and Reporting Tool (SMART)—a combination of open-source computer software and training resources intended to help local authorities in protected areas bridge the gap against sophisticated poachers. The SMART is a new and improved tool for measuring, evaluating and improving the usefulness of wildlife law enforcement patrols and site-based conservation activities. SMART recognizes the power of information and significance of accountability in directing resources to where they are most needed. SMART is much more than data collection tool.

SMART has been developed in response to the recognition that traditional tools, technologies and the resources are not stemming the illegitimate killing and interchange of endangered species and the resulting loss of threatened and extremely valued biodiversity, such as tigers, rhinos, elephants, great apes and their habitats. There are a number of reasons for the best efforts to date have yet to meet this challenge. A life-threatening issue is the growing gap between the complexity of those involved in the illegal seizure and trade in wildlife and the number, skill levels and motivation of the personnel committed to imposing anti-poaching laws. SMART was designed to support association for this gap.

B. *Wildlife Alliance:*

Wildlife Alliance (WA) [13] is the leader in straight protection to forests and wildlife in the Southeast Asian tropical belt. Its works towards to combat deforestation, wildlife extinction, climate change and poverty by partnering with local communities and governments. The basic tenet of Wildlife Alliance is to work directly with habitats and communities to protect, preserve, and provide. WA focuses on direct action on the ground and direct access to the people essentially performing the everyday tasks, instead of training a few teachers to go into communities to convey our ideas. Since WA began its life in 1994 as the Global Survival Network, the organization has worked with local governments, communities, and other non-governmental organizations to implement cutting-edge conservation programs in Southeast Asia, Russia, South America, and the

Western Pacific. These program aims to protect the rainforest, preserve the watershed, and stop the illegal wildlife trade through direct action on the ground.

C. World Wide Fund for Nature:

The World Wide Fund for Nature (WWF) [14] is an international non-governmental organization founded and working in the arena of the biodiversity conservation, and the decrease of humanity's footprint on the environment. It was formerly named the World Wildlife Fund, which remains its authorized name in Canada and the United States. It is the world's major conservation organization with over 5 million groups worldwide, working in more than 100 countries, subsidiary around 1,300 conservation and environmental projects. The WWF works "to stop the degradation of the planet's natural environment and to shape a future in which humans live in harmony with nature [16].

Currently, its work focuses on the conservation of three biomes that contains most of the world's biodiversity: oceans and coasts, forests, and freshwater ecosystems. Among the other issues, it is also concerned with endangered species, sustainable production of supplies and climate change. WWF's is to conserve nature and reduce the most pressing threats to the diversity of life on Earth. To accomplish ambitious goals, they work to educate and influence people into making sustainable choices and decisions, including those who work in business and make decisions around the use of natural resources.

WWF is focusing efforts on a select group of priority species that are especially important, either for their ecosystem. These species fall into two major groups:

- Flagship species – iconic animals that provide a focus for raising awareness and stimulating action and funding for broader conservation efforts.
- Footprint-impacted species – species whose populations are primarily threatened because of unsustainable hunting, logging or fishing.

Strategically focusing efforts on these species will also help to preserve the many other species which share their habitats and are vulnerable to the threats.

D. International Fund for Animal Welfare:

The IFAW (International Fund for Animal Welfare) protects individual animals, animal populations and habitats all over the world. With projects in more than 40 countries, IFAW offers hands-on support to animals in need, whether it's dogs and cats, wildlife and livestock, or saving animals in the wake of disasters. They also advocate saving populations from cruelty and depletion, such as our campaign to end commercial whaling and seal hunts. IFAW believes in the intrinsic value of animals and that we have a responsibility to protect them from suffering and unnecessary exploitation.

IFAW [15] rescue and care for individual animals and deliver effective solutions for the long-term protection of animal populations and habitats. Their team includes rescue

workers, veterinarians, policy experts, campaigners, scientists, educators and the highest quality support staff all driven by a determination to help animals in need. Through strong international coordination, we leverage regional campaigns and projects to achieve global influence and impact.

E. International Union for Conservation of Nature:

The IUCN (International Union for Conservation of Nature) [19], helps the world identify pragmatic solutions to the most pressing environment and growth challenges. The IUCN's work focuses on valuing nature and conserving nature, guaranteeing that the effective and equitable governance of its use, and deploying nature-based resolutions to global challenges in climate, food and development. It also supports scientific research, manages field projects across worldwide, also brings governments and non-government organizations, the United Nation and companies joined together to develop policy, laws and best practice. It is the world's ancient and largest global environmental organization, with almost 1,300 government and non-government organizations Members and more than 15,000 volunteer experts in 185 countries.

They work to build upon IUCN's niche as the world's authority on biodiversity conservation, nature-based solutions and associated to environmental governance. IUCN has three key areas of working:

Valuing and conserving nature improves IUCN's heartland work on biodiversity conservation, highlighting both tangible and intangible values of nature. **Effective and equitable governance** of nature's use consolidates IUCN's work on people-nature relations, rights and responsibilities of peoples, and the political economy of nature. **Deploying nature-based solutions** to global challenges in climate, food and development expands IUCN's work on nature's contribution to undertaking problems of sustainable development, particularly in climate change, food security and social and economic development.

The IUCN Red List [20] is the world's most comprehensive information source on the global conservation status of animal, fungi and plant species and their links to livelihoods. It provides more than a list of species and their status of risk, IUCN is a powerful tool to inform and catalyze action for biodiversity conservation and policy change - crucial to protecting the natural resources human need to survive. For each assessed species, The IUCN Red List provides information on population size and trends; geographic range and habitat needs. To date more than 76,000 species have been assessed with more than 22,000 at risk of extinction. Comprehensive assessments have been completed for many species groups including mammals, amphibians, birds, reef-building corals and conifers.

Species are classified by the IUCN Red List version 3.1 into nine groups, set through criteria such as rate of decline, population size, area of geographic distribution, and degree of population and distribution fragmentation.

Extinct (EX): A taxon is Extinct when there is no reasonable doubt that the last individual has died.

Extinct in the Wild (EW): A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity or as a naturalized population (or populations) well outside the past range.

Critically Endangered (CR): CR taxa are considered to be facing an extremely high risk of extinction in the wild.

Endangered (EN): EN taxa are considered to be facing a very high risk of extinction in the wild.

Vulnerable (VU): VU taxa are considered to be facing a high risk of extinction in the wild.

Near Threatened (NT): A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

Least Concern (LC): A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category. Data Deficient (DD): A taxon is DD when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status.

Not Evaluated (NE): A taxon is Not Evaluated when it has not yet been evaluated against the criteria.

When discussing the IUCN Red List, the official term "threatened" is a grouping of three categories: Critically Endangered, Endangered, and Vulnerable. As of 2015 there are seven versions of IUCN Red List. The version 3.1 is the recent document for categorizing the species based on the criteria.

III. Organization work evaluation

The organization work performance of species conservation and other ecological services are evaluated based on the projects of the organization undertaken. The organization history and works follows:

Table 1: Organization History and Region Wise Work

Organization	Started year	Region	Species conservation	
			Plants	Animals
WCS	1895	worldwide	✓	✓
WA	1994	New York	--	✓
WWF	1961	worldwide	--	✓
IFAW	1969	worldwide	--	✓
IUCN	1948	worldwide	✓	✓

Few wildlife conservation organizations conservation process of species and plants. The above table shows that the organization history and conservation of species. The conservation of animals and plants are the focus of the organization across worldwide. The two of the organization WCS and IUCN focuses on conserving plant species across worldwide and animals. The other organization are employed to conserve animals itself. The biosphere and the ecosystem is maintained by conserving species of the planet on earth inclusion of plant and animals, etc... the WCS and IUCN have open source tools to analyses and monitor the species and finding the status of risk. Those tools can be utilized by individual assessor to protect species and publish about species and its risk. While considering the above table and organizational work the IUCN has the better knowledge about the all living organism in the earth planet. The risk status of each and every species are assessed by the IUCN Red List and the criteria is mentioned to classify species into the category to prioritize the species conservation.

III. Conclusion

In this paper, we have reviewed wildlife conservation society of worldwide organization and their efforts to conservation of nature and ecosystem maintenance. Wildlife is increasingly becoming more threatened due to human activity and irresponsibly. The biggest threat to wildlife is habitat loss due to deforestation, overgrazing, farming, development, and pollution. These issues also lead to other problems such as soil compaction, erosion, and desertification. The globally distributed species conservation is significant impact for the sustaining the species on earth and other living organism. The wildlife is important to live human in real nature end better environmental health of future generations. The aim and goal of the wildlife conservation organization is not only preserving species and also educating, training of people to conserve nature. Even minor actions can have a major impact on wildlife conservation when we all work together.

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