Editorial

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Ecology, Ecosystem & Conservation Biology

Ecology is the study of the interaction between organisms and their environment. To fulfill the food requirements of increasing population, human activities are affecting the ecosystem. It has never been extra important to comprehend what regulates the dispersal and richness of species, how they intract with each other and their environment, and how biodiversity rejoins to threats by change in climate, invasive species, over-exploitation and destruction of habitat.

Issues arising due to climate change, understanding the ecosystem, and the measures required to sustain Earth's life-support systems has become progressively important. In this evolutionary process, human activities have played a prominent role, and those who study vegetation cannot afford to neglect this aspect.

Conversion of natural habitats into industrial and agricultural landscapes, and finally into tainted land, is the major influence of humans on the natural environment, posing a great threat to biodiversity. Restoration of ecosystem is an emerging discipline which provides a more suite of tools for the recovery of degraded lands. Restoration of ecology offers a crucial accompaniment to nature reserves as a way for the preservation of biodiversity. An unified understanding of human population growth and changes in agricultural practices with natural recovery processes and restoration ecology offers hope for the future of the environment. Even though ecologists have documented the role of history and historical legacy concept in determining present-day ecological systems, few international conservation assessments consider time scales more than 50 years. Conservation biology is prearranged management of natural resources and natural balance retention, diversity and evolutionary processes in the environment. Conservation strategies in a rapidly changing world need to consider the dynamic biological processes of species and their interactions with their environment: it is here that insights from long-term ecology can guide conservation.

Palaeoecological techniques like macrofossils, pollen analysis and sediment chemistry in long-term ecology uses to resolve critical questions to resolve long-term ecological changes and the processes behind such changes. Palaeoecological record uses that preserved in lake and bog sediments as a long-term ecological laboratory. The record delivers exclusive information about ecological impact of environmental change on population, organisms, communities, landscapes and ecosystems over time scales from 50 to 12000 years. New developments mean that palaeoecological studies have high taxonomic precision, fine temporal resolution (typically of ~5 years, and sometimes 1 or 2 years), appropriate numerical methods of analysis, and can benefit from synergies of multi-proxy studies. Palaeoecological studies can help to answer questions such as

- In the change of ecosystem what are the major drivers at different time scales?
- In a specific ecosystem how much natural variability is there?
- How have landscapes changed over time?
- What is the native status of particular species?
- Which ecological processes are important for maintaining target ecosystems?
- How do human activities affect the resilience of ecosystems to climate change?
- What time-lags can be expected between climate change and ecosystem response?
- How will climate change affect the distribution and impacts of climate-dependent disturbance regimes such as fire?

Within the application of long-term ecological data to conservation and management there are many controversies, challenges, and compromises. Recently, a study has emphasized a serious question in practical conservation: Do we know what we want to conserve

and how to conserve it? Two opposite ideas are preservation of cultural landscapes and creation of partially 'wild' areas with re-wilding. Long-term ecology has much to pay to conservation as the complexity of processes and patterns in the past, when prudently decrypted, can help to make new ideas about management in the future. Biodiversity loss is a local phenomenon and an in-depth understanding of individual locations is needed to devise solutions.

This special issue provides focused study on ecological forecasting and customized decision support tools for a variety of topics. In this Special issue, researchers spatially explicit modeling approaches to address complex interactions, and relationships to solve the following issues: Wildfire, Climate Change Impacts, Species Population Modeling, Wildlife Connectivity, Green Energy Development and Environmental Risk Avoidance conservation problems.

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