

Engineering Ecological Risk Assessment in Kashmir

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Abstract—*The aim of my paper is the understanding of the potential effects of factors that have become the prime cause to disturb the ecological balance in Kashmir and managing risks from them in order to protect the health of the natural environment, and the natural resources that people rely on.*

How did I Conduct an Ecological Risk assessment?

My project mainly dwelled upon the following three phases:

•Phase 1 - Identification of core factors

I gathered information which helped me in determining what, in terms of plants and animals, is at risk and what needs to be protected.

•Phase 2 - Analysis of data

The data, facts, practicality, observations and expertise of locals helped me in the determination of what plants and animals are exposed and to what degree they are exposed, and if that level of exposure is likely or not to cause harmful ecological effects.

•Phase 3 -Sketching Risk characterization maps

After drawing sufficient conclusions from the above two phases, I mapped two major components of risk assessment: risk estimation and risk description. "Risk estimation" combines exposure profiles and its effects. "Risk description" provides information important for interpreting the risk results and identifies a level for harmful effects on the plants and animals of concern.

Scope of my Assessments:

In future, ecological risk assessments can be used to support many types of actions, including the regulation of hazardous waste sites, industrial chemicals, and pesticides; or the management of watersheds or other ecosystems affected by multiple chemical, physical, or biological stressors. My assessments can be used to predict the likelihood of future effects (prospective) or evaluate the likelihood that effects are caused by past exposure to stressors (retrospective). Information from my assessments can be then used by risk managers for follow-up such as communicating to interested parties and the general public, limiting activities related to the ecological stressor, limiting use of a given chemical, or developing a future plan to monitor the activities and life of the ecosystem.

Keywords: *risk estimation, risk assessment, stressors*

1. INTRODUCTION

[Ecological risk assessment has become an essential hotspot in the present environmental conditions in Kashmir, the study of which mainly focuses on the chemical, physical, and biological stressors that damage ecosystem or its components.

Ecological risk assessment has a great significance for making scientific environmental management strategies. In order to mitigate the damage of ecosystem or its parts, and to manage the ecosystem properly, it is necessary to predict the adverse ecological effects and the consequences related with it. This paper summarizes the research strategies, tools and trends of Ecological risk assessment and highlights the areas that need to be further studied. It is pertinent that under the background of urbanization, urban ecological risk should be given more attention.

Ecological risk assessment has a broader scope in its evaluation of risk, often integrating exposure and effect evaluations over many species and biological scales, delineating criteria protective of varying proportions of species in Kashmir.

The factors which are most trending in disturbing the ecological balance of Kashmir are mentioned below;

2. TEMPERATURE AND SALINITY IMPACTS

Beyond the exposure of chemical and nonchemical stressors to organisms, environmental alterations with core pollutants have the potential to alter the toxicokinetics of chemicals that can in turn influence internal exposure sites, concentrations, and durations. Toxicokinetic modifications can lead to changes in organism-level responses and eventually produce population-level impacts. This can be understood by alterations in absorption, distribution, metabolism, and excretion of toxicants. Understanding how water is impacted by different stressors, such as temperature and salinity in aquatic environments, would help to identify mechanisms involved with them and allow risk assessors to make predictions about geographical regions susceptible to these types of interactions and other combinations of climatic changes and toxicant exposures.

Some broad observations can be made regarding potential climate effects on the uptake and disposition of chemical contaminants. For example, it has generally been observed that uptake and elimination of toxicants increase as temperature increases.]

3. PERSISTENT ORGANIC POLLUTANTS

Persistent organic pollutants are problematic in that they can migrate thousands of miles from their original point of release to high-latitude ecosystems. For example, such organic pollutants are found in the water bodies in Kashmir which are not released by the industries established here. This suggests the inherent tendency of these pollutants to contaminate multiple water bodies over a long period of time.

4. UNEVEN TEMPERATURE RISE

Study evidence suggests the increasing primary production of algae from rising temperature and declines in snow cover over the past few years. This might well over time culminate into the transfer of the food chain, thereby leading to a major ecological imbalance.

5. THE HUMAN FACTOR

The construction of permanent habitats in some of the most vulnerable and delicate ecosystems has led to a rapid fall in the inherent floral and faunal species naturally dwelling in that area. This includes the construction of structures in forests, river banks and valleys. The drastic fall in the number of species like "*Hangul*" can be attributed to the human disruption in its natural habitat.]

6. CONCLUSION

Hence, the ultimate aim of Ecological Risk Assessment is to estimate the probability of adverse events from identified environmental stressors and factors. Initially, Ecological Risk Assessment was used to investigate the effects of the release of particular chemical pollutants (toxicants) into the receiving 'environment'. However, Ecological Risk Assessment is now applied more broadly to assess the relative impact potential of multiple 'threats' against measured and/or predicted impacts on environmental values (appropriate & measurable monitoring domains).

Further, risk-reduction strategies can be developed from improved understanding of both the risks posed by specific stressors and of the processes contributing to them. In this context Ecological Risk Assessment plays an important role in best-practice natural resource management based on adaptive management.

REFERENCES

- [1] <http://onlinelibrary.wiley.com/>
- [2] <http://bioscience.oxfordjournals.org/>
- [3] <http://www.sciencedirect.com/>