

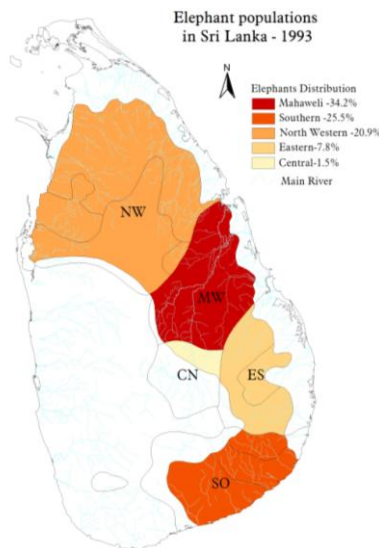
Human Elephant Conflict in Sri Lanka...

In Sri Lanka, human-elephant conflict has been becoming a major problem. The question that we address: "How important are the climate, water availability and river basin management to conflict and coexistence between elephants and people?". We collaborated with the Center for International Earth Science Information Networks (CIESIN), Center for Environmental Research and Conservation (CERC), Mahaweli Authority of Sri Lanka (MASL). Our main objectives of this project were to: (1) Study the relationships between climate and elephant ecology, (2) Develop geospatial databases, (3) Assess long-term scenarios of the responses of habitat and elephant ecology to climate. We identified the climate influences on human elephant conflict in Sri Lanka, and report on work in assessing the impact of climate on human-elephant-conflict in response to requests from the Environment and Forest Conservation Division of the Mahaweli Authority of Sri Lanka. We have also characterized Normalized Difference Vegetation Index (NDVI) data sets and their links to climate.

The Role of Climate in the Human-Elephant Conflict in Sri Lanka

The elephant is the largest land animal in Sri Lanka and 3000-4000 elephants share Sri Lanka with 20 million people. There has been over centuries a conservation ethic that posits coexistence between humans and elephants. However, increased conflicts in the last 14 years have led to the deaths of 1595 elephants and 600 people. Causes for the conflicts between people and wildlife are competitive stresses on land, water and food, ill-advised or non-existent land use policies, and the consequences of conflict particularly civil wars.

While these are major causes for elephant deaths, climate could also influence the conflict through its modulation of drought, floods, vegetation patterns, irrigation and water management, agricultural cultivation in marginal lands. Here, we explicitly explore this linkage with data on elephant deaths from 1990-2003 on a monthly basis and more extensive climate data in Sri Lanka.



Density of Elephants in the five zones of the Sri Lanka



Most elephants belong to clans. Females tend to stick closer to home grounds.

Reference

Zubair, L., J. Chandimala, V. Ralapanawe, U. Tennakoon, M. R. A. Siraj, Z. Yahiya. Evaluation of Climate and Habitat Interactions Affecting the Conservation and Management of Asian Elephants in Southeast Sri Lanka. Project Report: Foundation for Environment, Climate and Technology, Digana Village, August 2011.



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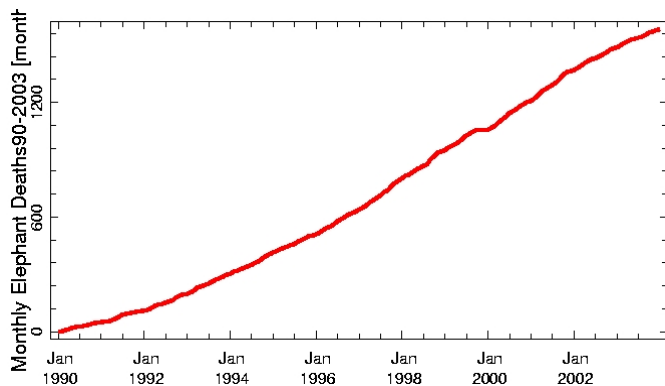
H. Manthirithillake, W.L. Hendawitharana

Partners and Funders

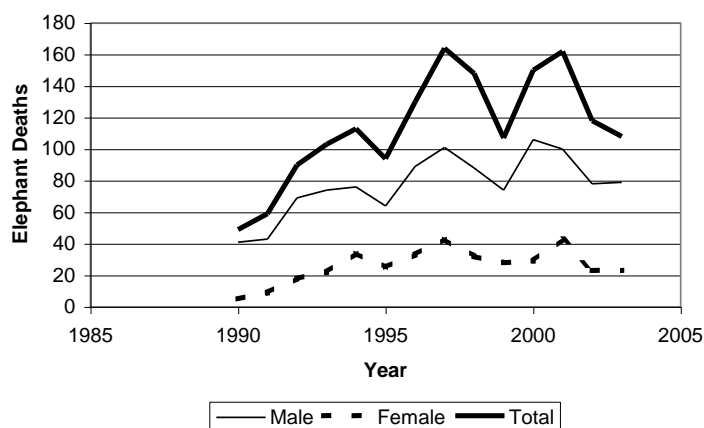
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Analysis

Elephant Death Characteristics

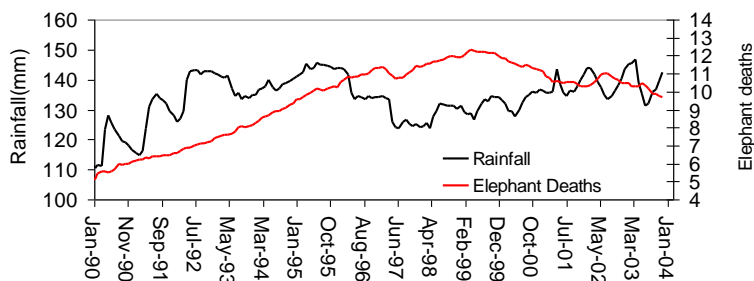


Cumulative losses in Elephants in Sri Lanka (1990-2003). There has been a dramatic rise in elephant deaths which if sustained shall lead to extinction.



Inter-Annual Variation in Elephant Deaths. Variation by gender is shown. Males are being killed at higher rates than females. Males forage farther.

Climate Influences on Elephant Deaths



The long-term trends in elephant deaths and rainfall for the Eastern region estimated by computing running means of 60 months windows centered in the year in question. During periods and particular years in which there was reduced rainfall, the death count was unusually high.

Discussion

Overall, this analysis leads to the following conclusions. While other factors such as land use, the issues of guns and the management of human-elephant conflict are probably significant determinants of human-elephant-conflict, our analysis brings out a clear and robust role of climate even with the short data sets. The climate influence on the elephant deaths is evident in the analysis of the data with a 5 year running average and in the seasonal variations of elephant deaths that coincide with drought peaks in March or follow the months of peak drought in March and August. In addition, inter-annual analysis of the de-trended rainfall and elephant deaths shows that there are statistically significant relationships between drought in the first 7 months of the year and elephant deaths during the simultaneous period and the subsequent period.



An Institute for the Application of Science for Societal Welfare & Environmental Sustainability

Our officers have been working on projects on environment, climate and technologies. We started a Foundation in 2002 and registered it as a non-profit company in 2003. At present, we work in climate adaptation, information technology, communication and capacity building for sustainable development.

Our work is oriented towards developing useable scientific information that can be applied in diverse sectors. We build capacity through education, training, and collaborations.

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