CONTENTS

GENERAL

The effect of illegal small-scale gold mining on stream macro-invertebrate assemblages in the East Usambara Mountains

Abstract

An investigation of the effect of illegal small-scale gold-mining on stream macro-invertebrate assemblages in the East Usambara Mountains was conducted between August 5th and 20th 2013. Macro-invertebrate abundances, species richness and Ephemeroptera, Plecoptera, Trichoptera (EPT) abundances were compared among three river types (semi-natural, restored and active mining) using a Multi Factor ANOVA. We found that macro-invertebrate abundances, overall species richness and EPT (a group susceptible to anthropogenic disturbance) abundances differed among the river types with active mining rivers scoring the lowest results. In addition restored sites showed significantly higher values for these variables than active mining sites, suggesting that restoration (e.g. covering of digging location or afforestation) has a positive effect on stream macro-invertebrate assemblages. Our results also imply that illegal small-scale gold-mining may reduce macro-invertebrate abundance, species richness and EPT abundance, in the East Usambara Mountains.

Patteson Mwagona Chula, Kenya Wildlife Service, Kenya

Evariste Rutebuka, National University of Rwanda, Rwanda

Paul Luis Schmidt Yáñez, Georg August University Göttingen, Germany

2013

Does clothes washing activity in forest streams have an impact on macroinvertebrate biodiversity?

Abstract

Streams and rivers attract human settlements since they provide many different sources of utilisation. This also means that they are greatly impacted in terms of disturbance and pollution. The aim of this study was to investigate the impact of washing activity on invertebrate biodiversity at four washing sites in Amani region, East Usambara Mountains, Tanzania. We assessed variation in species composition (diversity and abundance) between areas above and below the actual washing points. Our results show no significant difference in biodiversity and abundance between any of the sites. This implies that washing activity has no impact on macroinvertebrate biodiversity.

Pete Bacon, University of Nottingham, UK

Hanna Nilsson, Stockholm University, Sweden

Adetayo Okunlola, Nigerian Conservation Foundation, Nigeria

2007

The Amani Butterfly Project: an assessment of its impact on Amani Nature Reserve

Abstract

The Amani Butterfly Project was established in 2002 in an effort to provide local communities with an alternative source of income. The aim of this study was to investigate the consequences of the project for conservation in Amani Nature Reserve. Questionnaires were used to assess changes in income, uses of the forest and community benefits. It is clear that villages involved have increased income per month and have positive views towards the project. However, there have not been any improvements in community conservation of the reserve and continuous monitoring is required.

Hassan A. Boru, African Wildlife Foundation, Kenya

Sophie A Butt, University of Sydney, Australia

Claire M. McDonald, University of Leeds, United Kingdom

2006

The effect of cutting on the floodplain vegetation of Amani, Tanzania

Abstract

The plant community of the floodplain above Amani pond was studied between 15 and 21 September 2003. Various community aspects, principally diversity and richness, were compared between paired cut and uncut quadrants. Family diversity was found to be significantly higher at uncut than cut sites, whilst richness was higher in cut sites. In contrast, species diversity and richness were affected only by distance along the floodplain (presumably due to an unmeasured environmental variable). Similarity between cut and uncut quadrants was low (0.32 with Sorenson's index), which indicates significantly different species composition between cut and uncut sites. This has important implications for the conservation of maximum biodiversity in Amani Nature Reserve: although cutting is illegal, its removal could result in lower plant diversity at Amani floodplain.

Iwona Kolodziejska, University of Warsaw, Poland

Mia Kristersson, University of Lund, Sweden

Kerry Waylen, University of Cambridge, UK

2003

The impact of human activities on floodplain in Amani, East Usambara Mountains, Tanzania

Abstract

This study was carried out to investigate the impact of human activities on a floodplain in Amani, East Usambara Mountains, Tanzania. Fishing for crabs and foraging activities were the two major human activities studied along the floodplain over four days. Locally made traps (mgono) and pond nets were used to catch crabs along the floodplain stream. Number and size (length and width) of crabs both in traps and caught by pond nets were recorded. A non-parametric Mann Whitney U test was carried out to distinguish between the medians and these were found to be significantly different at p <0.0001. The population of crabs in the stream was estimated by using a mark-release-recapture method. Questionnaires were also used in this investigation. The total number of bundles of cattle forage cut per year was estimated from the questionnaires. The weights of five

bundles cut by men from the floodplain were estimated and compared with weights of five bundles we cut. The area cut on the floodplain was determined by relating the surveyed area on a sketch map to its equivalent on a surveyed map of part of the area. Productivity, biomass and turnover rate of the floodplain grassland were estimated. The turnover rate was found to be very large, partly due to some sampling errors. No statistical analysis was possible as only one estimate of number of bundles cut was available, but the turnover rate appears to be naturally high.

Nuriat Tumanye, Islamic University in Uganda, Uganda

Rosemary Matemba, Sokoine University of Agriculture, Tanzania

2003

Pole extraction in the Amani Nature Reserve forests, Tanzania

Abstract

Pole extraction in four Amani Nature Reserve forests were determined. These were Amani West forest, Mbomole forest, Monga forest and Shebomeza forest. Two hundred metre long transects were laid down and within which 4 plots of 30 m by 4 m were made after each 50 m from the edge of the forest. Data on species, age of cutting, availability of the poles in the plot and type of cuts were recorded. The results indicated no linear pattern of cutting intensity with the distance from the forest edge since each forest showed its own pattern. Four species out of sixty tree species recorded were found to be more than 50% of the cutting composition. These were *Mesogyne insignis, Alchornea hirtella, Allanblackia stuhlmanii,* and *Sorondea madagascariensis*, More pole cuts were recorded in diameter class <6.5 cm and very few in the class >12.5 cm except in Monga forest. Most of the cuts were recorded to be old. The study concludes that, cutting intensity does not decrease with the increase in distance from the forest edge; and that there are some species that are mostly cut more than others. The study recommends more research on the forest disturbance to be carried out in Amani Nature reserve forests.

Biruktayet Assefa, Ethiopian Agricultural Research Organization, Ethiopia

Shemdoe Riziki Silas, Sokoine University of Agriculture, Tanzania

2001

Gender participation in natural resource management in the East Usambara Mountains, Tanzania

Abstract

The study was conducted in Kisiwani and Mlesa villages in the East Usambara Mountains, Tanzania. It involved the use of semi-structured interviews alongside visual observations. Ten men and ten women were interviewed in each of the study areas. Results were summarised using percentiles. Observations in the villages show that there are neither women's nor men's groups concerned with natural resources management. The younger age group's rate of forest utilisation differs with gender. Females attest to forest use more than their male counterparts and the products of interest differ between males and females. Firewood is most in demand by both sexes, whereas timber is of interest only to men. Only women collect spices and vegetables from the forest. The recently established Amani Nature Reserve is a very important source of resources for both sexes. In spite of the great role that women play in natural resource use we found that no women groups concerned with environmental issues have been set up in either village. This is considered a set- back for conservation measures. Participatory approach to resource management

with consideration for the affected groups meeting social and economic needs of the community and encouragement of grassroots resource conservation organisations are recommended.

Abdullahi Asimalowo, University of Ibadan, Nigeria

Heidi Lipsanen, University of Turku, Finland

1998

Perception of the local people towards the Amani Nature Reserve: the case for Kisiwani and Mlesa villages

Abstract

The study looked at the perception of local people towards the Amani Nature Reserve with the overall aim of generating information for sustainable participatory management of natural resources in East Usambara. Focus was on Kisiwani and Mlesa villages. Data was obtained through semi-structured interviewing method targeting equal proportions of both sexes and two age groups (<30 and >30). It was found out that the people appreciated the values of the forest, and prefer reduced conservation measures as compared to the current conservation measures (Nature Reserve). It has been recommended their interests be put in place and the people whose land was recovered to forest be compensated.

Jane N. Ndeti, Moi University, Kenya

Polycarp M. Mwima, Makerere University, Uganda

1998

TEA PLANTATIONS

Examination of riverine macro invertebrate riffle assemblages with particular reference to impact of tea plantations

Abstract

Freshwater habitats are under threat globally due to human impacts and are relatively little studied in tropical areas. Therefore studies of biodiversity and the effects of human activities are important. In the present study we examined the macro invertebrate diversity in rivers of the East Usambara Mountains, Tanzania. We then focused on the effects of tea plantations as a form of land use in the catchment of our system. We also found that diversity was lower in the Usambara Mountains compared to the reference tropical site in Brazil. Our most salient finding was that tea had a significant effect on river macro invertebrate biodiversity.

Joseph Daniels, University of Ghana, Ghana

Konrad Wisniewski, University of Warsaw, Poland

Olly van Biervliet, University of Liverpool, United Kingdom

2007

A comparison of tea plantation and forest soil habitats in the East Usambara Mountains

Abstract

An assessment of the effects of tea growing on soil habitat was carried out over a two-week period in the East Usambara Mountains, Amani, Tanzania. The study focuses on the habitat changes that occur in the soil when forest is cleared to make way for tea plantations. Results are given for the comparison of environmental and biological variables between three established tea and primary forest sites. Soils in the forested areas were found to support a greater organic layer depth, lower temperature variability, providing better habitat for microbial and invertebrate fauna. The resulting microbial activity and invertebrate diversity is increased indicating a healthier system. Soil nitrogen content is higher in the tea plantation, owing to continual fertilisation of the tea plantations. In light of the quantifications of the degree of soil habitat alteration that occurs in tea plantations, guidance is given for possible restoration.

Daniel Nuhu, Sokoine University of Agriculture, Tanzania

Colin Minto, Trinity College, Ireland

2003

Tea plantations as a habitat for wild flowers

Abstract

Tea cover, plant cover, species composition, effect of slope, edge effect and presence of *Lantana camara* and *Clidemia hirta* were studied in 4 different tea fields in the East Usambara Mountains in Tanzania. The cover of *Impatiens* species was studied in relation to tea cover and field slope. Twenty-nine plant species were found in the study area but no edge effect could be shown. Tea cover seems to have a negative effect on total plant cover. Fewer plant species and less total plant cover was found on steeper slopes. *Impatiens* cover varied between the studied fields. *C. hirta* was found to be established all over fields, even in dense plantations. *L. camara* could only be seen on some field edges.

Marie Herner, Lund University, Sweden

Hanna Paulomaki, University of Helsinki, Finland

2001
