Understanding
natural processes

Sustainable use
of biodiversity

Information
policy

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BIOTA East Africa, BIOTA Southern Africa and BIOTA West Africa together are BIOTA Africa

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BIOTA East Africa

Biodiversity in conversion

Towards a sustainable use of East African rain forest systems

Assessment of
biodiversity

Understanding
natural processes

Understanding human
use, value and impact

Sustainable use
of biodiversity

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Understanding
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Assessment of
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BIOTA East Africa

BIOTA East Africa network is set up in close co-operation between German and African Institutions. It links a set of thematically and geographically strictly co-ordinated analyses of biodiversity change in the East African rain forests.

The network will above all deliver data, tools and methods designed for biodiversity monitoring, biodiversity regeneration, management plans and recommendations for the reduction of human pressure on East African rain forests. Measures for capacity building will be concluded to allow local scientists and NGO staff to continue without additional assistance. Implementation of developed measures and their validation will be accompanied by considerable efforts in information policy and conducted in close cooperation with local and national authorities.

Since experience on the realisation of management plans for a sustainable use of biodiversity in tropical countries is still insufficient, the knowledge and conclusions derived from BIOTA research will have a strong impact on international research and conservation activities.

The BIOTA East Africa network focusses on five overarching themes:

Assessment of biodiversity Data and tools required for assessment of biodiversity to describe the past and current state of habitats.

Understanding natural processes Descriptions of interactions, of food webs, the role of pollination and of seed dispersal, the processes of recruitment and regeneration, effects of genetic isolation.

Understanding human use, value and impact Documentation of current forest use, survey of use of resources in agriculture and of available technology, analyses of benefits of biodiversity for income.

Sustainable use of biodiversity Monitoring and prediction tools, recommendations for strategies and techniques of alternative uses.

Information policy Information transfer to involve local farmers and para-ecologists to make management plans arrived from BIOTA data available to policy makers.

Assessment of biodiversity in space and time

It is intended to deliver reliable data sets certified by experts on the history of changes and the actual state, composition and extension of Kakamega rain forest habitats and on surrounding rural areas, including an inventory of medicinal forest plants. The current state of long term monitoring sites recommended for future observation will be described.

During the previous periods of field work many samples of animals and plants were collected, lists of species were compiled and the distribution of vegetation types was recorded. It is now necessary to finalize and deliver easy-to-use keys to species (digital and on paper), data bases for access via internet, a field guide for forest visitors (tourists and schools).

Spatial correlation of all information based on existing samples and satellite images will provide the data base for a participatory forest management plan of the Kakamega area. Since the continuation of inventorying and monitoring is desperately desired by our counterparts, a contribution of BIOTA East will be to test and recommend just emerging innovative methods (DNA barcoding and image analyses) to considerably speed-up biodiversity inventorying and monitoring.

Understanding natural processes of change

Hitherto compiled data will be combined in a meta-analysis of biodiversity and ecosystem function. Recommendations for the conservation of habitats will include explanations on the importance of birds and insects for seed dispersal, on the importance of tree diversity for the dynamics of patchiness and diversity in soil, vegetation, and fauna. Data on tree growth and on the regeneration of clearings of different age will help to understand successions, required time and management measures. It is intended to identify insect pests and disease problems of some important indigenous trees in the forest and when cultivated.

Understanding human use, value and impact in space and time

The current state of the agricultural land surrounding the forest will be documented using high-resolution QuickBird satellite imagery. The social and economic needs of the local population will be described to understand the causes of non-sustainable forest use. Improvements for livelihoods around the forest, tools for appropriate land use planning in a participatory way and mechanisms for fair sharing of the resulting benefits will be recommended.

This requires a study of all relevant socio-economic needs of local populations as well at political priorities at regional, national and international levels. There is a great need of mainstreaming economic valuation of forest resources as a tool for decision making in conservation strategies. We will work out models for socio-economical scenarios to evaluate regeneration potential and landscape planning of the agricultural matrix.

Recommendations and measures for sustainable use of biodiversity

Measures for sustainable use include the implementation of management plans for an existing tree nursery, implementation of planting strategies of indigenous trees on farmlands and enrich planting. The use of medicinal plants and of timber trees requires ex-situ conservation of endangered forest plants in Maseno Botanical Garden. Sites for seed collections to maintain genetic potential of tree species will be identified.

A simulation and prediction tool to model rain forest regeneration potential via seed dispersal processes between forest fragments will be prepared. In connection with GIS tools and time series as well as evaluation of socio-economic components, area-specific differences and political priorities, we intend to modify developed management plans according to the area-specific requirements and run equivalent test procedures.

Based on a multi-criteria analysis it is intended to describe how the interests of various stakeholders can be reconciled for sustainable use of forest biodiversity, how local communities' capacity can be enhanced to understand the economic value of forest resources and how in-built incentives for sustainable management can be created. Replicable participatory methods in protection and management of biodiversity will be developed involving communities around protected areas.

National and regional management authorities and stakeholders will take part in joint planning of respective actions and their implementation. The process will be accompanied by monitoring of the effectiveness of selected applications and the subsequent interchange of feedback information between stakeholders, local communities, management authorities and biodiversity researchers.

Information policy at local, national, and international levels

The participation of forest management authorities will be important with respect to the development of management scenarios and the implementation of instruments for a sustainable use of biodiversity. Institutional capacity building is an important measure to enable continuation of initiated long-term efforts and to assure feedback processes about transformation of used instruments. A major goal is autonomous management by East African counterparts.

Key characteristics of the information policy should be compatible with different levels of local and national capacity, needs-driven, created for the mutual benefit of all participants. The information programme includes preparation of illustrated English/Swahili field guides to selected plant/animal groups, documentations of sounds of the forests as well as posters and booklets on forest diversity, as well as compilation of a library with publications relevant for the scope of BIOTA East. These resources will be made available e.g. for visitors and schools via an information centre that should be set up.

Further activities include seminars to create public awareness, to explain strategies for successful conservation and development of indigenous tree species, implementation of a geodata viewing and processing unit in close vicinity of the forest, allocation of digital species data, participatory elaboration of District Development Plan with integration of biodiversity and Forest Management Plan, development of a report to the Ministry of Environment and participation in the presentation of a BIOTA exhibition.