Bioinvasion and Global Environmental Governance: The Transnational Policy Network on Invasive Alien Species

Mozambique's Actions on IAS

Description[1]

Mozambique, officially the Republic of Mozambique, is a country in southeastern Africa bordered by the Indian Ocean to the east, Tanzania to the north, Malawi and Zambia to the northwest, Zimbabwe to the west and Swaziland and South Africa to the southwest. Geographically, the country is divided into two topographical regions by the Zambezi River, with hills and plateaus to the north and lowlands to the south. Mozambique has a tropical climate with two seasons, a wet season from October to March and a dry season from April to September.

Almost five centuries as a Portuguese colony came to a close with independence in 1975. Large-scale emigration, economic dependence on South Africa, a severe drought, and a prolonged civil war hindered the country's development until the mid 1990's. The ruling Front for the Liberation of Mozambique (FRELIMO) party formally abandoned Marxism in 1989, and a new constitution the following year provided for multiparty elections and a free market economy. Although reforms since 1994 have improved the economic situation of many, the majority of the 21 million population remains below the poverty line. Subsistence agriculture continues to employ the vast majority of the country's work force. Mozambique is a member of the Community of Portuguese Language Countries and the Commonwealth of Nations, and an observer of the Francophonie.

Overview of Biodiversity

Mozambique possesses sites of high importance in regard to biodiversity such as the Gorongosa Mountains, the Great Inselberg Archipelago of Quirimbas in Northern Mozambique, and the Chimanimani Massif. According to national estimates, Mozambique is home to around 5,500 plants, 581 birds, and 205 mammals.

- Convention on Biological Diversity's Country Profile on Mozambique
- Earth Trends Country Profile on Biodiversity and Protected Areas

Legislation relating to IAS[4]

- Forest and Wildlife Act (No. 10/1999)
- Land Act (No. 19/97)
- Environmental Act (No. 20/1997)

Government Agencies/Departments/Ministries dealing with IAS

- Ministério da Agricultura e Pescas [Ministry of Agriculture and Fisheries][3]
    - Direcção Nacional de Extensão Rural (DNER)

- Ministério para a Coordenaçao da Acçao Ambiental [Ministry for Coordination of Environmental Action]

Major Invasive Alien Species[2]

Azolla filiculoides (aquatic plant)[5]
Azadirachta indica (tree)[5]
Casuarina sp. (tree)[5]
Corvus splendens (bird)
Cyprinus carpio (fish)
Eichornia sp. (aquatic plant)[5]
Eichhornia crassipes (aquatic plant)
Leucaena leucocephala (tree)[5]
Ligustrum lucidum (tree)
Micropterus salmoides (fish)
Monomorium destructor (insect)
Salvinia sp. (aquatic plant)[5]
Verbena brasiliensis (herb)
Vibrio cholerae (micro-organism)

Native Species Exported/Introduced to Non-Native Environments[2]

Achatina fulica (mollusc)
Columba livia (bird)
Oreochromis mossambicus (fish)
Panicum repens (grass)
Pennisetum ciliare (grass)
Pennisetum polystachion (grass)
Senecio inaequidens (shrub)
Urochloa maxima (grass)

Table 1 Actions to prevent, detect and manage IAS categorized into three themes: biodiversity, human health, and economic

Note: Actions (such as projects, publications and programs) are classified according to the most obvious theme but may also fit into the dimensions of another.

Theme	Action
Biodiversity	• Strategy and Action Plan for the Conservation of Biological Diversity in Mozambique: Sustainable Development through Conservation of Biodiversity 2003-2010. 2010 Goals include - Identification and knowledge of invasive species with the greatest impact on biodiversity. - Establishment of measures and strategies for the eradication of the main invasive species. - Reduction of the introduction of new species. - Adoption of tariff and non-tariff borders that inhibit/limit the importing of invasive species and GMOs. Priority Activities include - Priority 12: Control and knowledge of GMOs and of potential invasive species capable of attacking biodiversity. • Preliminary survey on the alien invasive species (AIS) in Mozambique produced the following conclusions and recommendations:[5] 1. Many alien species have been introduced into Mozambique for different purposes namely commercial (Eucalyptus plantations), agriculture, livestocks, agrofrorestry (*Leucaena leucocephala*,

	Azadirachta indica etc.), ornamental, pet (Corvus corvus) and even for conservation (*Casuarina* sp. plantations along the coast line. Some have invaded river basins as Incomati river (*Salvinia* sp. and *Eichornia* sp. leading to reduction in water availability which is serious problem in Mozambique. 2. The proposed targets includes: - Removal of alien species in conservation areas - Identification of alien invasive species that have greater impact on biodiversity - Establishment of me asures and strategies for eradication of the main alien invasive species - Reduction of the introduction of new alien invasive species into Mozambique - Development of accessible database to the users. 3. Indicators: - Number of alien invasive species eradication programmes - Increasing in number of actions to combat erosion and degraded areas with native species - Number of incentive measures on AIS in place or in development - Number of memorandum of understanding or workshop on AIS undertaken - Catalogues on IAS developed - Management, evaluation and monitoring measures in place - Criteria for monitoring established; and - Research carried out or under development • Measures to prevent the introduction of, control or eradicate, alien species include public awareness on the risks of the introduction of alien invasive species which is currently being undertaken.[5] • At the SADC level, a regional biodiversity support program is underway, which includes alien invasive species control.[5] • The Ministry for Coordination of Environmental Action lists the Members of the Network of Environmental Education[6] o IUCN o WWF Mozambique Program o Agricultura Biológica, Biodiversidade e Desenvolvimento Sustentável (ABIODES) [Organic Farming, Biodiversity and Sustainable Development] o Centro Terra Viva (CTV) [The Earth Living Center] o Associação para Peservação do Ambient (LIVANINGO) [Association for Preserving the Environment] o Fórum Empresarial para Meio Ambiente (FEMA) [Business Forum for the Environment]
Human health	• See case study
Economic	• The Mozambique government has conducted a survey in the agriculture sector which has concluded there is no financial capacity

	to meet the demand related to the control of alien invasive species.[5] • Mozambique's import prohibitions include seeds, infectious substances, and live animals, insects and snails.[8]

Case Study

Post-flood Epidemics of Infectious Diseases in Mozambique[8]

Hisayoshi Kondo, Norimasa Seo, Tadashi Yasuda, Masahiro Hasizume, Yuichi Koido, Norifumi Ninomiya, and Yasuhiro Yamamoto.
Prehospital and Disaster Medicine (2002)

Abstract
INTRODUCTION: The types of medical care required during a disaster are determined by variables such as the cycle and nature of the disaster. Following a flood, there exists the potential for transmission of water-borne diseases and for increased levels of endemic illnesses such as vector-borne diseases. Therefore, consideration of the situation of infectious diseases must be addressed when providing relief. The Japan Disaster Relief (JDR) Medical Team was sent to Mozambique where a flood disaster occurred during January to March 2000. The team operated in the Hokwe area of the State of Gaza, in the mid-south of Mozambique where damage was the greatest.
METHODS: An epidemiological study was conducted. Information was collected from medical records by abstracting data at local medical facilities, interviewing in habitants and evacuees, and conducting analyses of water. RESULTS: A total of 2,611 patients received medical care during the nine days. Infectious diseases were detected in 85% of all of patients, predominantly malaria, respiratory infectious diseases, and diarrhea. There was no outbreak of cholera or dysentery. Self-reports of the level of health decreased among the flood victims after the event. The incidence of malaria increased by four to five times over non-disaster periods, and the quality of drinking water deteriorated after the event.
CONCLUSIONS: Both the number of patients and the incidence of endemic infectious diseases, such as malaria and diarrhea, increased following the flood. Also, there was a heightening of risk factors for infectious diseases such as an increase in population, deterioration of physical strength due to the shortage of food and the temporary living conditions for safety purposes, and turbid degeneration of drinking water. These findings support the hypotheses that there exists the potential for the increased transmission of water borne diseases and that there occurs increased levels of endemic illnesses during the post-flood period.

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