

THE STATUS AND DISTRIBUTION OF FRESHWATER BIODIVERSITY IN SOUTHERN AFRICA

W.R.T. Darwall, K.G. Smith, D. Tweddle and P. Skelton



SOUTHERN
AFRICA



The IUCN Red List of Threatened Species™ – Regional Assessment

Executive Summary

Biodiversity within inland water ecosystems in southern Africa is both highly diverse and of great regional importance to livelihoods and economies. However, development activities are not always compatible with the conservation of this diversity and it is poorly represented within the development planning process. One of the main reasons cited for inadequate representation of biodiversity is a lack of readily available information on the status and distribution of inland water taxa. In response to this need for information, the IUCN Species Programme, in collaboration with the South Africa Institute for Aquatic Biodiversity (SAIAB) and the South African National Biodiversity Institute (SANBI) conducted a regional assessment of the status and distribution of 1,279 taxa of freshwater fishes, molluscs, odonates, crabs, and selected families of aquatic plants from across southern Africa. In the process of the study, which is based on the collation and analysis of existing information, regional experts from five of these countries were trained in biodiversity assessment methods, including application of the IUCN Red List Categories and Criteria and species mapping using GIS software. Distribution ranges have been mapped for the majority of species so providing an important tool for application to the conservation and development planning processes. The full dataset, including all species distribution files (GIS shape files), is freely available in the CD accompanying this report and through the IUCN Red List website (www.iucnredlist.org).

Three key centres of species diversity identified are: (i) the upper Zambezi at the confluence of the upper Zambezi, Kwando and Chobe rivers above the Victoria Falls, (ii) the Komati and Crocodile river tributaries of the Incomati system in Mpumalanga, South Africa, and (iii) the Mbuluzi river basin, also in Mpumalanga, South Africa and in Swaziland. The combined diversity of fishes, molluscs, odonates, crabs and aquatic plants is exceptionally high in these three areas. A network of river and lake basins are identified as candidate Key Biodiversity Areas (KBAs) most important for the protection of threatened and restricted range species. Ten of these sites are proposed as Alliance for Zero Extinction (AZE) sites holding Critically Endangered or Endangered species in most urgent need of conservation action at the site scale. These proposed AZE sites should form the focus of the most immediate conservation actions if species extinctions are to be prevented. Levels of regional endemism are high, particularly in many of South Africa's coastal drainages, in the Kunene and Kwanza rivers on the west coast of Angola, and also in the Rovuma and Pungwe/Buzi systems on the east coast of Mozambique.

Around 7% of all species assessed are regionally threatened according to IUCN Red List Categories and Criteria. This level of threat may appear low relative to other taxonomic groups but, following comparison with similar studies in other parts of the world, the level of threat is predicted to increase dramatically unless the ecological requirements of freshwater species are given much greater consideration in future development planning, in particular for development of water resources such as for improved water supply, irrigation and provision of hydro-electric power. Major threats are identified as loss and degradation of habitat, in particular from sedimentation due to deforestation and eutrophication, unsustainable levels of water extraction, and the introduction of alien invasive species. The majority of threatened species are found in South Africa, largely reflecting the greater levels of development activity here when compared to other countries in the region. The data set provided here provides a great opportunity for helping development to proceed while minimizing or mitigating for impacts to freshwater biodiversity.

Inland waters throughout the region are poorly represented within the existing protected areas network which is largely designed for protection of terrestrial ecosystems. Future efforts must take account of the upstream and downstream connectivity in freshwater ecosystems. For example, it is recommended that conservation efforts focus on the protection of upper catchment areas, provision of adequate environmental flows, and the inclusion of rivers within protected areas rather than as the boundary markers for protected areas. Integrated river basin management is recommended along with the initiation of additional river/lake basin authorities.

The results of this assessment are to be merged with similar studies being conducted by this project for all other regions of Africa to provide a baseline of the status and distribution of freshwater biodiversity throughout all of Africa. This information source, which will be made freely and widely available, will provide the essential information, currently lacking in many places, to help conservation and development planning proceed in a manner that takes full account of the requirements of freshwater species.

Finally, it is most important that the findings and the data compiled here are made available to the relevant decision makers and stakeholders in a format that can be easily understood and readily integrated within the decision making process. With this in mind a number of

case studies are running as a key component of the project to develop a series of “Good Practice Guidelines” for the integration of biodiversity information within the environmental and development planning processes.

The key messages from this assessment are:

- The inland waters of southern Africa support a high diversity of aquatic species with high levels of endemism. Many of these species provide direct (e.g. fisheries) and indirect (e.g. water purification) benefits to people. The conservation of these species is most important to the livelihoods and economies of the regions’ people.
- Current levels of threat across the region are relatively low with 7% of species threatened. However, predicted future levels of threat, in particular due to development of water resources, are very high. The level of threat to species in South Africa is higher than in other countries. Steps will need to be taken to minimize or mitigate for predicted impacts to the regions’ freshwater species.
- Data on the distributions, conservation status, and ecology of all 762 known species of fishes, molluscs, odonates, crabs, and 517 selected species of aquatic plants are now freely available through this project and the IUCN Red List website (<http://www.iucnredlist.org/>) to inform conservation and development planners.
- The current network of protected areas is not designed for protection of freshwater species with many falling outside of any protected area. Future protected areas must be designed for the effective conservation of freshwater species.
- The data made available through this assessment must be integrated within the decision-making processes in planning for the conservation and development of inland water resources. Lack of available information should no longer be given as a reason for inadequate consideration for development impacts to freshwater species.
- Species information remains very limited for many parts of the region with Angola and Mozambique, in particular, identified as priorities for future field survey. Information on the status and distribution of aquatic plants needs to be greatly improved throughout the region.

IUCN – The Species Survival Commission

The Species Survival Commission (SSC) is the largest of IUCN's six volunteer commissions with a global membership of 8,000 experts. SSC advises IUCN and its members on the wide range of technical and scientific aspects of species conservation and is dedicated to securing a future for biodiversity. SSC has significant input into the international agreements dealing with biodiversity conservation. Web: www.iucn.org/themes/ssc

IUCN – Species Programme

The IUCN Species Programme supports the activities of the IUCN Species Survival Commission and individual Specialist Groups, as well as implementing global species conservation initiatives. It is an integral part of the IUCN Secretariat and is managed from IUCN's international headquarters in Gland, Switzerland. The Species Programme includes a number of technical units covering Species Trade and Use, The IUCN Red List, Freshwater Biodiversity Assessment Initiative (all located in Cambridge, UK), and the Global Biodiversity Assessment Initiative (located in Washington DC, USA).



THE IUCN RED LIST
OF THREATENED SPECIES™

IUCN

Rue Mauverney 28
CH-1196 Gland
Switzerland
Tel: + 41 22 999 0000
Fax: + 41 22 999 0015
www.iucn.org/redlist
www.iucnredlist.org

