

## The Status and Distribution of Freshwater Biodiversity in Western Africa



*Afrithelphusa monodosa*. Endangered. © Piotr Naskrecki

Biodiversity within inland water ecosystems in western Africa is both highly diverse and of great regional importance to livelihoods and economies. However, western Africa is currently undergoing huge levels of development, with a population which is projected to double by 2050 to over 600 million people. 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 Wetlands International conducted a regional assessment of the status and distribution of 1,395 taxa of freshwater fishes, molluscs, odonates, crabs, and selected families of aquatic plants from across western Africa.

## Summary of Key Findings

- The inland waters of western 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.
- More than 14% of species across the region are currently threatened and future levels of threat are expected to rise significantly due to a growing population and the corresponding demand of natural resources.
- Data on the distributions, conservation status, and ecology of all 1,395 known species of fishes, molluscs, odonates, crabs and selected aquatic plants are now freely available through this project and the IUCN Red List website to inform conservation and development planners.
- 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 species within the region with between 10% (fishes) and 22% (crabs) assessed as Data Deficient. Information on the status and distribution of aquatic plants needs to be greatly improved throughout the region.

## Major Threats

Habitat loss primarily due to deforestation, agriculture, and to a lesser extent mining, impacts over 85% of the regionally threatened species and nearly half of all species in the region. Water pollution impacts over 55% of threatened species, with agriculture and the resulting sedimentation identified as the main causes along with commercial/industrial activities (including mining). Only 19% of species from these taxonomic groups have no current threat identified, and 8% of the threatened species also have no current threat identified. However, these species will be listed as threatened due to future threats – for example, a dam may be planned to be constructed upstream of the rapids in which a species survives. For 27% of the species threats are potentially present but there is insufficient information available to be sure (classified as “unknown”).

## Conclusions and Recommendations

### Conservation priorities for the region

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The results show that western Africa supports a high diversity of freshwater species, of which a significant proportion is threatened. As development increases across the region the status of

western Africa's freshwater biodiversity will worsen unless successful conservation measures can be undertaken.

An immediate priority is to implement conservation actions in the basins that have been identified to contain exceptional levels of species diversity and those containing high levels of threatened species. The basins identified are:

- the southern coastal area of Guinea;
- the lower river Jong in Sierra Leone;
- Ebrié Lagoon in Côte d'Ivoire;
- lower Ogun and Oueme rivers and their coastal lagoons in Benin, and;
- western Nigeria and the Niger Delta to the lower Cross river in southern Nigeria.

These actions need to address the downstream impacts of the key threats, such as agricultural and mining pollution and deforestation often leading to increased sedimentation. If this situation continues along current trends some species will become extirpated from catchments and may become extinct altogether. Ecosystem level consequences of the loss of such species are poorly understood, as are the knock on effects to the services they provide to human populations. It is often the poorest communities that rely most heavily upon freshwater resources, for example, as a protein source (e.g. the local crab fisheries in Mali), for building materials, and for income when subsistence harvest surpluses are sold. Consequently, this poorest section of the community, which has few alternative livelihood options, suffers the most when species are lost or ecosystems are degraded.

### **Environmental Impact Assessments (EIA)**

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EIAs, when correctly undertaken, are a valuable tool for informing the development planning process, particularly where threatened or restricted range species are expected to be found. This report (and the IUCN Red List website) provides data useful to the initial planning stages of EIAs, as the expected species composition of every sub-catchment in the region can be identified, along with information on species ecology, Red List status, threats and utilisation. It should be noted, however, that the spatial data presented are, in most cases, of too low resolution to replace the need for additional field surveys as required for a fully comprehensive EIA.

### **Protected Areas**

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Protected Areas need to be specifically designed for the protection of freshwater species, particularly those that have restricted ranges or limited numbers of congregation, migration or breeding sites. Design must take good account of the high connectivity within freshwater systems if the Protected Areas are to be effective. For example, the success of a protected area established for freshwater species conservation may be greatly reduced if upstream activities some distance outside the Protected Area boundaries, such as excessive water withdrawal or regulation, may significantly alter the downstream flow regime within the protected area to the detriment of those species being protected. A good understanding of the threats and ecology of the target species, as provided here, is often essential for optimising the design of the Protected Area.

## **Integrated Water Resource Management (IWRM) and Environmental Flows**

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In western Africa there are many transboundary rivers (e.g. the Niger river basin alone passes through nine countries), and as the region continues to develop and populations grow the demand for water in neighbouring countries is going to increase. There is therefore a need for IWRM to be adopted, along with other similar management approaches, such as Environmental Flows. IWRM aims to manage entire river catchments (both water and land) so that the economic and social benefits are maximised while maintaining ecosystem functions (see the Global Water Partnership Toolbox for more information on IWRM and case studies ([www.gwptoolbox.org](http://www.gwptoolbox.org))). Environmental Flows, a component part of IWRM, is a concept based on the understanding that a river's flow regime is critical to the maintenance of a functioning wetland ecosystem. The approach aims to find a balance between the quantity, quality and timing of water flows required to sustain freshwater and estuarine ecosystems, and the water needs of the associated human population. For example, using this approach, the natural flow regime of a river may be maintained or restored (such as through the controlled opening and closing of dams) to allow target species reliant on seasonal fluctuations to be maintained.

## **Filling the information gaps**

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There are a large number of Data Deficient species in the region, with between 10% (fishes) and 22% (crabs) of species falling into this category. Further research and survey work are desperately needed to gather more information on these species' distributions, taxonomy, ecology and their utilisation and threats. Findings from future field surveys will undoubtedly uncover more threatened species, and will likely add to the growing body of evidence that freshwater biodiversity has great value to local livelihoods.

In conclusion, we hope that the information provided through this assessment will be taken up by the key stakeholders in freshwater ecosystems throughout western Africa and will be integrated in the decision making processes for environmental and development planning in wetland ecosystems. In this way, we hope that the future impacts of development actions affecting wetland ecosystems can be minimized and mitigated to the benefit of freshwater species and those people who rely on freshwater species for their livelihoods and pleasure.