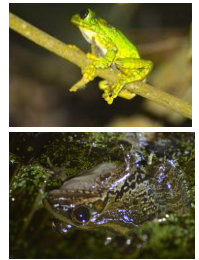


PROJECT REPORT: Conservation initiative for endangered *Churamiti maridadi*, Tanzania



Conserving *Churamiti maridadi* (Toad) Through Habitat Restoration, Research, Community Engagement, and Policy Strengthening in Mamiwa-Kisara Forest Reserve, Tanzania

Executive Summary

The project was implemented in Mamiwa-Kisara Forest Reserve, Tanzania, to safeguard the critically endangered toad species *Churamiti maridadi* through habitat restoration, ecological research, community engagement, policy advocacy, capacity building, and dissemination of conservation information. The project addressed major threats to the species and its habitat, including habitat degradation, unsustainable resource extraction, agricultural encroachment, and limited public awareness of its conservation importance. Comprehensive field surveys were conducted throughout the reserve to assess the population status, distribution, and ecological requirements of *C. maridadi*. Although the target species was not detected during the surveys, extensive biodiversity assessments documented several toad species, confirming the exceptional conservation value of Mamiwa-Kisara Forest Reserve and highlighting the urgency of continued monitoring and conservation interventions.

To improve ecosystem integrity, habitat restoration activities were implemented in degraded forest areas through the planting of 612 native tree seedlings, invasive species control, and assisted natural regeneration. The project actively engaged 12 villages in conservation actions and trained 113 participants, including local community members, forest rangers, and conservation groups, in biodiversity monitoring, habitat restoration, forest protection, and sustainable land-use practices. These efforts enhanced local conservation capacity and promoted community stewardship of natural resources. The project also strengthened collaboration among government authorities, local communities, and conservation stakeholders, contributing to improved forest management and enhanced protection of threatened species and critical habitats. Project findings and conservation messages were disseminated through stakeholder meetings, technical reports, educational materials, social media platforms, and scientific communications. Overall, the project made a significant contribution to biodiversity conservation by restoring degraded habitats, building local conservation capacity, strengthening stakeholder partnerships, and generating valuable baseline information to guide future conservation actions in Mamiwa-Kisara Forest Reserve.

1. Introduction

Mamiwa-Kisara Forest Reserve represents one of Tanzania's important biodiversity-rich forest ecosystems, supporting numerous endemic, rare, and threatened species. The reserve faces increasing pressures from agricultural

expansion, illegal harvesting of forest products, uncontrolled fires, and climate-related changes that threaten ecosystem integrity. *Churamiti maridadi* is a critically endangered toad species believed to occur within the Eastern Arc and Coastal Forest biodiversity hotspots. Due to limited information regarding its current distribution, population status, and ecological requirements, urgent conservation actions were necessary to prevent further decline and possible extinction. This project was developed to address these challenges through integrated conservation approaches involving scientific research, habitat restoration, community participation, policy support, and capacity building.

Project Objectives

The project aimed to:

1. Protect and restore critical habitat for *C. maridadi* within Mamiwa-Kisara Forest Reserve.
2. Assess and monitor population size, distribution, and ecological requirements of *C. maridadi*.
3. Promote sustainable land-use practices and provide alternative livelihood opportunities for local communities.
4. Strengthen conservation policies and legal protection mechanisms for *C. maridadi* and its habitat.
5. Train forest rangers and community members in habitat restoration, biodiversity monitoring, and sustainable conservation practices.
6. Disseminate project findings and conservation messages through meetings, publications, reports, and social media platforms.

Methodology

3.1 Biodiversity surveys

Systematic field surveys were conducted across different habitat types within Mamiwa-Kisara Forest Reserve. Transect walks, vegetation plots, opportunistic observations, and habitat assessments were used to search for *C. maridadi* and document associated biodiversity.

3.2 Habitat assessment

Habitat condition assessments evaluated vegetation structure, regeneration status, human disturbances, and ecological integrity of forest habitats.

3.3 Restoration activities

Degraded forest areas were identified and restored through:

- Native tree planting.
- Assisted natural regeneration.
- Removal of invasive species.
- Community-led restoration campaigns.

3.4 Community engagement

Community meetings, awareness campaigns, and participatory workshops were conducted to promote conservation awareness and sustainable resource management.

3.5 Capacity building

Training sessions targeted forest rangers, village environmental committees, youth groups, and community conservation volunteers.

Results and achievements

Objective 1: Habitat restoration

Achievements

- Degraded forest areas within Mamiwa-Kisara Forest Reserve were identified and prioritized for restoration interventions.
- A total of 612 native tree seedlings were planted in selected restoration sites to enhance habitat recovery and improve forest structure.
- Assisted natural regeneration was implemented in degraded areas, promoting natural forest recovery and increasing vegetation cover.
- Communities from 12 villages actively participated in tree planting campaigns and habitat restoration activities, strengthening local ownership of conservation initiatives.
- Awareness-raising activities and increased forest patrols contributed to reducing threats such as illegal logging, unsustainable resource extraction, and habitat degradation.



Figure 1. Restoration activities conducted in Mamiwa-Kisara Forest Reserve

Outcomes

- Improved habitat quality and increased forest connectivity across restored areas.
- Enhanced ecological resilience and recovery of the forest ecosystem through restoration and regeneration efforts.
- Increased participation and commitment of local communities in habitat conservation and sustainable natural resource management.
- Strengthened protection of critical habitats, providing a more suitable environment for biodiversity conservation and the potential recovery of threatened species, including *C. maridadi*.

Objective 2: Assessing and monitoring population status and ecological requirements

Achievements and survey findings

- Extensive biodiversity and habitat surveys were conducted throughout Mamiwa-Kisara Forest Reserve to assess the population status, distribution, and ecological requirements of *C. maridadi*.
- Although *C. maridadi* was not detected during the survey period, important ecological and conservation information was generated.
- Potential habitat areas suitable for supporting *C. maridadi* were identified and mapped, providing valuable guidance for future monitoring and conservation efforts.
- Habitat characteristics associated with the potential occurrence of the species were documented.
- Several species of amphibia, for instance, *Nectophrynoides Laticeps*, *Nectophrynoides paulae*, *Arthroleptis mamiwakisaraensis*, *Xenopus cf. victorianus*, *Leptopelis natalensis*, *Hyperous ukaguruensis*, *Probreviceps durostris*, *Afrixalus uluguensis*, and *Callulina stanleyi*, were recorded within the reserve.
- Biodiversity assessments confirmed that Mamiwa-Kisara Forest Reserve remains an important refuge for rare and threatened species.

Interpretation

The absence of *C. maridadi* during the surveys may indicate an extremely low population size, a highly restricted distribution, local population decline, or the need for additional surveys during different seasons and in adjacent forest fragments. These findings highlight the challenges associated with locating and conserving rare endemic species.



Figure 2. Shows some of the areas surveyed for *C. maridadi* population surveys in Mamiwa-Kisara Forest Reserve



Figure 3. Photographs from field surveys showing the research team's campsite, team members conducting nocturnal surveys at *C. maridadi* breeding ponds, and representative frog and toad species recorded during the study.

Outcomes and conservation significance

- Comprehensive baseline data on biodiversity, habitat conditions, and species distribution were generated to support future conservation planning.
- Potential habitats for *C. maridadi* were identified and prioritized for continued monitoring and protection.
- The documentation of threatened and conservation-priority species reinforced the ecological importance of Mamiwa-Kisara Forest Reserve.
- The findings underscore the urgent need for continued monitoring, habitat protection, and expanded surveys across the broader landscape to improve understanding of *C. maridadi* and support its long-term conservation

Objective 3: Promoting sustainable land-use practices and alternative livelihoods

Activities implemented

- Community awareness programs and workshops were conducted to promote sustainable land management and conservation of natural resources.
- Training sessions and demonstrations on sustainable resource-use practices, including agroforestry and environmentally friendly land-use approaches, were provided to local communities.
- Conservation-compatible livelihood options and income-generating activities were introduced to reduce pressure on forest resources and improve household well-being.
- Environmentally sustainable livelihood practices were promoted to encourage long-term community participation in conservation efforts.

Outcomes

- Increased community awareness and understanding of sustainable land-use and natural resource management practices.
- Reduced dependence on forest resources through the adoption of alternative livelihood opportunities.
- Improved community support for forest conservation and habitat protection initiatives.
- Enhanced household resilience, livelihood diversification, and capacity to balance economic needs with environmental sustainability.
- Strengthened integration of conservation objectives into local development and land-use practices.

Objective 4: Strengthening conservation policies

Activities implemented

- Stakeholder consultations were conducted involving forest managers, village leaders, local communities, and government authorities to discuss conservation challenges and opportunities within Mamiwa-Kisara Forest Reserve.
- Discussions focused on improving forest governance, strengthening law enforcement, enhancing habitat protection, and promoting sustainable management of natural resources.
- Collaboration between local communities and forest management authorities was strengthened to support effective conservation actions.
- Conservation recommendations were developed to improve the protection of threatened species, critical habitats, and overall biodiversity within the reserve.



Figure 4. Stakeholder consultations

Outcomes

- Improved collaboration and coordination among conservation stakeholders, including communities, forest managers, and government agencies.
- Increased recognition of Mamiwa-Kisara Forest Reserve as a priority area for biodiversity conservation and habitat restoration.
- Enhanced support for strengthened habitat protection measures and sustainable forest management practices.
- Greater integration of biodiversity conservation objectives into local planning and decision-making processes.

- Established a stronger foundation for long-term conservation governance and protection of threatened species and ecosystems.

Objective 5: Capacity building and training

Training conducted

- A total of 113 participants, including forest rangers, community members, and local conservation groups, received practical training to strengthen conservation capacity within and around Mamiwa-Kisara Forest Reserve.
- Training covered key areas including biodiversity monitoring techniques, species identification, habitat restoration methods, data collection and reporting, and community-based conservation approaches.
- Participants gained hands-on experience in monitoring forest ecosystems, assessing biodiversity, and implementing habitat restoration activities.

Outcomes

- Increased technical knowledge and conservation skills among forest managers, rangers, and community members.
- Improved biodiversity monitoring, data collection, and reporting systems to support informed conservation decision-making.
- Strengthened local stewardship and ownership of forest resources through enhanced community involvement in conservation activities.
- Increased community participation in habitat restoration, biodiversity protection, and sustainable natural resource management.
- Established a stronger foundation for long-term conservation efforts through the development of local conservation expertise and leadership.



Figure 5. Capacity building

Objective 6: Dissemination of results

Dissemination activities

- Project results and conservation messages were widely disseminated through community feedback meetings, stakeholder workshops, technical reports, educational materials, awareness campaigns, and social media platforms.
- Findings were presented to conservation agencies, local authorities, forest managers, community leaders, and other key stakeholders to promote informed decision-making and collaborative conservation action.
- Educational and awareness materials were developed and distributed to enhance understanding of biodiversity conservation, habitat restoration, and the importance of protecting threatened species and ecosystems within Mamiwa-Kisara Forest Reserve.
- Social media platforms were utilized to increase public awareness and expand the reach of project achievements and conservation messages.



Figure 6. Dissemination of results

Outcomes

- Increased awareness and understanding of biodiversity conservation issues among local communities, stakeholders, and the wider public.
- Improved information sharing, communication, and collaboration among conservation stakeholders.
- Greater public engagement and participation in conservation initiatives and habitat protection efforts.
- Enhanced visibility and recognition of conservation activities undertaken in Mamiwa-Kisara Forest Reserve.
- Strengthened support for long-term conservation actions through effective dissemination of project findings, lessons learned, and best practices.

Project impact

The project generated significant conservation impacts despite the non-detection of *C. maridadi* during field surveys. Through habitat restoration, community engagement, capacity building, and stakeholder collaboration, the project contributed substantially to the conservation of biodiversity within Mamiwa-Kisara Forest Reserve. Key achievements included the restoration of degraded habitats through native tree planting and assisted natural regeneration, strengthening local conservation capacity through the training of 113 participants, and active engagement of communities from 12 villages in conservation activities. The project also increased awareness of threatened species conservation and sustainable natural resource management among local stakeholders.

Table 1. Indicator of project impact

Indicator	Achievement
Native tree seedlings planted	612
People trained	113
Villages engaged	12
Forest reserve targeted	Mamiwa-Kisara Forest Reserve
Biodiversity surveys conducted	Successfully completed
Stakeholder meetings conducted	Successfully completed
Awareness campaigns	Successfully completed
Habitat restoration activities	Successfully completed

Major impacts included improved habitat quality within priority restoration sites, enhanced ecological resilience of the forest ecosystem, strengthened conservation capacity among forest rangers and community members, and improved collaboration among government authorities, local communities, and conservation organizations. In addition, the project generated valuable

biodiversity baseline data and documented several threatened and conservation-priority species, confirming the high conservation value of Mamiwa-Kisara Forest Reserve. The information generated provides an important foundation for future monitoring, research, and conservation planning. Overall, the project improved the long-term prospects for forest conservation and biodiversity protection within the reserve while highlighting the urgent need for continued investment in biodiversity surveys, habitat restoration, and management interventions to prevent the potential extinction of highly threatened species such as *C. maridadi*.

Challenges encountered and mitigation measures

Several challenges were experienced during project implementation. These included difficult terrain in some survey areas, seasonal weather conditions that affected accessibility, limited historical information on the distribution of *C. maridadi*, and the non-detection of the target species despite extensive field surveys. The non-detection of *C. maridadi* represented the most significant challenge and underscores the possibility of an extremely small population size, a highly restricted distribution, or local population decline. This finding highlights the urgent need for continued monitoring, expanded surveys across adjacent forest fragments, and assessments during different seasons to improve the likelihood of detecting the species. To address these challenges, the project team adopted adaptive planning approaches, strengthened collaboration with local stakeholders and forest managers, and expanded survey efforts to cover a wider range of habitats. Despite these constraints, the project successfully generated valuable biodiversity information, strengthened conservation capacity, and provided important recommendations to guide future conservation actions within Mamiwa-Kisara Forest Reserve.

Recommendations

Based on the findings and outcomes of the project, the following recommendations are proposed to strengthen future conservation efforts for *C. maridadi* and the biodiversity of Mamiwa-Kisara Forest Reserve:

- Continue long-term monitoring of *C. maridadi* within Mamiwa-Kisara Forest Reserve and surrounding landscapes to improve understanding of its status and distribution.
- Expand surveys to adjacent forest fragments and other potential habitat areas, including assessments during different seasons to increase the likelihood of detecting the species.
- Maintain and scale up habitat restoration and protection activities, including native tree planting, assisted natural regeneration, and control of habitat degradation.
- Strengthen community-based conservation programs and promote sustainable livelihood initiatives that reduce pressure on forest resources.

- Establish permanent biodiversity monitoring plots to track ecosystem changes, habitat recovery, and species diversity over time.
- Increase policy support, enforcement measures, and stakeholder collaboration to enhance protection of threatened species and critical habitats.
- Promote further scientific research on the ecology, distribution, population status, and conservation requirements of *C. maridadi* and other threatened species within the reserve.

Conclusion

The *C. maridadi* Conservation Project successfully achieved its objectives related to habitat restoration, biodiversity assessment, community engagement, policy strengthening, capacity building, and dissemination of conservation information. Through the planting of 612 native tree seedlings, engagement of communities from 12 villages, and training of 113 participants, the project made a significant contribution to biodiversity conservation and sustainable natural resource management within Mamiwa-Kisara Forest Reserve. Although *C. maridadi* was not detected during field surveys, the project generated valuable ecological and biodiversity information, identified and mapped potential habitat areas, and reinforced the conservation importance of the reserve. The documentation of several threatened and conservation-priority species, restoration of degraded habitats, strengthened local conservation capacity, and improved stakeholder collaboration represent important conservation achievements. The project has established a strong foundation for future conservation initiatives by providing critical baseline data, enhancing local stewardship of natural resources, and promoting integrated conservation approaches. Overall, the project highlights the importance of continued monitoring, habitat restoration, scientific research, and community participation in preventing biodiversity loss and safeguarding Tanzania's threatened forest ecosystems. The lessons learned and partnerships established provide a model for future conservation efforts aimed at protecting highly threatened species and their habitats.



Acknowledgment

