

Conserving Lake Tanganyika's fisheries and biodiversity: from local collaboration to lake-wide impact



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Outline

Local work

- Tuungane Project Background
- Community and Ecological Challenges
- TNC Interventions and Actions/Solutions
- Community and Ecological Outcomes

Lake-wide initiatives

- Lake Tanganyika Freshwater Atlas - with Lake Tanganyika Authority (LTA)
- African Great Lakes Conference
- Lake-wide Sustainable Fisheries and Aquaculture Efforts
- Conclusions and Future Plans

Tuungane Project Background

A community-based project in and along Lake Tanganyika, Western Tanzania



Swahili word for “Let’s
Unite”



Addressing: Population, Health and Environment (PHE) issues in Greater Mahale Ecosystem (GME) across 4.8 million acres

Tuungane Project Background

Where do we work in Lake Tanganyika?



Tuungane Project Background

Why Lake Tanganyika?

- GME is one of 34 global biodiversity hotspots
- Over 250 endemic fish species
- 93% of Tanzania's chimpanzees
- 17% of global fresh water



Photo credit: Ami Vitale

Ecological Challenges

Declines in fish biodiversity and abundance attributed to:

- High human population growth (4.8%)
- Increased fishing efforts and unsustainable fishing practices
- Effects of climate change
- Increased lake sedimentation caused by unsustainable agricultural practices

Endangered fish species including:

- *Oreochromis tanganycae* and *O. uvinzae*
- *Lates microlepis* and *L. mariae*

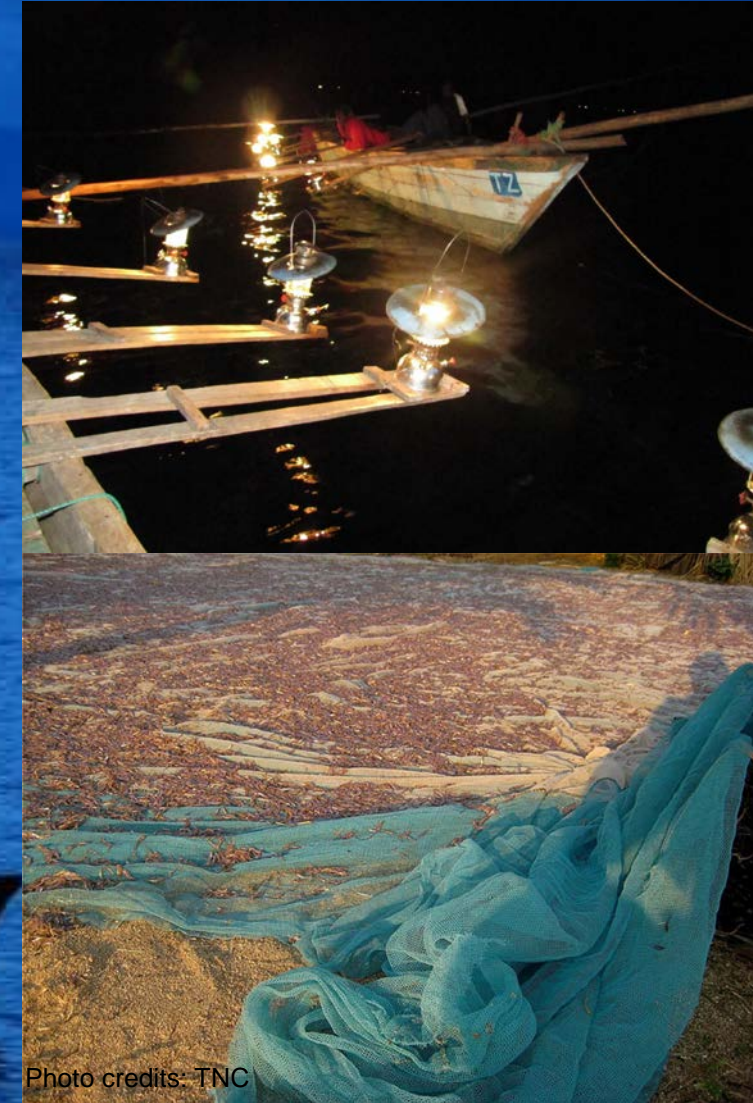


Photo credits: TNC

Community Challenges

Food insecurity intensified by:

- High population growth (4.8%) per year
- Unsustainable fisheries practices + illegal fishing gears – high fishing pressure, hence decline in fisheries resources (i.e., fish abundances)
- Unsustainable agricultural practices – low production + sediment
- Unsustainable forest harvest – high level of forest destruction
- Young community – 49% under age 15, thus limited working force

Livelihood options limited by:

- High level of poverty – limited by livelihoods alternatives
- Illiteracy (low level of education) – unsustainable exploitation
- Remoteness and accessibility – limit investors and marketing



Photo credits: TNC

Interventions and Actions/Solutions

Improving fisheries resources and biodiversity through better monitoring and management practices

- In collaboration with the Ministry of Livestock and Fisheries and Districts:
- 15 Beach Management Units (BMUs) established and 9 certified/registered
- Over 3,000 BMU members trained in fisheries regulations
- 4 Collaborative Fishery Management Areas (CFMAs) established to lead local patrols



Interventions and Actions/Solutions

Improving fisheries resources and biodiversity through better monitoring and management practices

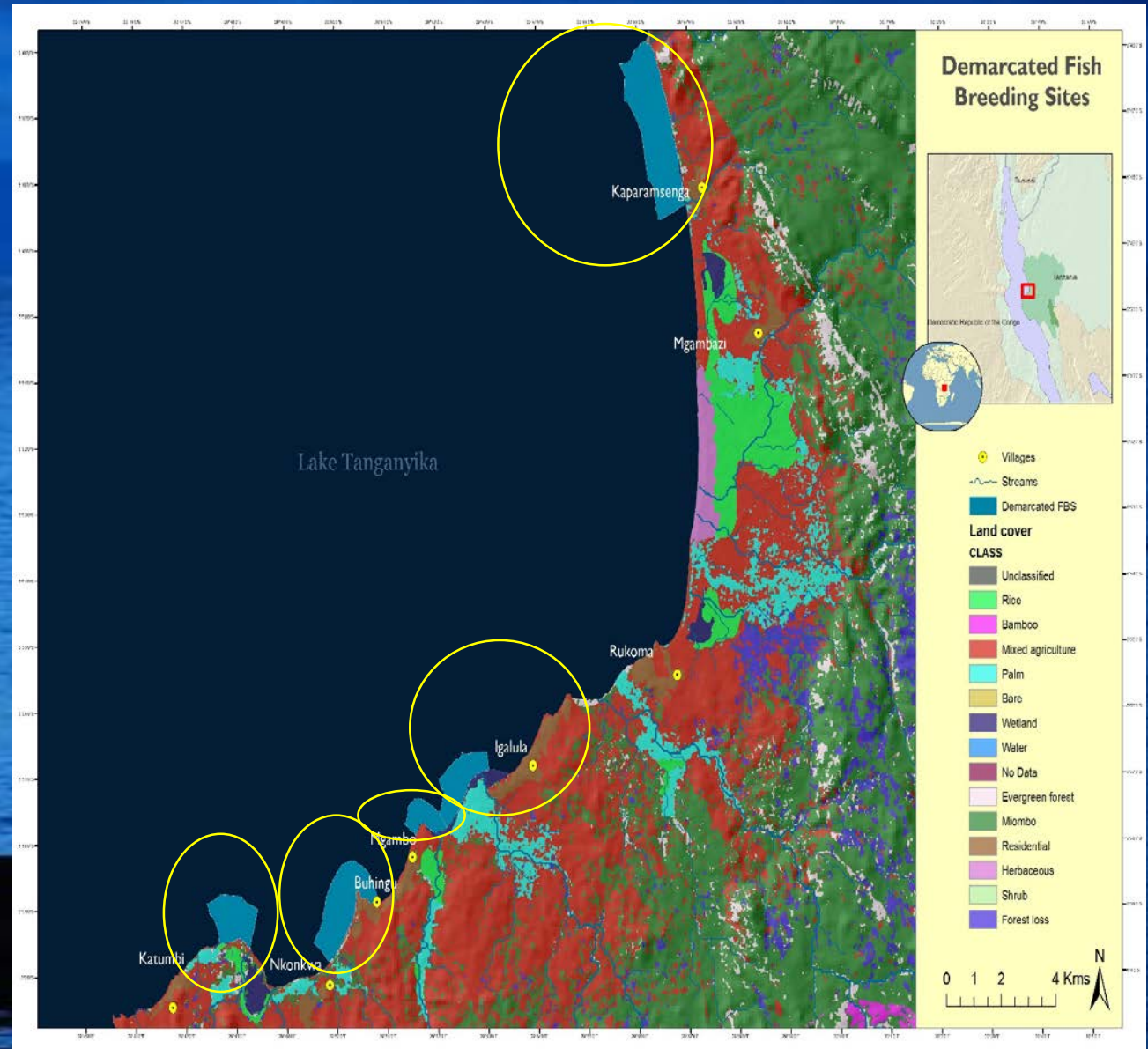
- 15 community fish breeding sites approved by village authorities; TNC requested to support demarcation of these reserves



Interventions and Actions/Solutions

Improving fisheries resources and biodiversity through better monitoring and management practices

- Community-led fish stock assessments
- 5 Community fish breeding sites demarcated and protected (3287 acres) through TNC support



Interventions and Actions/Solutions

Improving food security and livelihoods through better natural resource management, creation of alternative livelihoods, and adopting a PHE approach

- TNC-donated 44 fish drying racks in 11 villages
- >1000 BMU members trained on improved fish processing techniques
- 31 fishers' microfinance groups known as Community Conservation Banks (COCOBAs) established by BMUs
- >800 BMU members trained in microfinance and entrepreneurship



Photo credits: TNC

VIGEZO VYA KUCHAGUA MRADI

JINGI YA KUPATA WAZO LA MRADI LINALOIKELI ZEKKA		MRADI LINALOIKELI ZEKKA					MRADI/MIRADI YA KIFIMBELE	
WAZO la	Uwambao kuti	Miradi	Uwambao kuti	Mradi	Uwambao kuti	Mradi/Miradi	Uwambao kuti	
WAZO la	Uwambao kuti	Miradi	Uwambao kuti	Mradi	Uwambao kuti	Mradi/Miradi	Uwambao kuti	
1	10	1	10	1	10	1	10	
2	10	2	10	2	10	2	10	
3	10	3	10	3	10	3	10	
4	10	4	10	4	10	4	10	
5	10	5	10	5	10	5	10	
Jumla		Jumla		Jumla		Jumla		
10	10	10	10	10	10	10	10	

VIGEZO YA JUMLA

- 1 Mazingira Rafiki
- 2 Kupanda na kusuka Misa ba
- 3 Sheria na tarabuu
- 4 Teknolojia inayatumika
- 5 Vipaumbe vya Jenkati

VIGEZO VYA NDANI

- 1 Fou da
- 2 Soko
- 3 Upatikanaji wa wafanyakazi
- 4 Upatikanaji wa maligha fi
- 5 Mtan unaoTakwa



Interventions and Actions/Solutions

Improving food security and livelihoods through better natural resource management, creation of alternative livelihoods, and adopting a PHE approach

- 1,017 Model Households established with intention to reach >50% of villages by 2020
- >900 farmers trained in climate-smart agriculture practices
- >16 health facilities supported
- 112 community health workers trained to reach >900 clients per month
- 57 forest scouts trained to collect land use plan data and patrol in village forests
- Support of carbon project to 9 villages
- Establishment of Tongwe west community Reserve (247,000 acres)



Tuungane Outcomes

Illegal fishing incidences reduced leading to improved fish diversity and abundances

- >300 BMU patrols carried out per year
- >30 beach seine nets seized (>80% of 2011)
- >60 fish species verified by stock assessments at Buhingu fish breeding site
- Increased near shore fish biodiversity reported by community
- Communities are able to clean beaches and find those who pollute water



Photo credit: TNC



Photo credit: Ami Vitale

Tuungane Outcomes

Improved fish drying methods and functioning fishers Microfinance groups (BMU-COCOBA) leading to improved food security and livelihoods

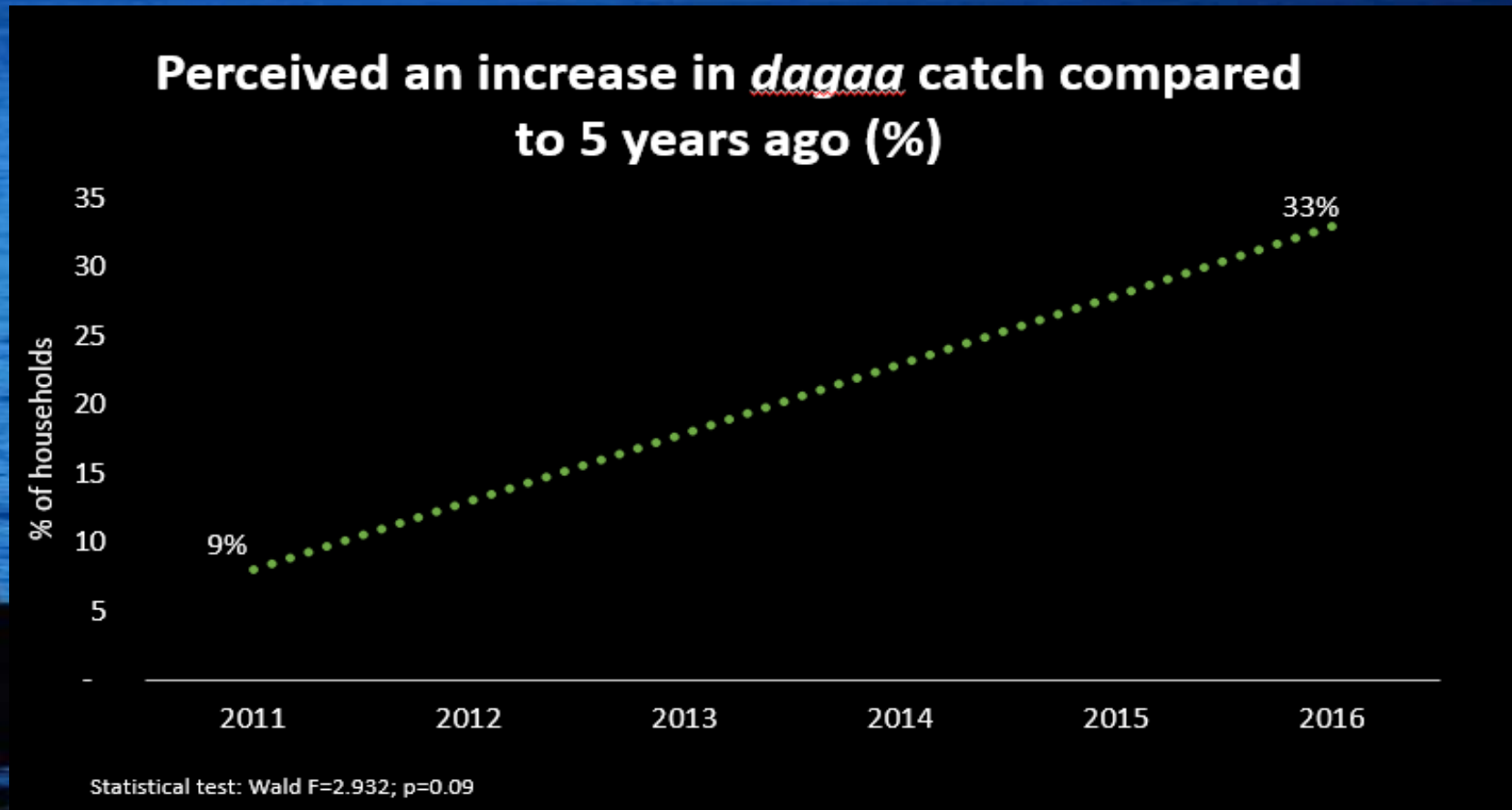
- Drying racks have improved fish market price by 15% vs. fish dried on sand!
- Fishers Microfinance groups (BMU-COCOBA) accumulated savings of approx. \$68,000 to help lend each other



Photo credits: TNC

Tuungane Outcomes

Tuungane household perception on fish catch has increased dramatically from 9% in 2011 to 33% in 2016 (based on TNC survey, 2016)

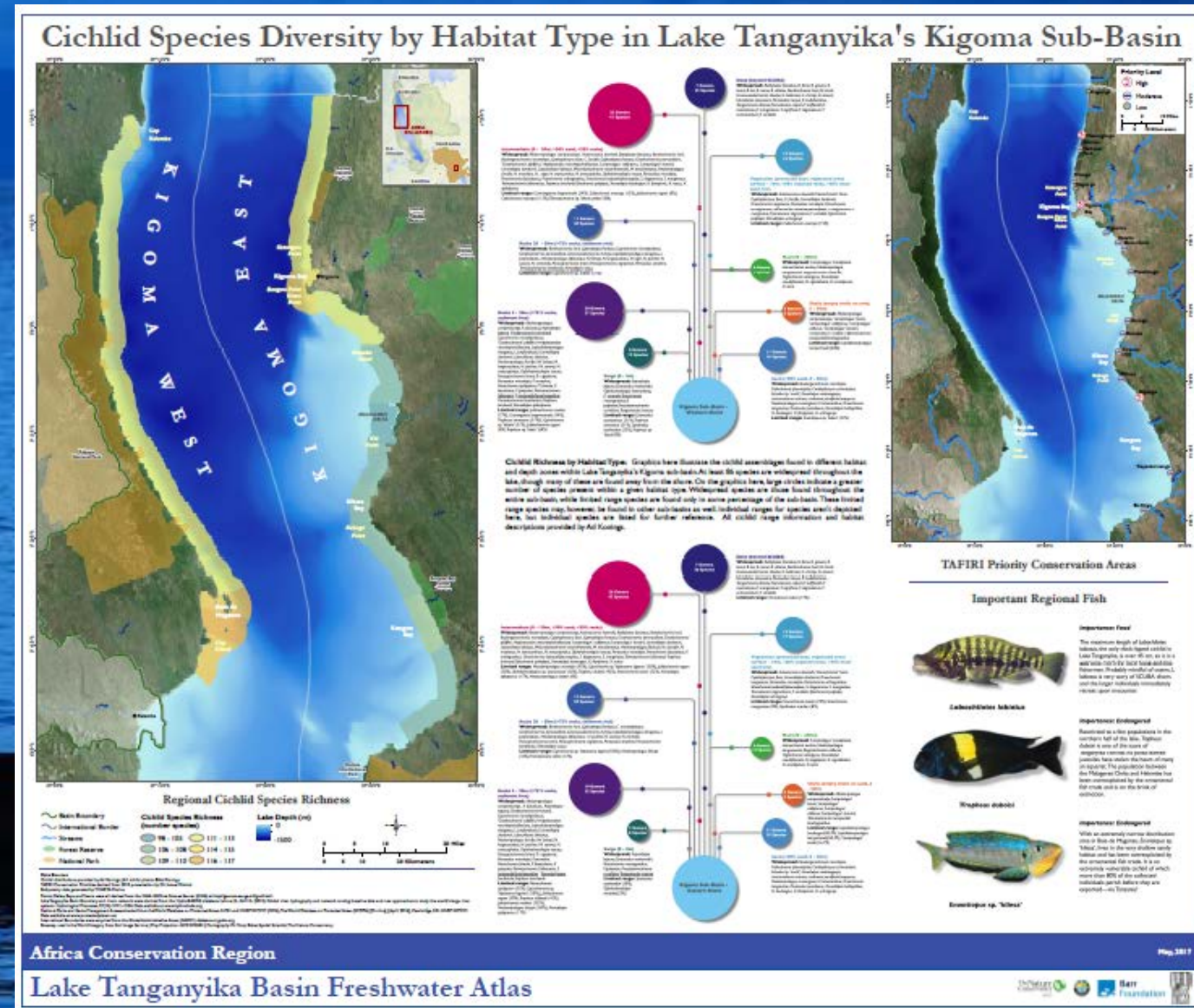




Lake Tanganyika Freshwater Atlas







Outputs and Goals

- Lake-wide conservation and management blueprint developed in collaboration with Lake Tanganyika Authority (LTA) and 4 basin countries
- Aims to identify priority areas for freshwater biodiversity, ecosystem services, and source of threats
- First version is now available
- Spatial database, does not require internet connection
- TNC currently building capacity on Atlas use for planning in region
- Fisheries managers are early users
- First detailed attempt to define within-lake Key Biodiversity Areas





6 Themes

 <p>Balancing Conservation and Development</p> <p>Sustaining ecosystem services requires appropriate balances between development and conservation</p>	 <p>Climate Change Impacts, Mitigation and Adaptation</p> <p>Understanding climate change effects, strategies, and funding opportunities</p>
 <p>Ecosystem Services and Biodiversity Benefits</p> <p>Valuing ecosystem services and opportunities and challenges in maintaining biodiversity</p>	 <p>Governance and Financing</p> <p>Using case studies and models to improve stakeholders' participation in governance and the role of...</p>
 <p>Population Dynamics, Health and the Environment</p> <p>Using a community-based integrated approach for conservation and development</p>	 <p>Sustainable Fisheries and Aquaculture Management</p> <p>Examining the values, threats, past trends, current status and future changes in fisheries</p>

7 Lakes, 11 Countries



Photo credit: Ami Vitale

Global Participation



- 300+ Participants
- Strong Conference Resolution, on www.africangreatlakesinform.org with much more
- Launch of African Great Lakes Conservation Fund (AGLCF) led by TNC

Lake-wide Sustainable Fisheries and Aquaculture Efforts

- Partnering to bring Tuungane fisheries best practices to Zambia, Burundi and DR Congo sides of Lake Tanganyika
- Working in Tanzania on fisheries policy improvements and with the LTA for policy harmonization
- Caged aquaculture both a threat and opportunity
 - Starting site suitability mapping in Tanzania
 - Funding Decision Support System for native species aquaculture (via AGLCF)
- Addressing information gaps: funding an electronic fish catch assessment system (eCAS) model
- Researching impact of shift to LED lanterns and how best to guide new community-level freshwater protected areas



Photo credits: TNC

Conclusions and Recommendations

- Tuungane package is replicable and TNC is interested in accelerating the work with LTA, NGOs, and riparian states to coordinate its replication across the riparian countries.
- While an increase in fish catches have been reported by communities, illegal fishing activities are still rampant.
- TNC is interested in collaborating with LTA, riparian fisheries departments and NGOs, to support strong co-management institutions and actions lake-wide to address illegal fishing activities and hence protect lake biodiversity.

Our Plan for Future Work

- Support a lake-wide stock assessment
- Map potential fish spawning/breeding/nursery sites
- Map critical habitats for endangered fish species
- Support demarcation of community fish reserves
- Conduct mapping and zoning of cage culture locations to support Tanzanian government on sustainable aquaculture development – attract cage culture investors
- Support development of aquaculture model for replication in Lake Tanganyika riparian countries
- To attract more collaborators - NGOs, academic, and government partners for sustainable biodiversity conservation efforts

Asante Thank you



Photo credit: Ami Vitale