

**Environmental Management and Biodiversity Conservation of Forests,  
Woodlands, and Wetlands of the Rufiji Delta and Floodplain**

**Merging Traditional and Scientific Knowledge for  
Environmental Awareness**

**The World Wetlands Day Celebrations Held in Utete, Rufiji on  
2<sup>nd</sup> February 2003**

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<sup>1</sup> The Rufiji District Council implements Rufiji Environment Management Project with technical assistance from IUCN – The World Conservation Union, and funding from the Royal Netherlands Embassy.

## **Rufiji Environment Management Project – REMP**

**Project Goal:** To promote the long-term conservation through ‘wise use’ of the lower Rufiji forests, woodlands and wetlands, such that biodiversity is conserved, critical ecological functions are maintained, renewable natural resources are used sustainably and the livelihoods of the area’s inhabitants are secured and enhanced.

### **Objectives**

- To promote the integration of environmental conservation and sustainable development through environmental planning within the Rufiji Delta and Floodplain.
- To promote the sustainable use of natural resources and enhance the livelihoods of local communities by implementing sustainable pilot development activities based on wise use principles.
- To promote awareness of the values of forests, woodlands and wetlands and the importance of wise use at village, district, regional and central government levels, and to influence national policies on natural resource management.

### **Project Area**

The project area is within Rufiji District in the ecosystems affected by the flooding of the river (floodplain and delta), downstream of the Selous Game Reserve and also including several upland forests of special importance.

### **Project Implementation**

The project is run from the district Headquarters in Utete by the Rufiji District Administration through a district Environmental Management Team coordinated by the District Executive Director. The Project Manager is employed by the project and two Technical Advisers are employed by IUCN.

Project partners, particularly NEMC, the Coast Region, RUBADA, The Royal Netherlands Embassy and the Ministry of Natural Resources and Tourism, collaborate formally through their participation in the Project Steering Committee and also informally.

### **Project Outputs**

At the end of the first five –year phase (1998-2003) of the project the expected outputs are:

An Environmental Management Plan: an integrated plan for the management of the ecosystems (forests, woodlands and wetlands) and natural resources of the project area that has been tested and revised so that it can be assured of success - especially through development hand-in-hand with the District council and the people of Rufiji.

Village (or community) Natural Resource Management Plans: These will be produced in pilot villages to facilitate village planning for natural resource management. The project will support the implementation of these plans by researching the legislation, providing training and some support for zoning, mapping and gazettement of reserves.

Established Wise Use Activities: These will consist of the successful sustainable development activities that are being tried and tested with pilot village and communities and are shown to be sustainable

Key forests will be conserved: Forests in Rufiji District that have shown high levels of plant biodiversity, endemism or other valuable biodiversity characteristics will be conserved by gazettement, forest management for conservation, and /or awareness-raising with their traditional owners.

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<sup>2</sup> All photographs by Kathryn Z. Doody, except page 5, page 10 top, page 12 bottom, page 14 bottom, page 15, page 17 bottom and page 18 by Gratian Luhikula

## 1 Introduction

This report is a summary of the activities, undertaken as part of the Rufiji Environment Management Project, to celebrate World Wetland Day in Utete, 2<sup>nd</sup> February 2003, and an evaluation of those activities.

The District Environment Management Team (EMT), a body that brings together the technical staff of the main local government departments involved with natural resources, lands, agriculture, education, community development, planning, etc., representatives from operational partners (other environmental projects in the district), two elected councillors and REMP staff. It holds its regular meetings on each first Friday of the month in Utete. In mid December 2002, the REMP CTA addressed a memo concerning the International Waterbird Count and the World Wetlands Day to the EMT, asking for ideas and suggestions on how Rufiji could participate in these global events (Appendix 1). The January EMT decided that both events could be held on the same day and formed an organising committee, in charge of the preparations.

### 1.1 Organising Committee

The celebrations were planned and implemented by an organising committee selected by members of the Environment Management Team. The organising committee was chaired by Hon. Councillor Athuman K. Palla, the secretary was Mr Peter John (DALDO), committee members were: Hon. Councillor Mwajabu Kingwande, and Mr John Eniyoye (DGO). In addition Dr Olivier Hamerlynck (REMP CTA) and Mr Frederick Mhina (REMP PM) contributed to the planning of the event. The committee met on January 13<sup>th</sup> 2003 to develop the action plan.

The committee set as its the goal:

***To raise awareness on wetlands functions, as they are vital for Rufiji livelihoods (and therefore contribute to poverty alleviation or at least food security), the cultural values of wetlands and their role in biodiversity conservation.***

It was decided that the emphasis should be on the linkages between the various resources: the role of floods for agriculture, fisheries, forests, etc. The main message to be passed on was: ***we should care for our wetlands because they care for us.***

As for the methodology, it was proposed to make the event as interactive as possible and to avoid long lectures and big speeches. It was decided to work primarily through direct communication between the various participants and a group of resource persons, through dialogue, using questions and answers and, as much as possible, at localities where the wetland issues could be directly observed.

It was clearly stated that the intention was to have a minimal cost - maximum impact activity. It was therefore decided to centre the celebrations on Utete and its surrounding wetlands. The target audience would be the community leaders and decisionmakers, the members of the EMT and the Utete schoolteachers and their pupils. There would be two main parts of the event:

- the early morning nature walk which, for practical reasons, would have a restricted number of participants, and
- an open access afternoon and evening programme, where the general population would also be welcome.

The organising committee drafted an action plan and budget and the tasks were partitioned. The District Education Department invited the schools to participate in a drawing competition with wetlands and wetland birds as its topic. Drawings were to be received by January 30<sup>th</sup> so they could be judged before the event and the winning entries exhibited. The DALDO prepared a summary of wetland functions in Swahili and this was sent out to the schools as background information (Appendix 2). The publicity needs for the event were outlined, invitations drafted and sent. The Utete drama group was requested to develop a scenario for a wetland related performance. The organisers specified that the scenario should preferably not limit itself to the usual unsustainable management and sanction slapstick but that it would go beyond by emphasising the potential benefits of jointly agreed management measures. Logistics, equipment for the nature walk and the

exhibits, etc. needed to be arranged. Shade would have to be provided at the venue. Press coverage was discussed. Resource persons from the education department were mobilised and participated occasionally in the meetings of the organising committee. Short feedback sessions evaluated progress at regular intervals.

## 1.2 'Resource' Persons

The organising committee decided on the type of resource persons needed and through networking with district staff identified the following people to assist with the preparation and implementation of the celebrations:

1. The chairperson of the District Committee for Economic Services, Works and the Environment: Hon. Mgeni A. Monero.
2. Local resource persons familiar with wetlands and birds: Mzee Abdulrahman Mnyige, Mzee Habibi Omari, Mzee Mohamed Omari, Mzee Hemed Msham, Mzee Malik Athuman, Mzee Mkombya Matimbwa, Mzee Masela Hamisi.
3. A local resource person on water issues, stageboard readings, the importance of floods and the need to collect and keep local records of water levels: A.B. Mwakalinga, District Agriculture Officer.
4. Local resource persons on fisheries: two young local people who had previously been employed as research assistants for the 2002 fish catch assessment work with REMP: Ms. Saida Mwaimu and Mr. Kasimu Kindinda,
5. A resource person on birds, perhaps a traditional hunter: none found but some of the Wazee invited proved to be very knowledgeable on birds.

A first meeting with organising committee and the resource persons was held on January 22<sup>nd</sup>, 2003.

The resource persons highlighted the values of the floods, stating that floods have more advantages than disadvantages, that the productivity of the delta is linked to the floods, that the floods make the use of industrial fertiliser unnecessary in Rufiji, etc. The joking relationship with the upland farmers from the Matumbi and Kichi Hills was also brought to the fore: these people are always asking the floodplain farmers when they will be washed away but they do not realise how many advantages farming in the floodplain has. Mama Habibi Omari summed it all up nicely by stating that she preferred the famine caused by floods to the famine caused by drought. There is much more suffering in a drought year because, after a big flood, the recession agriculture (Mlao) harvests are good and the fishing is good. She said the Rufiji floodplain has so many seasons in comparison to the dryland farming terrace areas. She also emphasised that the people of Rufiji have adapted to the floods and that the floodplain is a multipurpose area where many functions can be combined. Mzee Masela explained the uniqueness of the Rufiji mangroves and how the contact between saline and fresh waters causes the deposition of very fertile soils. He emphasised the filtering function of the mangrove and the benefits this brings to the coastal waters. He insisted that the flood-dependent Mlao agriculture is both more valuable and more reliable than other forms of agriculture in the district.



The Wazee were also very knowledgeable on birds, identifying different useful species: birds that announce rain, birds that announce the time for planting, birds that signal good fishing grounds, honeyguides, birds warning about snakes and dangerous animals. Aesthetic values were also mentioned, such as the beauty of the flight of the skimmer and some birdsongs. Some birds (owls) and bird sounds announce death. Many a good bird story was told that could then be used both during the nature walk and in the drafting of the contents of the bird poster of the exhibit (Appendix 3). Hon. Palla donated

an interesting exhibit from the delta, a washed up piece of the lid that is thought to cover the nest of the magical Mnandi bird.

As the District Education staff had too many other commitments to participate fully, the external facilitator of the Experiential Environmental Learning (EEL) programme, Kathryn Doody, was requested to participate in the preparations of the educational activities, the setting up of the exhibits, the evaluation and the report writing. Many of the activities and exhibits were based on the EEL programme, a manual for which is in preparation.

### **1.3 The practice session of the nature walk**

On January 30<sup>th</sup> 2003, from 6 to 10 a.m., the organising committee and the available resource persons did a practice run of the nature walk, to identify the localities where the groups could halt and the issues to be discussed at these localities. The fish and water level recorders from Utete and the neighbouring villages were also invited so they could share their knowledge and take lessons learned back to their own lakes.

The interactions were spontaneous and the discussions open. In general, the Wazee would select the sites where the group could learn something and then provide the traditional knowledge about the use and value of a particular resource. Often the technical staff could add scientific explanations of certain observations and provide examples from other areas on what can be the consequences of mismanagement. They explained that some of the soils around Lake Lugongwe are saline, that is why they are not cultivated. They can be recognised by short grassy vegetation. Some of saline soils have no vegetation at all and a spectacular erosion gully runs through it. This was an ideal site to discuss the links between vegetational cover and soil conservation and the implications of this for the Lower Rufiji. The tendency for floods to become sharper peaked and more destructive with increasing deforestation and other land use issues in the basin were highlighted. Test fishing nets was done with fine meshed.

This yielded interesting small shrimp and fish fry that could be used to demonstrate the nursery function of the marshes at the lakes edge. Small aquaria were used to show the catches to participants but it would be possible to replace these by simple jam jars.



In a baobab the nest of a Hamerkop family was observed. The Wazee explained that this bird is not shy because it is inedible. A group of foraging Open-billed Storks were observed and a group of snorting hippos at the fish landing site. The Wazee explained that hippo meat is traditionally not eaten.

The role of hippos, fertilising the lakes with their dung was discussed. A mongoose midden was discovered, Jacana's were seen scurrying over the water lily leaves and the mention of their polyandric mating system (one female has several males who care for the eggs and the young) raised a few eyebrows. Pied Kingfishers obligingly hovered at close range. After the marshes, the walk passed over the fertile floodplain shambas, an illustration of the process that deposits fine fertile materials in areas with low current speeds. The walk ended at the connection between the lake and the river where A.S. Mwakalinga explained the use of stageboard readings and the role of the floods for the water supply to the lakes.

At the feedback session over a late breakfast all participants confirmed that they had greatly enjoyed the practice walk and found the merging of traditional and scientific knowledge highly instructive, as was the exchange of experience from different places. It was decided that two groups was the maximum that could be handled during WWD proper and that both groups would do the same walk but starting at the opposite ends. The resource persons were partitioned over the groups. The Wazee, asked to play a predominant role in the explanations to be given to the invited guests, emphasised that it would be best to conduct the nature walk in the same open discussion atmosphere as the practice walk rather than in a top down instruction format. It was decided that the exhibits should reinforce as much as possible the issues seen in the nature walk.

Subsequently, the organising committee drafted the final timetable for the event (Appendix 4).

#### 1.4 Evaluation Group

An evaluation meeting was held on February 3<sup>rd</sup> 2003, whilst memories of the celebration were still fresh.

The evaluation group was comprised of: Hon. Palla (chairman), Hon. Monero (District Committee for Economic Services, Works and the Environment), Hon. Mwajabu Kingwande, Mr Peter John (DALDO - secretary), Mr John Eniyoye (DGO), Ms. Saida Mwaimu, Mr. Kasimu Kindinda, Dr Olivier Hamerlynck (CTA), Mr Frederick Mhina (PM), Mr Chande, Mzee Masela, Mzee Mnyige and Kathryn Doody.

The evaluation dealt with each of the activities in turn asking the questions:

- ☺ What was good and why?
- ☹ What was not good and why?
- How can this activity be improved?

The detailed results of the evaluation exercise are given under 2. Evaluation of the celebration activities (see below).

### 1.5 Cost of the event

The total expenditure for the event was 2,216,450 TSh (at the time of the event 1\$US approximately equalled 1000 TSh). Details of the expenditure are given in Appendix 10.

### 1.6 Post-event actions

Considering that the event had been successful it was decided to rapidly prepare a website report (Appendix 8) and to send it to both the Ramsar Convention Secretariat and IUCN. This was completed by February 8<sup>th</sup>. It was posted on both websites.

A colour print of the website report and a Swahili translation of the text, were sent to all the invited guests as a reminder of the successful event to those who participated and as a teaser for those who did not. It is hoped they will regret their absence and that they will put it high on their agenda next time. Gratian Luhikula, the journalist present at the celebrations, was asked to prepare a publication for a national periodical.



**Nature walk discussion of wetland functions at Lake Lugongwe**



## 2 Evaluation of Celebration Activities

This section will deal with each of the activities in turn, giving a brief description and then evaluating the activity. The evaluation is based on the detailed discussion of each activity held during the evaluation meeting, together with additional information offered by people running events on the day.

### 2.1 Planning the celebrations

Planning of the celebrations started 3 weeks before the event (see above). The Organising committee met regularly to get preparation reports from those in charge of action points, to evaluate the progress and to propose alternatives where bottlenecks occurred.

#### 2.1.1 Evaluation

- ☺ The combination of local knowledge and technical knowledge was very positive as it brought technical issues closer to what people of Rufiji think and feel about wetlands and birds.
- ☺ Planning took into account the value of indigenous knowledge.
- ☺ Timing of planning was good, it started early, the planning meetings were well attended (including the practice nature walk) and the planning was completed in time.
- ☺ Combining theoretical learning with practical learning was good as you can really see and understand what is happening.
- ☺ Good translation was available between Kiswahili and English during the planning and that was important.
- ☺ The planned timetable for the day is shown on the next page.
  
- ☹ The education department was not sufficiently available during the planning because of other commitments. Perhaps as a consequence, the school teachers were not very involved in the planning, in spite of the fact that schools and pupils were an important target audience and were very involved in the events. Involving teachers in the planning stage would have allowed teachers to contribute on what they think the students need. In fact we did not think about involving the teachers in the planning process.
- ☹ The celebrations were held a long way from the town/villages; in future these celebrations could take place in the villages and town centre.
- ☹ The pilot village representatives did not bring exhibition materials so they could not demonstrate their achievements in environmental management, nor sell products from the wise use activities. This was partly due to a communication confusion as they were told to present exhibits before the 30<sup>th</sup> January. This was not possible for the village representatives, as that would have meant spending 3 extra days in Utete but in fact they could easily have brought the exhibits the day before the event. In addition the selection within the village of who should attend such events takes time, although the letters were sent 10 days/week in advance, due to the length of time it takes for a letter to arrive and the selection process, there was not sufficient time for the village representatives to prepare an exhibition. In future letters of invitation should be sent out much earlier (to arrive in the village at least two weeks before the event), and it could be suggested to pilot villages they prepare a standard exhibition piece ready to take such events.

### 2.2 Advertising the celebrations

It was planned that the celebration would be advertised using posters located in strategic places. As relatively few people read posters, local drummers would be going house to house from the airstrip to the Boma and throughout Utete centre, beating a drum and telling people about the celebrations taking place the next day. In addition the school band was requested to march through the town playing their instruments on the way to the event. It was also planned that the celebrations would

be recorded and broadcast on radio.

Good posters were produced and displayed at the strategic locations but there was no advertisement by drumming circulating the town and announcing the news on the evening of February 1<sup>st</sup>.

- ☺ The posters were nice and sited in good places.
  - ☺ The student drumband passing through the town and coming to the Mazingira building venue in the afternoon of the 2<sup>nd</sup> was an effective way of encouraging people to come to the celebrations – the DED asked if we can look into ways in which this band can be supported so that in the future the local student band can be used to advertise and welcome guests rather than paying a lot of money for a band from Dar es Salaam.
  - ☹ Posters were restricted to Utete town, forgetting the near-by villages.
  - ☹ Mr Ndumbogani was not available as planned to record and broadcast the events of the celebration on the radio for publicity.
  - ☹ Relatively few adults came to the celebration, perhaps because of the venue (adults not always in favour of public meetings as they are tired of ‘political events’ with very long speeches, something we avoided). Next time more work is required to improve this perception problem, perhaps by holding in a more ‘neutral’ territory. But one of the objectives was also to familiarise the inhabitants of Utete with the resource centre in the Mazingira grounds. Also next time students should be encouraged to bring their parents along to such events.
- For the future the process of planning celebrations to mark World Wetlands Day and World Environment Day should be incorporated into school activities.

### 2.3 Nature Walk

An early morning nature walk was planned to show guests the birds and habitat around Lake Lugongwe. A practise walk was undertaken to establish the route and determine the important topics for discussion. The Wazee were particularly involved in this activity, providing and presenting much of the information. Mr Mwakalinga gave a presentation explaining water data collection methods and the use of stage boards.

- ☺ The nature walk was very successful and we effectively using all the material and equipment (fine meshed fishing nets, small aquaria) as planned.
  - ☺ The nature walk made participants use all their senses.
  - ☺ Successful in teaching about traditional medicines.
  - ☺ Successful in demonstrating the idea of nature watching for pleasure and that that is also a value of wetlands.
  - ☹ The students unfortunately ended up all in one group, so the age groups were not very mixed in the two groups – this was because the people directing the guests were late arriving at their positions (and because the students were avoiding the teachers that all ended up in one group).
  - ☹ Students arrived late (in fact they were not invited, but decided to come on their own after choir practice which is in fact a positive sign of their interest) and so they missed the explanation from Mwakalinga about the importance of water level data recording and the links between the river and the lake.
  - ☹ Capacity - the ideal group of 20 people was greatly exceeded. In each group there were well over 40 people so the groups were too large for the style of open discussions of issues to take place in the way it was done during the practice walk. In fact this means we need more people capable of guiding such walks.
- The nature walk focused on the wetland and birds, no effort was made to discuss more general

issues such as pollution e.g. by asking participants to collect litter. For future events wider issues could be included.



**Kassimu Kindinda and participants listening to the Wazee and discussing fisheries management at Lake Lugongwe**

## 2.4 Fishing Game

The fishing game is an outdoor game that encourages participants to recognise that unsustainable fishing destroys fish stocks and negatively impacts on all users of the resource. The game then encourages participants to come up with management strategies to ensure the common resources are utilised sustainably.

- ☺ The game was played with several groups of children who learnt about the problems facing management of common resources.
- ☹ The facilitator of this game was not sure whether to play this game with schoolchildren only or also with non-school-children. There was some confusion due the mass of children present who the activities were for. The idea was that it was open to ALL, however in reality there were too many children for the resource people to deal with.
- ☹ Due to lack of resource people to facilitate games there were many children left waiting doing nothing whilst the school-children enjoyed the exhibits inside – in the end the fishing game was played with anyone.
- For future events it is suggested that more teachers are recruited to help manage the children as they are familiar with dealing with large groups of children.

## 2.5 Discovery table



The discovery table activity is designed to encourage participants to look carefully at items from the natural environment that are unusual, beautiful or interesting to look at. Ideally the objects used should be interesting to touch, feel or smell. This activity encourages participants to use all their senses when exploring the item on the table. The game part was simply to match the items of the table with pictures of where the items had come from, e.g. Mninga seed matches with a picture of an Mninga Tree, and find the odd ones out that did not have a picture.

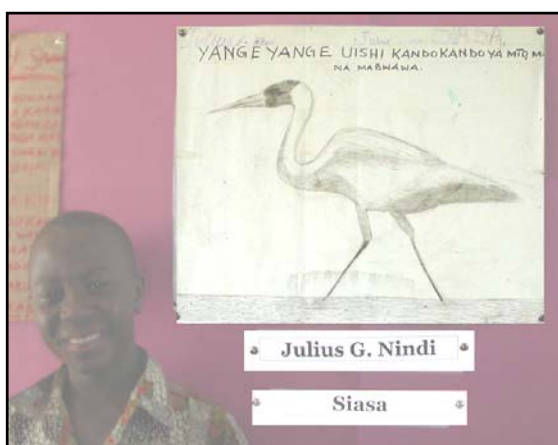
☺ The activity was successful in as much participants were touching and feeling and looking closely at the items on the table. We successfully got participants to use lots of their senses to ‘discover’ an item.

☺ The game aspect of the activity to match the items to the picture and find the ‘odd ones out’ was not so successful as participants were confused. This is probably again due to limited number of resources people available – Saida who ran this activity was roped in to help just before the participants arrived and was therefore a little unsure of all the items.

- In the future it would be best to simplify the activity by just asking participants what they think the objects are and where they have come from.
- Encourage teachers to have a discovery table in the class room that student can add items to for the rest of the class to look at, touch and feel, the rest of the class can then try and find out where the item is from.



## 2.6 Drawing competition



A week before World Wetland Day Siasa Primary School and Mapinduzi Primary School were asked to participate in a drawing competition. The entries were submitted on time (by the 30<sup>th</sup> January) for judging. Dr. Olivier Hamerlynck and Kathryn Doody assessed the pictures and five winners were selected (the third jury member from the District Game Department could not attend because of other duties). The winning entries were displayed in the conference during the celebrations but who won first, second prize etc. was kept secret until the prize-giving.

☺ There were lots of very good pictures showing birds in their natural environment, some included information about the ecology of the bird, showing that the students really knew about the birds they were drawing.

- ☹ Some of the entries were drawn on very poor quality paper making it difficult for children to draw properly.
- ☹ The drawings did not mention the age of the artist. Therefore it was difficult to fairly judge the entries – particularly because of the large age range of children attending primary school (some primary school students are adolescents). The end result was that 3 of the 5 winners were older than what is normally assumed primary school age (6-13 years).



- In future it is recommended that paper and drawing material are provided to the schools to give to the children to draw with.
- In future it is recommended that the age of the artist is written on the drawing, so the drawings can be judged in different age classes.



- It would be good to have the picture displayed with the artist during the prize giving ceremony.
- Also, to ensure that it the entrant is the true author of the picture, it is suggested that the pictures are drawn at school.

## 2.7 Wetland bird poster

This was an informative poster providing information about species of wetland birds found in Rufiji. In addition to information about the birds ecology, migration roots, scientific name, English name and local name there were excellent line drawings depicting the birds in their natural environment. The choice of the species depicted was made on the basis of key wetland species signalled to the organising committee by the Wazee and species for which Rufiji district is of international importance. Additional material, referring to a mysterious and magical bird, important in local beliefs, had been provided by Hon. Councillor Palla.



- ☺ Lots of people read the poster and were seen discussing the information, in particular the district officials.
- ☹ Local and Kiswahili names were not available for all the bird species.
- It was suggested that a short summary for people to take away and read would have been useful.
- In addition the need was expressed for a small colourful booklet about Rufiji birds, the target audience being District staff and the general public.

## 2.8 Colouring corner



The colouring corner provided small children the chance to sit and colour pictures or do dot-to-dot drawings. Pencils, paper and pictures to colour in were provided.

- ☺ Lots of children enjoyed the colouring and produced careful and colourful work.
- ☹ It was difficult to cope with all the children, as there were so many of them, the pictures quickly ran out.
- ☹ As there were so many children it was decided *ad hoc* that only school children would get the chance to do colouring. It was unfortunate that already excluded children (not having the chance to go to school) were then further excluded at our event.

## 2.9 Photograph displays

The photograph displays showed pictures of forest birds found in Rufiji District.

- ☺ Lots of people stopped to look at the pictures and discussed the birds they knew.
- ☺ The display was attractive to look at and caught people's attention.
- ☹ Unfortunately there was no text describing the forest birds, not what the purpose of the forest bird studies of the REMP had been, nor an explanation about the exceptional biodiversity values discovered through the surveys. Some people therefore did not realise the fact that the pictures were of forest species, not wetland species. The absence of the REMP-trained bird expert from the District Game Department, called away on other duties (dealing with the very important lion issue on the southern floodplain) was the main reason for the lack of information.
- In future make sure that pictures have some text giving a short explanation of what is displayed and why these surveys, targeting indicator species, provide a quick and comprehensive biodiversity inventory.

## 2.10 Stick the lakes on the map game

In this game the participants had to stick cut-out cardboard lakes onto the map of the River Rufiji from Mloka to the Ocean, encouraging participants to think about how many lakes there are in Rufiji, where they are located, how big they are, etc. The map was drawn to a 1:50,000 scale and more than 3m long.





☺ This game was played by several groups of teachers and students, all of whom successfully completed the map and enjoyed playing the game.

☺ A group of teachers asked to borrow the map to use school to play the same activity with their pupils.

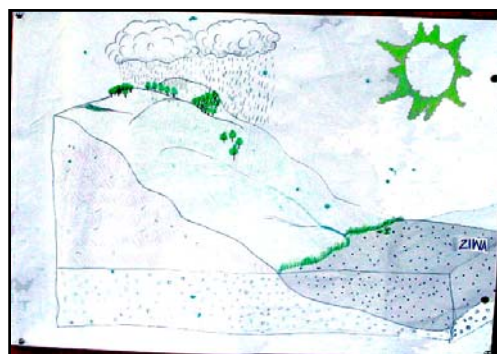
☹ As the map only showed the River Rufiji and few towns and villages it was difficult for participants to orientate the lakes in relation to other reference points such as roads and villages.

☹ Some of the participants did not recognise the River to be the Rufiji – which makes sense if you have never seen a map of the Rufiji River before and are not familiar with the use of maps in general.

- In future add more features to the map such as forests, roads, mangroves and villages – this could be an exercise for the schools to do.
- Follow-up on the request from the teachers to use the map in the school.

### 2.11 Water Cycle Game

This game had a poster showing a slice of a hillside, with trees, a lake at the bottom, a river, rain clouds and the sun. The object of the game was stick on arrows showing where the water moves through the water cycle, then if the participants were able they were asked to stick on labels showing the names of these processes e.g. rain, evaporation etc.



☺ Lots of students tried the game and enjoyed trying to put the arrows in the right places.

☺ Some students, who could not manage the activity in full, were assisted by Mwakalinga, who carefully explained the principles of the water cycle. Lots of learning was taking place!

☹ The game was quite difficult, particularly for the younger students.

- In future the game could perhaps be simplified for younger players by starting with more information already on the poster.
- Perhaps this activity is more appropriate for secondary schools.

### 2.12 Chemsha Bongo – Word search

The word search puzzles (examples are given in Appendix 5) were designed for older children to practise literary skills using environmental words.

☺ Lots of students enjoyed playing the puzzles and successfully completed the word searches.

☹ As there were so many children it was decided *ad hoc* that only school children would get the chance to do the puzzles. It was unfortunate that



already excluded children (not having the chance to go to school) were then further excluded at our event. Especially as there were about 40 copies of the puzzle left over at the end of the day.

- ☹ This game ended up being judged, which was not really the idea, it was intended to give students the opportunity to enjoy doing a puzzle and do the best they can.

### 2.13 What am I poster

This poster was a game in which participants had to guess what was hidden under the flap at the bottom of the poster from 9 clues revealed in sequence. If the participant managed to guess what the picture was without looking at the picture they were said to have won. The clues given for each picture are listed in Appendix 6.



- ☺ Participants easily understood how to play the game and many were successful in guessing the hidden picture.
  - ☺ Participants enjoyed playing the game and practised classification skills.
  - ☹ As there were so many children there was quite a lot of crowding around the poster so it was difficult for people at the back to see what was happening.
- In future create more questions/pictures with which to play the game.

### 2.14 Who Am I Game

In this game (played outside) the participant has to guess what is on the picture attached to his/her back by asking 10 questions, to which the audience can reply yes or no. This is a fun game in which participants have to think logically and practise skills of classification. It looks easy but is surprisingly difficult when you are the one guessing!

- ☺ Lots of students enjoyed playing the game outside with Mwalimu Mtwewe.
  - ☺ This game is good for making participants think about how plants and animals and other environmental features are grouped.
  - ☹ Once again so many children and not enough resource people to manage them – this activity could have been played in several smaller groups giving more participants a chance to play had there been more resource people available.
- This activity can be used again in many varied situations as it is simple but gets participants thinking about the natural world around them.



## 2.15 Wetland Web of Life Game

This activity is a game (played outside) in which participants are given a small card depicting one feature of the wetland environment, e.g. water, trees, sun, grasses, frog, fish, birds, mosquito, man etc. The participants sit or stand in a circle and then pass between themselves a ball of string representing the connections between each of the participants (who eats what, who needs what to nest, etc.). Eventually a web is created. When all compartments/elements of the environment are functioning, the web is strong and taut, this is shown to the participants by asking them to press down gently on the web. Some aspect of the environment is then removed, explaining the reasons why, for example a pollution incident may destroy water quality meaning that all insects and fish die, or an upstream dam may significantly reduce water flow. Other participants must let go of the string as the things they depend on die out. Eventually the web of life collapses. This is an excellent game for demonstrating the inter-relatedness of all things in our environment.

- This activity can be used again in many varied situations as it is simple and gets participants thinking about the linkages in the natural world around them.



## 2.16 Drama Production

The Utete Drama Group was invited to perform a short drama about the importance of wetlands and birds. The drama group were also requested to announce the celebrations in Utete town the day before the event using drums. Unfortunately they still had too much work perfecting the play to be able to go around announcing the event.

- ☺ The performance was good, well-acted and enjoyed by the audience.
  - ☺ The Drama used comedy well to explore the impacts of habitat degradation on rural communities and re-iterated the importance of wetlands in maintaining livelihoods and ecosystem functions.
  - ☺ Drama is a useful way of conveying a message to a wide audience.
  - ☺ The drama production performed by the group was created with little external input – suggesting the local community understands the importance of wetlands.
  
  - ☹ The community based conservation message was not emphasized in the drama.
  - ☹ The idea of finding solutions to problems was not emphasised in the drama, instead the baddies got caught and were punished.
  - ☹ In the drama the visiting expert was from Japan – why not Europe to be closer to the reality?
  - ☹ The drama group did not help to advertise the event by announcing the day before in town.
  - ☹ The performance area was not really big enough for the performers to spread out.
- In future follow up more closely on the drama group to ensure additional requests such as for

advertising are carried out or split up the functions, charging other people to announce the event.

- Get a summary of each scene written and recorded, (in English and Swahili).
- In future events mark out a performance area, either with rope on the ground or a raised platform.

### 2.17 Choirs

Siasa primary school and Mapinduzi primary school were asked to prepare environmental songs about wetlands, and perform them at the world wetlands day celebrations. The schools were provided with a summary of the functions of wetlands.



- ☺ The choir performances were excellent, enthusiastic, the highlight of the day.
- ☺ The words of the songs were very good (particularly Siasa Primary School) that made a successful emotional appeal to decision-makers to guarantee wetland functions also for the future generations.
- ☺ The melodies and rhythms were familiar so people can remember snippets of the song days later.
- ☹ The performance area was not really big enough for the performers to spread out.
- Get words from songs typed up and translated also into English, give to Gratian Luhikula to incorporate into his article in the National Press.
- In future events mark out a performance area, either with rope on the ground or a raised platform.
- In future a larger area of shade is required.

### 2.18 Prize giving



It was arranged that during the prize-giving several prizes would be given: Lars Dinesen to present the IBA book to the DC; Drawing competition winners to be presented their prizes; Choir groups each to be presented with 15,000 Tsh., Drama group to be presented with 15,000 Tsh., Schools to be presented with a prize consisting of bird posters and wetlands information.

well worth adjusting the timetable for. Lars presented the book and said a few short words emphasizing the exceptional environmental values in Rufiji District.

- ☹ The DC thanked Lars but was not given the opportunity to speak formally – perhaps this was not necessary.

## 2.19 Presentation of bicycles to water data collectors

It was planned that 6 village-based volunteer waterlevel data collectors would sign their contracts early in the day and be presented with their bicycles.

- ☺ The bicycles were presented following a short explanation of the work of the water level recorders, and how the bicycles would be used. The audience seemed to understand the reason for giving the bicycles.
- ☹ Only three bicycles were presented in public instead of the planned 6, this was because the intended recipients were not present.

## 2.20 Quiz

It was planned that a 10-question quiz would be held asking children questions about the importance of wetlands and about birds in Rufiji. The questions are listed in Appendix 7.

- ☺ The quiz was a great success, the whole audience engaged and played along with the students, and this was mostly because of Fredrick Mhina's excellent management of the event.
- ☺ The decision to select representatives from each of the schools was taken late in the afternoon but worked very well to encourage competition.
- ☺ The event worked well as an energiser for the audience.
- ☺ A good way of transferring knowledge.

- In future it would be good if the audience could see what the prizes were, as they were wrapped in an envelope nobody knew what the student had won.
- This quiz idea could be encouraged within school environmental clubs, together with field trips to the Selous and the delta.
- More emphasis is needed to get school environmental clubs up and going, this may need a push from the district environmental committee. The environmental committee chairman has promised to take this up with the Education Department.
- The process of environmental planning is more important than the product (EMP). It is important to have the community on board so that the EMP to be prepared can be implemented. Awareness raising events with a relevant technical content are a good way to approach this.



## 2.21 Videos

It was planned to show environment / wetland videos in the evening.

- ☺ In spite of the long and busy day, the video show was well attended and started on time.
- ☺ There were different groups in the video audience, including children, women, men and councillors.
- ☺ Most of the videos shown were in Kiswahili. The only Uganda Wetlands one, that was in English was translated by Mwakalinga and summarised at the end. This was very helpful for improved understanding.
- ☺ The Ugandan wetlands video was very good in encouraging fisheries enterprises and demonstrated that environmental conservation is not restricted to Rufiji.

## 2.22 Attendance

The list of participants officially invited to the event is included in Appendix 9.

- ☺ It is estimated that 450 people attended the event many of these (about 300) were children.
- ☺ Attendance by the general public was surprisingly good, exceeding our expectations.

- ☹ The event was attended by more women than men, with the exception of the guests from the pilot villages where a gender balance was attained.
  - ☹ Wildlife Conservation Society of Tanzania was invited but they were unable to attend and sent their apologies (WCST was invited to help with the birdwalk). The Mangrove Management Project also apologised for not having been able to attend because of other commitments.
  - ☹ There was little or no attendance from the departments of the District that are not directly involved in the implementation of REMP activities though environmental issues are very important to them, e.g. manpower development, water, health, public works and finance.
  - ☹ Most the visitors were children, it seems that the message did not reach the adults of Utete in a way that made them want to come and join the celebrations. This could have been due to venue, being out of town and near the district headquarters may have led people to believe that it was political event.
  - ☹ Unfortunately there was a scarcity of district staff volunteering to help out with the activities. This meant that the staff that were present, were very busy and struggled to cope with the (unexpectedly) large number of participants.
- The lack of interest of the other departments in the event will be tabled at the next EMT. Ways will be sought to increase their involvement and understanding.

### 2.23 General Organisation of the event

The whole day went very smoothly with nearly all that was planned took place successfully.

- In future it is recommended there is a larger area of shade for people to occupy.

### 2.24 Participants' evaluation

On leaving all adult participants were invited to answer the following two questions by ticking the column for yes or no:

1. Did you enjoy the celebrations?
2. Have you learnt anything?

The participants' response to these questions was as follows:

1. Did you enjoy the celebrations.		
YES	31	(82%)
NO	7	(18%)

The main reason cited by people not enjoying the event was that they were not given a free drink (for budgetary reasons this had been restricted to the invited guests). In the future this double standard should be rectified or alternatives provided, for example by inviting the private sector to set up a stand selling sodas.

2. Have you learned anything?		
YES	34	(85%)
NO	6	(15%)

It would seem vast majority of the adult public therefore both enjoyed the event and learned things. Further evaluation could be carried out by sending questionnaires to the schools and also through the EMT.

### 2.25 Other topics raised during discussion.

Exhibits – what will happen to the exhibits? The evaluation committee decided this would be best decided by the EMT.

The chairman of the District Environment Committee emphasized the fact that over the past two years REMP seems to have moved out of the office and towards the people. This has made the

project much more relevant to the district and the communities. Having had initial doubts about the project's usefulness he is now convinced that a second phase is both necessary and welcome. The chairman of the evaluation committee closed the meeting by thanking everyone for her or his co-operation, concluding that we were 85% successful, so there is still room for improvement for next time. Special thanks were offered to Dr. Olivier Hamerlynck and the Wazee for committing their time and efforts to the event.



**The exhibition hall was initially overrun by eager participants, only batches of children were successively allowed in to explore and join in the games.**

### 3 Appendices

#### Appendix 1: Memo

**Memo from:** Olivier Hamerlynck

**Date:** 16 December 2002

**To:** TACD, PM, EMT

**Subject:** International Waterbird Count and World Wetlands Day.

The International Waterbird count was initiated by the International Waterfowl Research Bureau (which has in the meantime become Wetlands International) over 25 years ago. In mid January of each year thousands of volunteers go out to count waterbirds all over the world and the data are compiled by country and published as a report. This is then used to analyse trends in the numbers of certain species, etc. In many countries this has been a very effective awareness raising exercise for wetland conservation.

Unfortunately Tanzania, in contrast to many other African countries, has very few active professional or amateur ornithologists and data collection has mostly been limited to aerial counts of the flamingos in the Rift Valley Lakes, often by Kenyans.

It would seem that some of the District staff now have sufficient knowledge of waterbirds to be able to contribute to the annual count and, because we are often travelling through wetland areas it may be possible to count, at least some of the more prominent water bird species (pelicans, cormorants, darters, ducks and geese, egrets, herons, storks, spoonbills, ibises, fish eagles, black kites, skimmers, etc.). It may even be possible to count some of the larger waders (including the white-crowned plover *Vanellus albiceps*, the noisy one with the yellow green legs and prominent yellow wattles and a lot of white on the wing that, in Tanzania is only known from Rufiji).

Would some of the EMT members and village counterparts be interested in volunteering for a systematic count of the waterbirds on their travels in the field in January? If this is the case we may have a small group planning and coordinating the counts. It should be well understood that this is not a posho activity. By feeling part of the global environmental web (imagine how many people are doing the same while you are counting, from Alaska and Siberia to South Africa and Terre del Fuego) and contributing to the knowledge of waterbird numbers and distribution you may get a good feeling. Indirectly it could contribute to local livelihoods by the drawing attention of ornithologists and other environmentally interested people to Rufiji. These may then come and visit and spend some money locally for guides, lodging, food, etc.

On Sunday February 2<sup>nd</sup> the World celebrates Worlds Wetlands Day. Can we have some ideas on how we would like to celebrate this in Rufiji? One idea that has already been put forward is by applying some of the knowledge we have acquired in the experiential learning exercise to take children on a biodiversity survey of some easily accessible wetlands. But please let your minds roam freely and make other suggestions.



## Appendix 2: Socio-economic values and ecological functions of wetlands (English and Swahili)

### A: SOCIO-ECONOMIC VALUES

1. Provide habitats for several species of birds, reptiles, fish, hippos etc.
2. Microclimate stabilization: rainfall and temperatures.
3. Food production: rice, pumpkins, sugarcane and maize.
4. Food provider: fish, prawns, and hippos.
5. Site for recreation and social functions: swimming, birdwatching, nature photography, sacrifices, sailing and sport-hunting.
6. Source of building and handicraft materials: palm, mangrove poles and pots.
7. Medicines for human and animals.
8. Water transport: canoes, boats and ships.
9. Water for domestic use: cooking, washing and bathing.
10. Drinking water and pastures for livestock and wild animals.
11. Breeding sites for some animals and birds.
12. Source of salt

### B: ECOLOGICAL FUNCTIONS

1. Water balance: charging and discharging of lakes and underground aquifers.
2. Shoreline stabilization and erosion control.
3. Sediment and nutrient retention: sinks for Nitrogen and Phosphorus from agriculture and industries and by so doing improves the water quality and prevents eutrophication.
4. Nutrient transport: flood-fed agriculture cropping season in the Rufiji Floodplain.
5. Transport of various plant seeds and hence facilitate their distribution downstream.
6. Flood control: due to wetland's water storage capacity and ability to release runoff evenly.
7. Support mangrove forests and other forest resources.



MRADI WA USIMAMIZI WA MAZINGIRA WILAYA YA RUFJI (MUMARU)

**A. MANUFAA YATOKANAYO NA ARDHI OEVU/ CHEPECHEPE**

1. Makazi kwa viumbe kama vile ndege, mamba (na jamii zingine za mijusi), samaki, kiboko n.k.
2. Husaidia kurekebisha hali ya hewa, hasa mvua na kiwango cha joto
3. Kuzalisha chakula:- Mpunga, Maboga, Miwa na mahindi
4. Kuzalisha chakula:- Samaki, Kamba, Kiboko
5. Sehemu za kuburudika, kupunga upepo, shughuli za kijamii na kiutamaduni:- kuogelea, kuangalia ndege, kupiga picha, matambiko, matembezi ya boti na uwindaji mahalia.
6. Chanzo cha vifaa vya Ujenzi na zana za mikono:- Ukindu, nguzo za Mikoko na vyungu
7. Madawa ya binadamu na wanyama, hutoa kuni kwa ajili ya matumizi ya binadamu, Usafiri wa majini, Mitumbwi, boti na meli.
8. Maji kwa ajili ya matumizi ya nyumbani:- kupikia, kuoshea / kufua, kunywa na kuogea
10. Maji ya kunywa na malisho kwa mifugo na wanyama pori
11. Maeneo ya kuzaliana kwa baadhi ya wanyama na ndege
12. Hutoa chumvi kwa matumizi mbalimbali

**B. MANUFAA YA KIIKOLOJIA**

1. Husaidia kurekebisha uwepo wa maji ardhini kwa kuongeza na kupunguza maji ya maziwa na ya ardhini.
2. Kuimarisha kingo za ufukweni na kuzuia mmomonyoko wa udongo.
3. Husaidia kutuwamisha virutubisho hasa vya nitrojeni na phosphorus kutoka katika kilimo, viwanda na kwa kufanya hivyo huboresha ubora wa maji.
4. Kusafirisha virutubisho kwa ajili ya Kilimo cha mlao.
5. Husafirisha mbegu za miti, mazao na samaki mbalimbali
6. Kurekebisha mafuriko kwa kuruhusu maji kupita kwa uwiano mzuri.
7. Husaidia kuboresha misitu ya mikoko na raslimali nyingine za misitu.



### Appendix 3: Bird Poster Swahili and English text

The poster was illustrated with large drawings, small photographs of birds, maps of migratory routes, etc. A complete list of the birds observed in Rufiji and the piece of the nest cover of the magical Mnandi bird were exhibited as attachments on the poster.

#### BAADHI YA AINA YA NDEGE WENYE SIFA KUBWA WILAYANI RUFUJI

Wilaya ya Rufiji inaweza kufananishwa na Peponi katika suala la ndege. Wilaya ina aina zaidi ya 420 za ndege kati ya aina 1100 za ndege zinazofahamika na kuwekwa katika orodha Tanzania. Aidha bado aina nyingi za ndege zinasubiri kutambuliwa hapa Tanzania kwani bado kuna ndege zaidi ya 120 ambao hujumuishwa/ hushirikishwa katika kundi hili la ndege wa maeneo chepechepe hawajaorodheshwa.

Tanzania imegawanywa katika kanda za mraba zipatazo 350, na aina zote za ndege waliopo katika kila eneo hutambuliwa na kuwekwa katika orodha maalumu ya ndege. Wilaya ya Rufiji kwa mtizamo huu ina maeneo 4 ya mraba kati ya 350 ya Tanzania (angalia ramani).

Katika maeneo bora 80 ya ndege yaliyoandikwa Tanzania, maeneo 3 yapo wilaya ya Rufiji kama ifuatoavyo:

- Eneo la hifadhi ya wanyama Selous
- Misitu ya pwani ya wilaya ya Rufiji (Kati ya misitu hii ya pwani yetu, ni Misitu ya Matumbi, Vilima vya Kichi na Ngumburuni tu ambayo imeshafanyiwa uchambuzi wa kufahamu ndege waliyopo)
- Maeneo ya Visiwani (Delta)

#### BAADHI YA AINA YA NDEGE WILAYA YA RUFUJI WANAONYESHA UASILU NA UMUHIMU WA RUFUJI

Jina la Kienyeji Jina Kingereza

Mtepe

African Skimmer

Jina la Kisayansi

*Rynchops flavirostris*

Ndege mwenye mabawa marefu, mwenye uweusi na uweupe anafahamika sana hapa Rufiji na huonekana hasa mwisho wa mafuriko. Wazee husema huashiria mwisho wa mafuriko, kwa hiyo ni mwanzo wa kilimo cha Mlau. Sehemu yake ya chini ya mdomo ambao una rangi ya chungwa lililoiva ni mrefu kuliko sehemu ya juu ya mdomo. Hali hii inamwezesha kuishi vizuri katika maeneo chepechepe na kukamata samaki katika maeneo ya mito yenye tope. Ndege huyu huruka karibu sana na usawa wa maji, wakati mwingine pembeni mwa mto huku akikata maji kwa kutumia sehemu ya chini ya mdomo kama kisu. Kila samaki mdogo atakayepitiwa na sehemu hii ya mdomo hunaswa na kuchukuliwa/ kuliwa. Baada ya kula ndege huyu kuburudika ufukweni. Sehemu hizi pia huzitumia katika kutaga na kutamia mayai yake. Mafuriko yanapofika tena ndege huyu hutoweka katika maeneo haya; bado haijulikani anaelekea wapi, lakini inaaminika labda huelekea ziwa Nyanza / Victoria. Ndege hawa ni wachache sana katika Afrika. Huonekana hasa katika maeneo ya mito yenye mafuriko. Hata hivyo ndege huyu ameshatoweka katika maeneo mengi ya mito yaliyojengwa malambo/ mabwawa.

Jina la Kienyeji	Jina Kingereza	Jina la Kisayansi
Sipu Sipu	Pied Kingfisher	<i>Ceryle rudis</i>

Kati ya aina 9 ya Sipu Sipu wanaofahamika hapa Rufiji huyu anayetajwa sasa anaonekana sana na huonekana hasa katika sehemu zenye samaki wengi na uvuvi wa sehemu hiyo ni mzuri. Ndege huyu huwinda kwa kutumia uwezo wake mkubwa wa kuona. Huruka juu ya maji huku akiangalia samaki, mara aonapo samaki, husimama angani/ sehemu alipo samaki na kumyemelea hadi atakapo mkamata. Kama atabahatika kumkamata samaki, basi huruka naye hadi ufukweni na kuanza kula. Mara nyingi akisha kamata samaki huhakikisha kuwa amemuua samaki kwa kugonga kichwa chake kwenye mti. Huweka kiota chake katika mashimo yaliyopo katika kingo za mto.

Jina la Kienyeji	Jina Kingereza	Jina la Kisayansi
Mchingu	Hamerkop	<i>Scopus umbretta</i>

Pengine huyu ndege ni kati ya ndege wa majini ambaye huweza kuonekana katika wilaya ya Rufiji kwa urahisi. Mara nyingi huja karibu na sahemu ya kuvulia samaki na kuchukuwa mabaki ya samaki yaliyoachwa. Anafahamika sana hasa pia kwa uwezo wake wa kutengeneza kiota kikubwa katika mti. Kiota hiki huonekana kama nyumba yenye mfuniko katika tawi la mti. Kiota hiki huweza kukaa kwa muda wa miaka mingi na pengine ndege wengine wadogo wakaanza kujenga na kuisha nje ya kiota hiki.

Jina la Kienyeji	Jina Kingereza	Jina la Kisayansi
Kopwangola	African Open-billed stork	<i>Anastomus lamelligerus</i>

Ndege hawa huonekana zaidi katika kingo za maziwa, maeneo oevu, na katika mashamba chepechepe. Mdomo ya ndege hawa imefanana na chombo cha kushikia kitu (bapa) ila ina mwanya katikati. Mdomo huu umeumbika hivyo ili uweze kukamata konokono kwa urahisi majini au katika matope. Ndege hawa hushirikiana sana, huonekana katika makundi, wakati mwingine kundi huwa na ndege 1000 waliokaa ufukweni. Wakati wa usiku ndege hawa kulala katika mti mkubwa kwa pamoja. Kama walivyo Mwewe na Tai, ndege hawa wanauwezo wa kutumia upepo wenye joto umbao unawasaidia kuruka bila kupeperusha mbawa. Hali hii inawasaidia waweze kusafiri umbali mrefu bila kuchoka.

## NDEGE WA VISIWA VYA RUFJI

Visiwa vya Rufiji vikiwa na misitu ya Mikoko yenye hektari 50,000 na maeneo wazi yanayoonekana wakati wa maji kupwa, ni maeneo muhimu sana kwa ndege wa maeneo chepechepe/ oevu katika Afrika. Zaidi ya ndege hawa 40,000 walihesabiwa mwezi Disemba 2000. Hawa ndege badala ya kuishi/ kula usiku au mchana kama ndege wengine, wameweza kuishi kufuatana na kukupwa kwa bahari. Hujilisha kwa masaa sita katika maeneo yenye tope na kichanga na wakati wa maji kujaa kukaa katika misitu ya mikoko kwa masaa sita. Baadhi ya aina za ndege wenye sifa za kimataifa waliopo katika visiwa vya Rufiji ni hawa wafuatao:-

Jina la Kienyeji	Jina Kingereza	Jina la Kisayansi
	Curlew sandpiper	<i>Calidris ferruginea</i>

Ndege hawa wadogo huweka viota vyao katika vichaka vya asili huko Siberia karibu na Ncha ya kaskazini ya dunia, sehemu ambayo huwa na barafu kwa muda wa miezi 9 ya mwaka. Katika mwezi Machi na Aprili ndege hawa huanza kujilisha kwa nguvu mmno na kujiwekea mafuta mengi mwilini, kuongeza uzito karibu gramu 50 hadi 80. Kwa mfumo huu wa kula na kuhifadhi chakula, ndege hawa huweza kuruka umbali mrefu zaidi ya maelfu ya Kilomita hadi watakapofika katika maeneo mazuri kwa kula tena na kuzaana. Baada ya kuuzaana hurudi tena kwa mfumo ule ule na kufika tena katika visiwa vya Rufiji mwezi Oktoba. Wanaweza pia kuruka hadi Afrika kusini. Ndege hawa wapatao 16,000 walihesabiwa katika visiwa mwezi Disemba 2000. Hii ni sawa na zaidi ya asilimia 2 ya idadi ya ndege hawa duniani.

Jina la Kienyeji Jina Kingereza  
Terek sandpiper

Jina la Kisayansi  
*Xerus cinereus*

Ndege huyu huzaliana katika maeneo ya Taiga, misitu ya misindano ya Siberia kusini mwa Tundra. Katika Rufiji, wanapenda kula katika maeneo ya mifereji yenye matope katikati ya misitu ya mikoko. Hudidimiza midomo yao katika matope haya na kutafuta minyoo ya ardhini. Ndege 2900 walihesabiwa katika visiwa mwaka 2000, karibu asilimia 6 ya idadi ya ndege hawa duniani. Ndege wengi hawakuweza kuhesabiwa kwani boti iliweza kupita katika mifereji mikubwa na yenye maji mengi tu.

Jina la Kienyeji Jina Kingereza  
Crab Plover

Jina la Kisayansi  
*Dromas ardeola*

Huwa ni ndege wanaonekana sana na wana rangi nyeusi na nyeupe. Ndege hawa hula zaidi jamii ya kasa wadogo. Huzaliana zaidi katika visiwa katika bahari nyekundu na Huba ya Persian. Ndege wapatao 3500 walihesabiwa katika visiwa mwezi Disemba 2000, karibu 12% ya idadi yao duniani.

Jina la Kienyeji Hakuna jina la kingereza na pia la kisayansi  
Mnandi

Ndege huyu ni waajabu sana. Ndege huyu hufikiriwa ni wa mazingrara. Hata hivyo hakuna mengi yanayoeleweka juu ya ndege huyu. Inafikirika kuwa ndege huyu si rahisi kuonekana kwani huishi chini ya bahari. Wakati mwingine mabaki ya kiota cheke hutoka chini ya bahari na kutupwa na maji ufukweni. Mganga anasema kiota hiki hutumika katika uganga wa kumfanya mtu asionekane. Mambo mengine ya ndege huyu yanaonekana ni siri ya ndani lakini hata hivyo labda kuna ukweli ndani yake.

## English text

### Some remarkable bird species of Rufiji

Rufiji District is a haven for birds, with some 420 species, out of the total of 1100 species known from Tanzania, already recorded, and many more are certainly waiting to be discovered. Tanzania has been divided into some 350 squares and all bird species encountered in each square are recorded. Rufiji District forms the main part of 4 squares (see map).

Of the 80 Important Bird Areas described in Tanzania 3 are in Rufiji District:

- The Selous Game Reserve
- The coastal forests of Rufiji District (of which only the Matumbi and Kichi Hills and Ngumburuni Forest Reserve have been investigated)
- The Rufiji Delta.

Some remarkable birds in Rufiji District are depicted here:

Local Name	English Name	Scientific Name
Mtepe	African Skimmer	<i>Rynchops flavirostris</i>

This long-winged and very elegant black and white bird is well known in Rufiji as its arrival after the flood signals the time for planting for the Mlau agricultural season.

That the lower half of its bright orange bill is much longer than the upper half is a uniquely adaptation to fishing 'by touch' in muddy rivers. It flies very low over the river cutting the water surface like a knife with the lower half of the bill. Any small fish that it encounters is scooped up. After feeding the birds rest on sandbanks in the river. This is also where they make their nest. As the sandbanks disappear during the flood, the birds leave Rufiji but it is not known where they go, possibly to Lake Victoria.

The bird is rare all over Africa. It only occurs on rivers with important floods and has disappeared

from many rivers after dams have been built on them.

Local Name	English Name	Scientific Name
Sipu Sipu	Pied Kingfisher	<i>Ceryle rudis</i>

Of the 9 species of Kingfisher known from Rufiji district this is certainly the most conspicuous one and it shows places where the fishing is good.

It hunts by sight, flying over the water until it sees a fish. It then stops in the air and then hangs fluttering in the same spot, observing the fish until it plunges down to catch it. If successful it flies to a perch to eat the fish. Often it kills the fish first by banging its head against the branch.

It makes its nest in holes in the river bank.

Local Name	English Name	Scientific Name
Mchingu	Hamerkop	<i>Scopus umbretta</i>

Perhaps the most easy to observe waterbird in Rufiji as it is very confiding. It often comes to fish landing sites and takes some of the fish offal. It is remarkable mostly because of the enormous nest that it builds, like a house with a roof high up in a tree. The building can take several years and also creates a home for many smaller birds that nest in its walls.

Local Name	English Name	Scientific Name
Kopwangola	African Open-billed Stork	<i>Anastomus lamelligerus</i>

In Rufiji they are mostly seen on the edges of lakes, in marshes or on wet shambas. Its bill is shaped like tweezers, with a gape in the middle, especially adapted for taking snails out of the mud. Open-billed storks are very social, often seen in large groups, sometimes more than a 1000 birds together resting on a sandbank in the river. During the night they sleep together in large trees. Like vultures and eagles they can use warm rising air to fly without flapping their wings. This allows them to travel long distances without getting tired.

## Birds of the Rufiji Delta

The Rufiji Delta with its 50,000 ha of mangrove and vast areas that are exposed during low tide is one of the most remarkable places for waterbirds in the whole of Africa. More than 40,000 waterbirds, have been counted there in December 2000. These birds, instead of living with day and night like most birds, have adapted themselves to the Ocean tides, feeding for six hours on the muddy and sandy areas when the low tide and resting on the mangrove branches for 6 hours during the high tide. Some of the species for which the Rufiji Delta is of international importance are:

Local Name	English Name	Scientific Name
	Curlew Sandpiper	<i>Calidris ferruginea</i>

This small bird makes its nest on the tundra, the treeless expanses of Siberia close to the North Pole, an area that is covered by snow and ice for 9 months of the year. In March-April it starts feeding very intensively and puts on fat, increasing its weight from about 50 grams to 80 grams. With this 'fuel' reserve it can fly several thousand km to another delta where it repeats the same system until it reaches its breeding area. After breeding it returns in the same way to Rufiji, which it reaches in October. It can even fly further south to South Africa.

16000 of these birds were counted in the delta in December 2000. This is more than 2% of the World population.

Local Name	English Name	Scientific Name
	Terek Sandpiper	<i>Xerus cinereus</i>

This bird breeds in the Taiga, the vast pine forests of Siberia south of the Tundra. In Rufiji it likes to feed along the small muddy channels of the mangrove where it sticks its long bill into the soft

mud, probing for worms.

2900 of these birds were counted in the delta in December 2000, nearly 6% of the World population (and many of them have certainly not been seen as the counting was done by boat and could only cover the bigger channels of the delta).

Local Name	English Name	Scientific Name
	Crab Plover	<i>Dromas ardeola</i>

This magnificent black and white bird is a specialised crab eater. It catches the crabs with its strong bill. It breeds on coral islands in the Red Sea and the Persian Gulf. 3500 of these birds were counted in the delta in December 2000, nearly 12% of the World population.

Local Name	No English or Scientific Name (yet?)
Mnandi	

This is a very strange magical bird. Nothing much is known about it because it is invisible. It is thought that it lives on the bottom of the deep Ocean. Sometimes parts of the cover of its nest wash up on the shore of the delta. It is said witch doctors use the nest material to make themselves invisible. The other ingredients of the preparation are obviously a well guarded secret, but probably also quite special.

**Appendix 4: Timetable**

WORLD WETLAND DAY CELEBRATION  
TIME TABLE OF EVENTS  
Utete - 2<sup>nd</sup> February 2003

TIME	ACTIVITY	LOCATION
06:00 to 10.00	<b>Nature Walk</b> Meet at Hospital Junction, divide into two groups	Lake Lugongwe and Bridge
10.00 to 14.00	<b>Break</b>	
14.00 to 15.00	<b>Exhibits and Games Part I</b> Everyone welcome to view the exhibits and join in with the activities	Mazingira Ground
15.00 to 15.20	<b>Siasa Primary School Choir</b>	Mazingira Ground
15.20 to 15.40	<b>Utete Drama Group Performance</b>	Mazingira Ground
15.40 to 16.00	<b>Mapinduzi Primary School Choir</b>	Mazingira Ground
16.00 to 16.30	<b>Exhibits and Games Part II</b> Everyone welcome to view the exhibits and join in with the activities	Mazingira Ground
16.30 to 17.00	<b>Quiz</b> (John Or Mhina)	Mazingira Ground
17.00 to 17.10	<b>Presentation of Bicycles to water Data Collectors (Mwakalinga)</b>	Mazingira Ground
17.10 to 17.30	<b>Prize-giving</b> Presentation of Important Bird Area Book to DC ( By Lars Dinesen or Representative) <b>Drawing Competition Prizes</b> <b>Choirs</b> <b>Drama</b> <b>Schools</b>	Mazingira Ground
18.00 to 20.00	<b>Video Show</b> Everyone is welcome to stay and watch environmental videos	Conference Room

**Appendix 5: Jedwali la maneno**

Maneno nane yaliojificha katika jedwali ilifuatalo hapa chini.

Unaweza kuyatafuta yote?

Moja alimefanywa (Panya) kukusaidia.

Herufi lazma ifuate nyingine katika mstari ulionyoka.

<b>P</b>	<b>A</b>	<b>N</b>	<b>Y</b>	<b>A</b>	<b>S</b>	<b>M</b>
<b>O</b>	<b>N</b>	<b>Y</b>	<b>O</b>	<b>K</b>	<b>A</b>	<b>T</b>
<b>P</b>	<b>M</b>	<b>A</b>	<b>U</b>	<b>A</b>	<b>X</b>	<b>U</b>
<b>O</b>	<b>T</b>	<b>N</b>	<b>D</b>	<b>E</b>	<b>G</b>	<b>E</b>
<b>W</b>	<b>S</b>	<b>I</b>	<b>M</b>	<b>B</b>	<b>A</b>	<b>H</b>

Maneno yanaweza yakaenda kulia au chini, lakini sio nyuma.

Panya            Ndege

Maua            Simba

Nyoka           Nyani

Mtu              Popo

**Jedwali la maneno - Kiingereza**

Maneno nane yaliojificha katika jedwali ilifuatalo hapa chini.

Unaweza kuyatafuta yote?

Herufi lazima ifuate nyingine katika mstari ulionyoka.

Maneno yanaweza yakaenda kulia au chini, lakini sio nyuma.

- Wetland**
- Marsh**
- Lake**
- River**
- Water**
- Mangrove**
- Hippo**
- Crocodile**
- Heron**
- Kingfisher**
- Fish**
- Stork**
- Snail**
- Dragonfly**
- Python**
- Eel**
- Crab**

F	D	R	A	G	O	N	F	L	Y
I	Z	X	E	S	T	O	R	K	T
S	N	A	I	L	A	P	O	I	Y
U	A	S	D	H	E	R	O	N	I
F	G	H	J	K	C	L	Z	G	H
Q	M	W	E	C	R	A	B	F	I
M	A	N	G	R	O	V	E	I	P
Y	R	T	R	I	C	C	X	S	P
U	S	V	N	V	O	V	B	H	O
I	H	O	B	E	D	T	N	E	N
W	A	T	E	R	I	L	U	R	M
I	U	W	E	T	L	A	N	D	L
L	Y	A	L	E	E	K	U	J	O
P	Y	T	H	O	N	E	O	I	P

**Jedwali la maneno**

Maneno nane yaliojificha katika jedwali ilifuatalo hapa chini.

Unaweza kuyatafuta yote?

Herufi lazima ifuate nyingine katika mstari ulionyoka.

Maneno yanaweza yakaenda kulia au chini, lakini sio nyuma.

ARDHI OWEVU

CHEPECHEPE

ZIWA

MTO

MAJI

MIKOKO

KIBOKO

MAMBA

SIPUSIPU

SAMAKI

KERENGENDE

MKONOKONO

NYOKA

KA

MAWINGO

MAFURIKO

CHATU

CHURA

M	O	S	A	M	A	K	I	L	M	I
K	M	A	M	B	A	I	A	C	A	V
O	G	H	J	Q	X	B	X	H	J	S
N	Y	O	K	A	E	O	M	E	I	I
O	M	T	O	C	Z	K	A	P	R	P
K	A	R	D	H	I	O	W	E	V	U
O	J	G	F	A	W	H	I	C	C	S
N	I	U	R	T	A	W	N	H	H	I
O	K	Z	X	U	C	Y	G	E	U	P
M	A	F	U	R	I	K	O	P	R	U
K	A	A	Q	B	N	M	I	E	A	T
J	K	E	R	E	N	G	E	N	D	E
Q	E	U	Y	P	M	I	K	O	K	O

**Jedwali la maneno - Kiingereza**

Maneno nane yaliojificha katika jedwali lifuatalo hapa chini.

Unaweza kuyatafuta yote?

Herufi lazima ifuate nyingine katika mstari ulionyoka.

Maneno yanaweza yakaenda kulia au chini, lakini sio nyuma.

Water Cycle Word Search

EVAPORATION

PRECIPITATION

RAIN

CLOUDS

SNOW

ICE

WATER

LIQUID

STEAM

VAPOUR

TRANSPIRATION

RUNOFF

EROSION

WET

DROUGHT

FLOOD

MIST

M	O	W	S	T	E	A	M	E	T	A	I	S	L
I	G	H	J	L	V	A	P	O	U	R	I	N	I
S	I	O	P	K	A	D	R	O	U	G	H	T	Q
T	R	A	N	S	P	I	R	A	T	I	O	N	U
U	A	T	C	L	O	U	D	S	R	E	W	Q	I
Y	I	C	E	J	R	H	G	N	F	D	S	A	D
W	N	J	K	L	A	E	R	O	S	I	O	N	X
E	V	B	N	M	T	Q	U	W	A	T	E	R	Z
T	P	R	E	C	I	P	I	T	A	T	I	O	N
C	V	R	U	N	O	F	F	K	W	A	C	K	L
K	N	M	L	K	N	F	L	O	O	D	E	G	A



**Appendix 6: What am I? Can you guess what is hidden under the flap at the bottom?  
Ideas for Questions.**

**Frog**

I am not a plant.  
I do not have fur or scales.  
I have four legs.  
I always live near water but sometimes you'll find me on dry land.  
I have to breathe fresh air.  
I lay eggs.  
I can hop and crawl, and swim very well.  
I eat insects.  
I do not harm humans.

**Insect eating Bat**

I am not a plant.  
I live on dry land.  
I have fur and give birth to live young.  
I can live in buildings, trees and caves.  
I eat lots of insects, including mosquitoes.  
Usually I sleep most of the day and wake up as the sun goes down.  
I make a variety of sounds including squeaks, and whistles.  
I hunt using sound to locate my prey.  
I have wings and can fly very fast!

**Fish**

I am not a plant.  
I cannot walk I have no legs.  
I do not have fur.  
I live in water.  
I can breathe under water.  
I eat lots of things, including insects and vegetation.  
Humans like to catch and eat me.  
I lay eggs.  
I can swim very well.

**Tree**

I am not an animal.  
I live on dry land.  
Usually I grow very slowly.  
I can grow to be over 50 m tall.  
I produce seeds and fruit to reproduce.  
I use sunlight to grow.  
When I breathe I release oxygen into the atmosphere.  
I can live for hundreds of years.  
I am very useful for humans.

**Lake**

I am not an animal or plant.  
I can be big or small.  
You can see yourself in me.  
I am beautiful as in me you can see the colours in the sky and a reflection of my surroundings.  
I can be round or long and thin.  
I get bigger when it rains.  
I supply humans with food and water.  
I can be deep or shallow.  
I have many things living in me, including fish, hippos and crocodiles.

## **Appendix 7: QUIZ Questions and Answers (Swahili and English)**

### **1. ELEZA KIREFU CHA KIFUPISHO MUMARU, PIA TOA SHUGHULI TATU ZINAZOFANYWA NA MUMARU**

JIBU: Mradi wa Usimamizi wa Mazingira Rufiji ; Utafiti, Shughuli endelevu za maendeleo ya Maliasili ( Ufugaji wa nyuki, Kilimo hai cha matunda , Kilimo mseto), Kutoa ufuhamu na elimu ya kusimamia maliasili

### **2. ELEZA UMUHIMU WA MAENEO CHEPECHEPE HASA KWA MAISHA YA WATU WA RUFJI**

JIBU: Maeneo chepechepe yanadumisha maisha ya wananchi wa Utete kwa kutoa chakula kupitia kilimo, uvuvi, wanyama pori. Aidha maeneo haya hustawisha aina mbalimbali za Maliasili ambazo ni vyanzo muhimu vya uchumi wa wananchi.

### **3. TAJA JINA LA UJUMLA/ KUU LINALOWAKILISHA MISITU YOTE INAYOSTAWI KATIKA MAJI CHUMVI, KANDOKANDO YA VISIWA, MITO NA BAHARI YA HINDI**

JIBU: Mikoko

### **4.TAJA AINA 4 ZA SAMAKI ZINAZOPATIKANA KATIKA MABWAWA, MITO NA VISIWA KATIKA WILAYA YA RUFJI**

JIBU: Perege, Kumba, Pele, Kambale, vitoga, n.k .....

### **5. TAJA AINA 3 ZA NDEGE WANAOPATIKANA KATIKA MAENEO CHEPECHEPE YA WILAYA YA RUFJI**

JIBU: Bata maji, sipu sipu, Mchingu, Kopwangola n.k

### **6. TOA SABABU 3 ZA KUONYESHA KWA NINI NDEGE NI MUHIMU KWA JAMII YETU YA RUFJI NA TAIFA KWA UJUMLA**

JIBU: Husaidia kusambaza mbegu za mimea  
Wanakula wadudu waharibifu wa mimea  
Wanakula nyoka ambao wangukuwa ni tishio la maisha ya binadamu na wanyama wengine endapo wangukuwa wengi (Husawazisha idadi ya nyoka)  
Ndege ni wazuri na ni kivutio  
Wanatuburudisha kwa souti zao nzuri  
Baadhi yao ni chakula  
Chanzo cha fedha za kigeni

### **7. TAJA JINA MOJA LA NDEGE ANAYEWEZA KUOGEEA KATIKA MAJI, PIA ELEZA KWA VIPI MAUMBILE YAKE YALIVYOUMBIKA ILI KUMWEZESHA KUOGEEA**

JIBU: Bata maji , Kwasababu miguu yake iko kama utando wa buibui pia nyoya zake zinaterezesha maji.

### **8. TAJA AINA YA NDEGE WA PORINI AMBAYE WANANCHI WA RUFJI SASA WAMEANZA KUMFUGA**

JIBU: Kanga

### **9. TAJA FAIDA 3 ZA ZILETWAZO NA MAFURIKO YA MTO RUFJI**

JIBU: Mazalio ya samaki huongezeka, Maji ardhini kuongezeka, Hurutubisha udongo, husaidia katika kurekebisha mzunguko wa maji, chanzo cha maji ya binadamu na wanyama wengine, hujaza maziwa/ mabwawa na pia ni sehemu ya mazalio ya ndege na wanyama wengine wa majini.

### **10. TOA SAUTI YA NDEGE YEYOTE WA PORINI; KISHA KWA SIRI MNONG'ONEZE MSIMAMIZI WA KIPINDI HIKI JINA LA NDEGE HUYO.**

(JIBU: Atalitoa anayetoa sauti.)

## QUIZ Question and Answers (ENGLISH)

**1. What is REMP? Give examples of what REMP is doing.**

Answer: Rufiji Environment Management Project, Activities – Research, Sustainable Development Activities (beekeeping, organic horticulture, agroforestry), Awareness and Education.

**2. What is the Importance of Wetlands for the livelihoods of the Rufiji people?**

Answer: Rufiji wetlands support life for the inhabitants and outside world by providing FOOD in terms of agriculture (crops), fisheries and wildlife; wetlands support and produce several kinds of NATURAL RESOURCES, which are major sources of income for people.

**3. Name the famous type of forest that grows in salt water along the coast of the Western Indian Ocean.**

Answer: Mangrove Forests

**4. Name 4 types of fish found Rufiji Lakes and Delta.**

Answer: Tilapia, Pele, Kambale, Vitoga etc.....

**5. Name 3 types of waterfowl found in the Rufiji Wetlands.**

Answer: Ducks, Geese, Snipe, Comorants, Storks, Egrets, King fishers etc.

**6. Give 3 reasons why birds are important to the community and the Nation.**

Possible Answers:

Seed Dispersal.

They feed on insects and mammals that can be crop pests, keeping the population in check.

They feed on snakes that could be harmful, keeping the population in check.

They are beautiful and decorate our lives.

They entertain us with their sounds/songs and displays.

Food - they are a source of protein (chickens, ducks, guinea fowl ostrich etc.)

Source of foreign exchange – bird watching, photography holidays for tourist.

**7. Name a bird that can swim in water, and how is it adapted to water.**

Answer: Duck, adaptations, webbed feet, waterproof oil feathers.

**8. Name a type of wild bird that is commonly reared by people in Rufiji.**

Answer: Guinea Fowl

**9. Name 3 beneficial affects of floods.**

Answer: Fish Production, Ground Water Re-charge, Natural Fertilisation of the floodplain, regulates water cycle, water supply for humans and animals, fills up the lakes, habitat for breeding birds.

**10. Make the sound of a wild bird.**

(whisper to the quizmaster which bird it is and if the audience can guess correctly what the bird is you get the prize).

**Appendix 8: Website report**

**Utete Celebrates World Wetlands Day**

Finally, after weeks of preparations the dawn of World Wetlands Day arrived. Much to the relief of the organising committee, the night faded into a dusky morning with a little cloud but no rain. Leaving the house in the moonless darkness added to the excitement, as a growing procession of people joined us on the way down to the shores of Lake Lugongwe near Utete, in Rufiji District, Tanzania. The snaking procession included the Wazee, the respected local elders whose traditional knowledge had been vital in the preparations but also teachers, students, decision-makers, Rufiji District staff and welcome guests from as far away as Denmark.



As the Open-billed Storks, roosting in the treetops, descended to the waters' edge to start feeding, we began our leisurely nature walk. Strolling along the marshes and reedbeds we paused occasionally to listen to the Golden Weavers chattering, or to watch the hippos' surfacing and snorting or to discuss how vital the wetlands are for the livelihoods of people in Rufiji. The examples are easy to see around Lake Lugongwe: the water supply for Utete town is pumped from the lake, there is fertile land for agriculture, its nutrients replenished annually by the floods and fishing provides both food and business opportunities.



Two young local fisheries researchers explained to the walkers how management of a lake's resources can improve the quality and quantity of fish. They cited the example of Mtanza Msona, a nearby village where the local fishermen have successfully agreed on a closed season and on gear restrictions in their lake.



Bibi Habiba, one of the Wazee, captured the attention of the young and not so young as she explained the traditional medicinal uses of the wetland plants encountered. Students enjoyed using the binoculars to watch the Jacana birds step



delicately over the Lily leaves, or see the Kingfishers perched, patiently waiting to spot a fish under the surface. A pile of smashed up shells next to a rock fuelled a lively discussion on the type of animal that could be regularly using the rock as an anvil. The final consensus (with a little help from our Wazee) was: a Marsh Mongoose smashing the snails to get at the meat.



Arriving at the bridge across the connecting channel between the Lake and the mighty Rufiji River we found Mr Mwakalinga (District Agricultural Officer) who demonstrated how to measure water levels in the lake, and explained the importance



of collecting water level data in order to try and understand the ecological processes at work in Rufiji, but also to discover long-term trends. The data is being used to model the flow of water in the Rufiji. The first indications are that the lakes, so vital for peoples livelihoods and for local wildlife, will dry out or become saline without annual replenishment by the

floods. That those floods are increasingly threatened by developments upstream, did not escape the attention of the public and many questions were asked.

As it started to get too warm for walking in the open we retreated to the shade, still discussing the issues raised during the walk.

At two o'clock the Siasa Primary School Brass Band enthusiastically announced the beginning of the afternoon activities, singing and swinging through town and bringing hundreds of other children along to the Mazingira (environment) grounds in its wake. After a very brief introduction and welcome to the event, visitors started to mingle and explore the exhibition room and library, built by the Rufiji Environment Management Project (REMP<sup>3</sup>). There were plenty of activities for all age groups, the young children coloured pictures, almost rivalling the winners of the drawing competition, whose efforts were displayed on the far wall. Older Children took part in the Water Cycle Game and seemed to particularly like the wetland word search puzzles. Others tried to guess



the hidden picture from clues describing the habits of animals and plants.



The exhibition room was soon full to bursting with excited chattering children, crowding around activities and information posters. It was a relief to squeeze out through the door to watch the activities outside. In different corners of the ground facilitators were playing environmental games with a large groups of children. The Wetland

Web of Life game demonstrated the inter-relatedness of most things we see around us, whilst the Fishing Game was encouraging children to think about the impacts of over-fishing and create their own management solutions.

The highlight of the day was the performances by Mapinduzi and Siasa Primary school choirs. They performed songs about wetlands, birds and their importance. The lyrics, tune and dancing were fantastic, full of energy and the choirs delivered a punchy message for parents, decision-

<sup>3</sup> The Rufiji District Council implements the Rufiji Environment Management Project with technical assistance from IUCN, the World Conservation Union and funding from the Royal Netherlands Embassy, Dar es Salaam, Tanzania. For more information iucndar@epiq.or.tz

makers and all inhabitants of Rufiji asking them to secure their future by conserving wetlands.



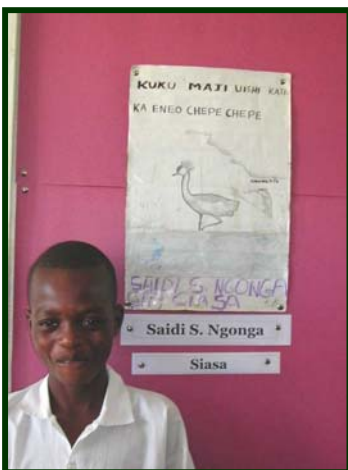
The crowds of children settled down with the adults to watch a short drama performance by the Utete Drama Groups. It used comedy and slapstick effectively to explore the impacts of habitat degradation on rural communities, and re-iterated the importance of wetlands in maintaining ecosystem functions and rural livelihoods.

Lars Dinesen and Mzamilu

Kaita from Wildlife Division Headquarters (Ministry of Natural Resources and Tourism) presented the brand new 'Important Bird Areas of Tanzania' book to the District Commissioner of Rufiji. Three of the 80 important Bird Areas listed in the book are located in Rufiji District.



The Rufiji District Commissioner then presented the happy winners of the drawing competition with their prizes, followed by prizes for the choirs, the drama group and primary schools.



The last activity of the afternoon was the Quiz. Students from the two primary schools had to answer questions about Rufiji Wetlands and Birds in front some 400 people enthusiastically urging them on or very vocally disapproving of incorrect answers. Many people learned new things about wetlands and birds through the quiz.

After dark, environmental education videos were shown and discussed and despite of the long and hectic day, the hall was full.

This was the first time Utete and Rufiji District celebrated World Wetland Day. It has certainly raised awareness and who knows, perhaps the Rufiji delta, with the largest mangrove area of East Africa and home to over 40,000 waterbirds may soon become a Ramsar site. The exhausted organisers were happy with the success of the occasion, and are already making plans to take the celebrations to the village level in 2004.....



**Appendix 9: List of participants invited to World Wetlands Day celebrations**

1.	District Commissioner
2.	District Executive Director
3.	Chairman (Rufiji District Council)
4.	District Administrative Secretary
5.	Chairman (Environment Committee)
6.	WEO – Utete
7.	Councillor (Utete)
<b>8.</b>	<b>Heads of Departments (outside EMT)</b>
	(a) Manpower Development
	(b) Water Division
	(c) Health
	(d) Works Department
	(e) Finance Dept.
	(f) TSC
	(g) Kindwitwi Leprosy Centre
<b>9.</b>	<b>EMT Members:</b>
	(a) Natural Resources – Heads of Department
	(b) Agriculture
	(c) Community Development
	(d) Lands
	(e) Game
	(f) Fisheries
	(g) Forest
	(h) Planning
	(i) MMP
	(j) RUBADA
	(k) TaTEDO
	(l) RUBEP
	(m) Education
	(n) Hon. Athuman Palla
	(o) Hon. Mwajabu Kingwande
<b>10.</b>	<b>Special Invitees:</b>
	(a) Representative Wildlife Division
	(b) Representative WCST
	(c) Gratian Luhikula, journalist
<b>11.</b>	<b>Resource Persons:</b>
	(a) Wazee _ Hunters / Fishermen – 6 people
	(b) Water level recorders from neighbouring lakes – 6 people
	(c) Ms. Saida Mwaimu
	(d) Mr. Kasimu Kindinda
	(e) MR. A. Mwakalinga
	(f) MR. Haji Mkungura
<b>12.</b>	<b>VILLAGERS</b>
	(a) 2 villagers – Mtanza/Msona
	(b) 2 villagers - Mbunju/Mvuleni
	(c) 2 villagers – Jaja
	(d) 2 villagers – Twasalie
<b>13.</b>	<b>Teachers and Pupils</b>
	(a) 20 Teachers – Mapinduzi Primary School
	(b) 12 Teachers – Siasa Primary School
	(c) 25 Pupils (Mapinduzi Primary School)
	(d) 25 pupils (Siasa Primary School)
<b>14.</b>	<b>Drama Group - 6 people</b>

**Appendix 10: Expenditure for World Wetlands Day Celebrations**

<b>Budget line</b>	<b>Amount (TSh)</b>
DSA & Fare resource persons & external participants	763,000
Honorarium Task Force	180,000
Soft Drinks, Tea preparatory meetings and WWD	126,950
Lunch allowance support staff WWD	53,000
Materials, shelter construction	68,500
Gifts and stationary	125,000
Facilitation and reporting	900,000
<b>Total</b>	<b>2,216,450</b>