RUVUMA RIVER SURVEY

September 2000

Marc Baker and Jo Anderson.

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Overview

In September 2000 Marc Baker and Jo Anderson undertook a survey of the Ruvuma River on behalf of Sir Tom Arnold and Colin Hook. The purpose of the expedition was to ascertain whether there was any part of the largely unsurveyed river that had the potential for an extended river trip involving the sponsors and other interested parties at a later date.

Of interest to the sponsors were areas of outstanding natural beauty with pristine or largely intact natural African habitat, especially areas which at present are not afforded any special conservation status, or which may prove potential candidates for future conservation efforts.

Of practical importance would be information relating to where and how it is possible to reach the river, and where supplies and support can be reached from the river. In addition, this reconnaissance trip would be a useful way of assessing the bureaucratic hurdles that would present themselves during any future expedition.

We set out to survey the river from the mouth inland towards the headwaters using a small inflatable motorised dinghy. To achieve this we planned to travel to the mouth of the river by car and to drive gradually inland in attempt to view the river at as many points as possible. At each point we hoped to use the boat to move up and down river from our point of entry to reach areas that are not accessible by car.

This report takes the form of 3 reviews which reflect a combination of 1) information gleaned from standard reference literature together with 2) the direct observations and data collected during the survey and 3) personal knowledge about the country and its environment. The geo-political review and the ecological review attempt to give brief impressions of what a visitor to the area would encounter today, while the logistics overview details many of the practical findings of the trip in relation to access to the river, best sections and overall feasibility.

The final section consists of recommendations for future possible river trips based on these reviews. The questions that we hope to answer with these recommendations are:

1. Is an ascent of the river the only possible option, or can a descent be undertaken given the right conditions of rain and river flow?
2. Having answered (1) above, which parts, if any, of the river are the most interesting to travel along?
3. Given that there are suitable parts to explore, how would they best be tackled (ie types of craft required) and how long would be needed?

Geo-political Review

The Ruvuma River is a seasonally inundated sand river that forms the common border between The United Republic of Tanzania (Tanzania) to the north, and the People's Republic of Mozambique (Mozambique) to the south. Rising in the highlands to the east of Lake Malawi both north and south of the border, it runs generally West to East and is approximately 720 km long. It traverses two political Regions of Tanzania, Ruvuma in the West and Mtwara to the east. The main economy of these regions is the raw cashew nut industry, followed closely and possibly dwarfed illicitly by the gem trade – rubies, Alexandrites and other less precious stones, as well as more recently (see below) diamonds.

Most cashew nut plantations date back to the colonial and early independence periods, and have now fallen into low piecemeal production. All cashews are sold raw and sent for processing abroad (mostly India) and therefore the luxury goods added value is not realised in Tanzania. The farmers growing cashews are little better off than subsistence producers and indeed are all growing food crops to ensure year round basic food supplies. Therefore the regions are among the poorest areas in Africa and relatively backwards in modern "development" terms.

In addition to this economic torpor, the regions have minimal infrastructure in terms of roads and communications. The main road connecting the regional capitals of Ruvuma and Mtwara (Songea and Mtwara respectively) is surfaced inland from Mtwara via Mingoyo (close to Lindi) to Masasi, but is from there on a dirt road which suffers during the heavy rains of the wet season. The road linking Tunduru, the centre of the mining industry in southern Tanzania, to Songea was in terrible condition during the survey time and its prospects for the wet season appear bleak.

The communities along the river itself are often subsistence fishing villages except in the moister coastal areas where cashew plantations reach almost to the river. In some areas there is a variety of crops grown ranging from cassava to tobacco, but few if any of these villages are producing cash crops on a commercial scale. As you move inland away from the coast the diversity of crops grown diminishes greatly and the land under cultivation also becomes less extensive, reflecting lower water availability and poorer soils. In these areas the indigenous miombo woodland often extends right to the river's edge.

Ecological Review

The river passes through several major ecologically distinct African habitats, from its headwaters in the west to the Indian Ocean in the East. The highlands of south-western Tanzania and North Western Mozambique are not high enough to exhibit afro-alpine habitat, but do have some afro-montane forest in patches throughout the area. Coffee is cultivated in these highlands as well as temperate crops such as potatoes, cabbage and carrots. For this reason the area is relatively highly populated.

Further downstream from these highlands the river encounters classic southern African moist woodland, variously called miombo, mopane or mixed brachestygia bush. This habitat dominates most of the river's length and is the most interesting ecologically, harbouring an extensive community of large mammals and a wide variety of birds, reptiles, amphibians and fish. Coastal habitat occupies the lower reaches of the river close to the coast, and the mouth of the river is fringed with mangrove flats and coral reefs.

The river has many minor tributaries along its length, most of which are dry sand rivers for most of the year. Its one major tributary is the Rio Lugenda which joins the stream near to the village of Masuguru and forms the eastern boundary of the huge Niassa Game Reserve of Northern Mozambique. This river flows all year and at the confluence the character of the river changes markedly. Upstream the river is never more than half a kilometre wide and its course is dictated largely by geological strata, restricting the flow to basal rock formations. Below the confluence the river meanders in sweeping arcs through a flat and often extremely wide flood plain, its main channel changing from year to year throughout the expansive sandy riverbed. At one point that we visited, below the village of Maparawe, the river was over a kilometre wide during the driest period of the year, and the villagers indicated the extent of the annual floodwaters to be nearly 3 kilometres from the then existing bank!

In the highest reaches the river runs through inaccessible rocky gorges in the highland areas, and from our best estimates from maps, almost certainly has a wild fluctuation in its level due to the seasonal flooding of the area.

Returning to the miombo areas of the river (ie the main central section) it is important to note that there are efforts currently underway to establish a cross-border wildlife corridor perpendicular to The Ruvuma. This corridor would theoretically extend from the Selous Game Reserve to the north down to the Niassa Game Reserve in the South, thus providing a safe and protected area for the movement of large mammals between these two giant reserves. This cross border movement is recognised as an important and increasingly rare phenomenon and the rapidly growing population of the two countries poses a major threat to this existing ecological highway. Already the space available for such a corridor is severely limited, and during the survey we were able to see clearly that there are only two narrow strips of intact miombo habitat through which animals will be able to move freely without coming into contact with human habitation, agriculture or other activities. These areas are not surprisingly characterised by having forest reserves or game reserves established within them, and the creation of a corridor would simply require the joining up of such already protected areas.

The first area is the land to the west of Masasi. To the south of the main road is an area called Ndechela Forest Reserve which presents the visitor with spectacular views of granite extrusions towering above a sea of miombo. To the south of this is Lukwika Game Reserve, which extends to the river itself. To its west there is a large forest reserve marked as Mwambesi on

the map which follows the river westwards until the village of Mtoni. The Miombo woodland in this area is in good condition and despite the normal intrusions of local woodcutters, is relatively intact for vast tracts.

While we were in the Masuguru area we heard from the local immigration officer that an elephant had been shot the day before for crop raiding, so there is reportedly large game in the area. In between Lukwika and Mwambesi is good miombo habitat, but on the river's edge near to the area called the Sunda Rapids is a large foreign owned mining operation, as well as numerous local diggings. However the habitat could still be considered adequate to provide a corridor if hunting and poaching were controlled.

The second area, which presents itself as an obvious candidate for a wildlife corridor, is to the west of Tunduru on the Songea road. To the north of the road the Selous Game Reserve is only 60 kilometres away and to the south the Miombo woodland seems to stretch off unbroken to the distant river 100kms away at this point. There are no roads or tracks down towards the river all the way from Tunduru to Songea, the last access to the stream being from Tunduru itself (see below). There is one approximately 10kms section on the highway before the village of Kilimasera which has no habitation whatsoever and is dominated by beautiful miombo woodland. In one part the ground rises and the road passes over a rocky ridge. From this vantage point many miles of habitat free of human habitation fill the vista to the south. We assume that somewhere in this area a corridor would be feasible thanks to the small but intact habitat that crosses the main highway. Although not marked as such on the map, it may well be a forest reserve.

It is not possible to comment with certainty on the appearance of the river further west than Tunduru because time and money limitations prevented us from trying to reach the river's edge from Songea. The map shows a track leading south from the town towards The Ruvuma, but the distance at that point is over 100 kms and even with the benefit of 1:50,000 scale maps it is impossible to tell whether the river is reachable from there. The maps show that the river takes on a much more rugged and tortuous course in these upper reaches, cutting through rocky gorges and meandering through thick woodland with no obvious accesses. Even harder to assess is the nature of the stream. It may be deep and fast flowing in the wetter months, making it unpredictable and dangerous, but in the drier seasons is may, depending on the catchment feeding it, become little more than a shallow rivulet.

Logistics Report

Telephone services are available in all the major towns along the main road (Newala, Masasi, Tunduru and Songea). Fuel is available at all the above locations, as well as some of the minor

road stops along the way. The supply at these re-fuelling stations will almost always depend on the state of the road and whether it allows a supply lorry to reach these outposts.

The main district road within Mtwara region is graded from Mtwara parallel to the river through Newala to Masasi. After Masasi the road is unsurfaced and although reasonable to Tunduru in Ruvuma Region, it is in bad condition all the way beyond there to Songea. From Songea to the main Dar-Mbeya highway the road is surfaced and in excellent condition.

The main access points identified were as follows:

Coastal Section:

1. The river mouth – there is a ferry now on the main road south from Mtwara town. The river is very wide and has extensive sandy banks. However the stream itself even here is often shallow and unpredictable.
2. Inland 50 kms at Kitaya the river is a sluggish flow in the middle of a very wide valley that changes dramatically from season to season, but is on average deepest on the Mozambique side. No roads reach the water's edge, but many tracks lead down through thick vegetation and onto the sand flats where a boat could be accessed. This is the case as you travel further inland at Kitaya (75 kms from mouth), Mchichira (125kms) up until Mnavira (150kms). All these places allow access to the river by foot rather than vehicle, but equipment can easily be The river can be navigated in dug out canoes, and probably flat bottomed boats, but again with such a constantly changing and unpredictable stream, passage is not easy.

Inland Section:

1. At Maparawe the river can be accessed easily about 3-4 kms from the village which is on high ground above the river valley. In the wet season this distance may be reduced to one kilometre. There is much less vegetation screening the river than downstream, but the sandy flats bordering the stream are no less extensive, and in fact at this point are remarkably wide. The flow was very shallow and spread thinly over the riverbed when we visited making navigation extremely difficult.
2. The next access from Maparawe is at Masuguru. At this point the river has not yet been joined by the Lugenda from Mozambique and is already dramatically smaller than at Maparawe. The stream is much stronger as it passes through rocky channels, and often over broad rock rapids, and the banks are edges with thick vegetation. 3 kms from the village of Masuguru is a very good access to the river, used regularly by the local villagers for washing and swimming. Here the stream was easier to navigate, but still where the river broadened we encountered problems due to the low dry season flow. This may not be the case in the wet season, although then the rocky sections can be expected to become violent rapids.
3. South of Ndechela Forest Reserve in Lukwika Game Reserve the river is bordered by intact Miombo woodland but has accesses in many places in its sandy bank.
4. A little further upstream from Lukwika the river has access near to the many mining operations, which have developed in the area recently. The river varies in character though, and at one point there are huge rock fields that render it non-navigable in the dry season. It is difficult to say what the access would be like in the wet season, or to estimate the water level, but this huge rock field which extends for several kms may be completely impassable even at high water.

5. Access through Mwambesi Forest Reserve was not verified as the tracks going into the forest reserve all peter out to nothing. They are probably the remains of woodcutter's trails and as the woodland is so thick it was impossible to penetrate further. Therefore the final access identified was at Mtoni, a village approximately 80kms to the south of Tunduru and just to the west of Mwambesi. Although we did not have time to put the boat in, during our visit the water level appeared barely adequate to launch, but the river was still wide enough to produce a good stream and in the wet season it would undoubtedly be possible to launch there.

One other logistical obstacle that we ran into was the village councils and the immigration services. Both of these presented considerable hurdles to staying close to and launching a boat onto the river, presumably because the river is also an international boundary. These bureaucratic pitfalls were usually overcome as we had sought permission from the regional authorities, but any future expedition will need water tight permission papers and a good support team to prepare the ground ahead so that days are not wasted unnecessarily.

Recommendations

In answering our original questions we can make several recommendations.

1. Is an ascent of the river the only possible option, or can a descent be undertaken given the right conditions of rain and river flow?

From our experience along the river it is possible to attempt both ascents and descents in various sections, but the time of year and the level of the river will be critical. Our visit during the driest time of year (in a particularly dry year) showed that the water drops to a level that makes navigation of the stream very difficult and mostly impossible in many areas.

We inquired frequently in many places as to the level of the water during the wet season and were often surprised by how high it rises. In full flood the river must be a most impressive sight, filling its sandy bed and spilling over into the flood plain around it. The flow through some sections if villagers are to be believed is enormous, especially where the water is forced through rock gullies and over narrow rocky sections.

This is the case further up-river from Masuguru. Therefore neither a descent nor an ascent of the river could be attempted in this area during the rains. However with Canadian style flat bottomed boats and small outboard motors a steady descent could be made at a time following the end of the rains, when the water level has dropped and the flow is reduced so as to make controlling a boat feasible.

It is most likely these conditions are present in June and possibly early July. In this way little motor power would be needed, perhaps only being employed to avoid being swept into obstacles or wild animals. For the most part with the water high enough but not in spate, the river would be passable in most places, although there are, as noted, several sections that would probably be impassable even at high water.

Below the confluence of the Rio Lugenda and the Ruvuma the river may well be passable both up and down stream during or shortly after the rains. This would also require a flat-bottomed boat that could easily be carried or dragged if a particularly shallow area was encountered. Again June or early July would probably provide the best conditions in terms of avoiding serious spate while having the best chance of finding a navigable stream.

2. Having answered (1) above, which parts, if any, of the river are the most interesting to travel along?

There is really only one major section that, in our estimation, satisfied. the goal of this survey. The section from Mtoni downstream to the confluence of the Ruvuma and the Rio Lugenda, close to Masuguru village is that section. It is an area of natural beauty, possessing ecological significance in the form of intact southern moist woodland and protected areas, which may in the future form the core of a wildlife corridor from Selous to Niassa Game Reserve.

In addition, the river in this area is still little known and there are some sections that seem almost completely inaccessible except if one was willing to launch a longer exploration from upstream. There are access points along this section that could provide back up and supplies.

3. Given that there are suitable parts to explore, how would they best be tackled (ie types of craft required) and how long would be needed?

As already noted, a flat-bottomed, Canadian style launch with a small outboard would probably be the best solution to combat the combination of often shallow streams and the need for carrying in some parts. 6 people in each boat would leave enough capacity for most supplies, and

re-supplies would probably have to be arranged. The section we have identified is less than 150 kms long, but given the possibility of having to carry the boats over some sections, not being able to pass others and generally leaving time to be able to explore parts of the river more fully when so desired, we recommend 4 weeks minimum to complete the journey. This would include travel time down the coast to Mtwara, plus a few days staging at the mouth of the Ruvuma, probably in Mnazi Bay, a naturally sheltered inlet that would provide a good place to testing boats etc. Also a couple of days would be required to return to Dar es Salaam, or at least one day driving followed by a light aircraft charter from Lindi or Nachingwea. As mentioned before, we would be keen to avoid any use of the Tunduru to Songea road unless absolutely necessary, thus the recommendation to come in and out of the area via the coastal road to Mtwara.

Conclusion

Overall the Ruvuma River was not as remote nor inaccessible as we had expected, although some of the sections further upstream may have proved much more difficult to reach. The coastal section of the river especially in Mtwara Region is relatively heavily populated and although spectacular in its appearance and size, is not particularly interesting in an ecological or exploratory sense.

The upper parts of the stream are of more interest as they pass through some relatively unspoiled and biologically rich habitats, dominated by vast swathes of miombo woodland. Also the river's appearance is distinctly "African" in these areas being characterised by a faster stream, more thickly vegetated banks leading down from bird-filled moist bush, with rugged rocky areas and sand bars all hiding the possibility of hippos, crocodiles, buffaloes and many other of Africa's classic large mammals. Elephants migrate through and live in these woodlands and when on the river the observer is able to capture the feeling that Victorian explorers must have had when first navigating their way into the interior of the African Continent – although this river does not come from such a dark heart!

The survey team believes that despite the logistical challenges of organising a descent or ascent on any part of the river, and the potential and unforeseeable problems that will inevitably be faced, an exploration of part or parts of the Ruvuma would provide a rewarding and unique way of experiencing a rarely visited and little known corner of Africa.