RIVER HEALTH AND WATER QUALITY

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Sources of information

River biomonitoring, specifically on a national scale, is a rather new concept in South Africa. For this reason very few reports are available. Information on the water quality and river health for the Soutpansberg is very limited.

All the data collected through biomonitoring is entered in the Rivers Database and is therefore public domain. This database is maintained by the River Health Programme of which the CSIR acts as custodian.

Summary statistics

As part of the National River Health Programme the rivers of the Luvuvhu River System were monitored in 2000. To determine the health status of the river, the following biomonitoring tools were employed: the South African Scoring System (SASS), the Riparian Vegetation Index (RVI) and the Fish Assemblage Integrity Index (FAII).

The rivers monitored were the Sterkstroom, Latonyanda, Dzindi, Mutshindudi, Mbwedi, Mukhase, Tshiombedi, Sambandou, Mutale and the main channel of the Luvuvhu River.

The only SASS scores that fell in the "natural" category (no or negligible modification of the in-stream habitat) were recorded in the headwaters of the Luvuvhu, the Sterkstroom and the sites in Luvuvhu River within the Kruger National Park. However, the only site rated as "poor" (only tolerant species remaining) was in the headwaters of the Mbwedi River. The rest of the rivers achieved scores ranging from "good" (biodiversity largely intact) to "fair" (few sensitive species lost).

The RVI scores showed that no sites in the natural category were recorded. In the KNP and in the Mukhase River the vegetation scored were "good". Scores ranging from fair to poor, with 11 poor and 5 fair, indicated that the status of the vegetation in the riparian zones were far from the desired health state.

As far as fish are concerned a pattern closely resembling that of the RVI scores were observed. The difference was, however, that there were fewer sites rated as poor.

Based on the findings, only the headwaters were close to their desired health status. The bottom line is, however, that on a temporal scale there are indications of long term problems and anthropogenic impacts (RVI and FAII) but the SASS scores indicate that the water quality has not been as adversely affected.

There is also a disturbingly large number of exotic or alien plant species present in the riparian zones. This alien invasion was detected, in various degrees, at all the sites except for the Mukhase River and the upper reaches of the Mutshindudi River.

Major studies and publications

ANGLIS, M. K. & FOUCHE, P. S. O. (in preparation) *A technical report on the ecological status of the Luvuvhu River and its tributaries*.

FOUCHE, P. S. O. & FOORD, S.H. (in preparation) *The post-flood ecological status of the upper reaches of the Luvuvhu rivers for the period 2001 - 2002*.

State of the Rivers report : Letaba and Luvuvhu rivers systems. 2001. WRC report number: TT165/01

Recommendations for priority studies required to fill any gaps identified

Most of the research/biomonitoring was done in the perennial rivers on the southern slopes of the mountain. There are, however, two rivers on the northern slopes, namely the Nwanedi and the Nzhelele that have not been monitored and which should be attended to.

The biomonitoring indicates that certain problems (eg the alien vegetation) exists and that aspects such as the extent of invasion should be researched.

"Hot spots" of particular importance

The hotspots in this component should be seen as the reaches of the river most impacted by human activities and alien vegetation invasion.

- The Mukase River, which flows through the Mphaphuli cycad reserve, and is the only river classified as "natural" is one of the few rivers where the Red Data fish species, *Opsaridium peringueyi*, is still found. Currently there are major impacts starting to occur in the reserve and very little is done to manage it.
- The Nwanedi River is one of the few localities in South Africa where Clarias theodoria occurs and this river needs serious attention and management strategies.