

The Msunduzi River Disaster (August 2019) – Comment by Dr Gordon O’Brien

The University of KwaZulu-Natal in collaboration with Ezemvelo KZN wildlife and Umgeni Water have been monitoring the ecological health of the fish communities in the Umgeni Catchment, including the Duzi River from 2016.

From our research we discovered that the fish communities in the Duzi are ecologically important and have been in a moderately modified to impaired ecological state. This research has resulted in changes to the conservation status of some local fishes including the listing of the local redbtail barb as vulnerable on the IUCN red list (<https://www.iucnredlist.org/species/63262/100141523>). Although the barb still occurred in the Duzi River (prior to the spill), by 2017 more than 40% of their populations in KwaZulu-Natal had already been lost). We've also have new information on the local stargazer (*Amphillius* cf. *Umgeni*) from the Duzi and Umgeni in now recognised as a new species (based on DNA research). We also have been looking at the catadromous migratory eels that are affected by barriers in the catchment and have found remnants of populations in the Duzi! The river has also maintained populations of cichlids that have social and ecological value to many subsistence fishermen and recreational anglers!

Following the spill in August we would like to raise some concerns and propose some recommendations to mitigate the effects on the indigenous fish communities.

Although the fish kill was dominated by the relatively tolerant cyprinid of the Duzi River, the KwaZulu-Natal Scaly (*Labeobarbus natalensis*) there have been many observation that other indigenous and including barbs (*Enteromius spp.*) catfishes (*Clarius geriepinus*) and eels (Anguillids) have been collected. It is true that some of the populations from upstream and the Umgeni River mainstem can and should recolonise the Duzi, but many population will not or at least they will take many generations to recover. One example is the effects on the long-lived KwaZulu-Natal Scaly (*Labeobarbus natalensis*). These fishes take between 5 and 7 years to mature and may take >20 years to recover. This is similar to the effect of the spill in the Elands River in Mpumalanga in 1989. And this happened in a river with very little water quality impacts (compared to the highly utilised Duzi). In the Elands we only started to see good recruitment of yellowfish in the late 2000s and this was after relocation support from MTPA! We also monitored the recovery in the Elands of other vulnerable species which have recovered after extensive fisheries conservation and relocation work including the establishment of at least three protected area in the catchment! My fear is that the fish communities of the Duzi will not receive the attention they need to recover! From earlier on this year we were tracking yellowfish in the spill zone and know that there is little opportunity for some of the populations to occur upstream. We have lost our whole populations of yellowfish in the study and do not believe there are is a good potential for recovery from upstream. We also know that population pressure is a driver of migrations for these fishes and that only when the population in the Umgeni improves considerably will we experience recolonization from the mainstem!

For the past few years we have been recommending that regulators and conservationists contribute to the management of fisheries in the region and regulate multiple stressors! We hoped that the new DAFF inland fisheries regulations would have been a good vehicle to support the management of fisheries in the Umgeni Catchment. We have promoted that the river and the fish it provides contributes to the resilience of the communities who undertake subsistence fishing. We have also highlighted the effect of multiple stressors to the wellbeing of the Duzi and working with Umgeni Water have been trying to look at better monitoring and regulation measures for the river. We still however need more information on the biology and ecology of the local fishes and I think that without better regulation of the water quality stressors and active relocations from the Umgeni and conservation actions to support recruitment in bit the Umgeni and the Duzi we will only be able to report on the tragic events of the spill and not any recovery.

Please let us not just accept the consequences of the spill as unfortunate and not take any actions, the larger stakeholder community has the means and with motivation we can raise the resources needed to take action. Although I have moved to the University of Mpumalanga most of the applied research programme working on fish is still based at UKZN in Pietermaritzburg and we are keen to contribute to mitigating the effects of the spill.

Please comment and or start discussion amongst yourselves! Sorry for the delay in getting this email out allot of us have been away!

Regards,

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