

INLAND FISHERIES

– A vital rural food source

A recent study by the Water Research Commission (WRC) has confirmed the importance of inland fisheries as a food source of rural communities. Article by Bruce Ellender.

South Africa is a water scarce country and consequently, approximately 3 000 impoundments have been constructed to supplement irrigation, hydro-electricity and urban water supplies. Historically these impoundments also fulfilled a number of secondary roles, predominantly recreational, such as boating, water skiing, sailing and angling.

From a fisheries perspective, the potential of these impoundments was noted early in the twentieth century, and many were viewed as ideal for the stocking of alien and indigenous fish species for both recreational angling and for commercial harvest. To date, commercial fishing has had limited success

on a long-term basis, and the fish resources in impoundments are commonly thought to be predominantly used by recreational anglers and their contribution to near-shore communities is poorly understood.

Inland water bodies are increasingly being viewed as a source of food and income opportunities in a time when food security and poverty alleviation are a major priority in South Africa. This coupled with the current economic climate worldwide, makes the development of inland fisheries an attractive option. Recently, the Department of Agriculture became the Department of Agriculture Forestry and Fisheries, resulting in an increased interest to develop inland fisheries.

This interest has also been taken up by the WRC who has solicited a research project to study the development and sustainable use of storage dams for inland fisheries, with a specific focus on rural livelihoods. In essence, the purpose of this baseline survey is to generate the knowledge that would inform government (and relevant stakeholders) on the potential of inland fisheries; the challenges and bottlenecks in developing them and to develop a road map on how to realise this potential.

Pertinent questions to consider before development are: who uses the impoundment, and how do these users benefit from it and how can negative impacts of the development be minimised to create a win-win



A Lake Gariep Subsistence angler with a nice sized common carp, the predominant species in anglers catches.



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Above: The Oviston settlement on the Lake Gariep shoreline.

Below: Subsistence anglers fishing on an island in the Oviston/Venterstad region of Lake Gariep.

situation. Although this may be the case, until a recent National Research Foundation-funded research on Lake Gariep, no recent information existed on the fisheries utilisation patterns of a South African impoundment.

Lake Gariep, South Africa's largest impoundment was chosen as a case study to investigate user group dynamics and the utilisation trends of an inland water body. The principal aim of the study was firstly to identify the different user groups (recreational, subsistence, commercial) participating in the fishery, secondly to quantify the catches from the fishery for each sector, and lastly to try and quantify what role

this catch plays in the lives of those who are using the resource. This article is essentially a synthesis of three peer-reviewed scientific publications on the Lake Gariep fishery (see references elsewhere).

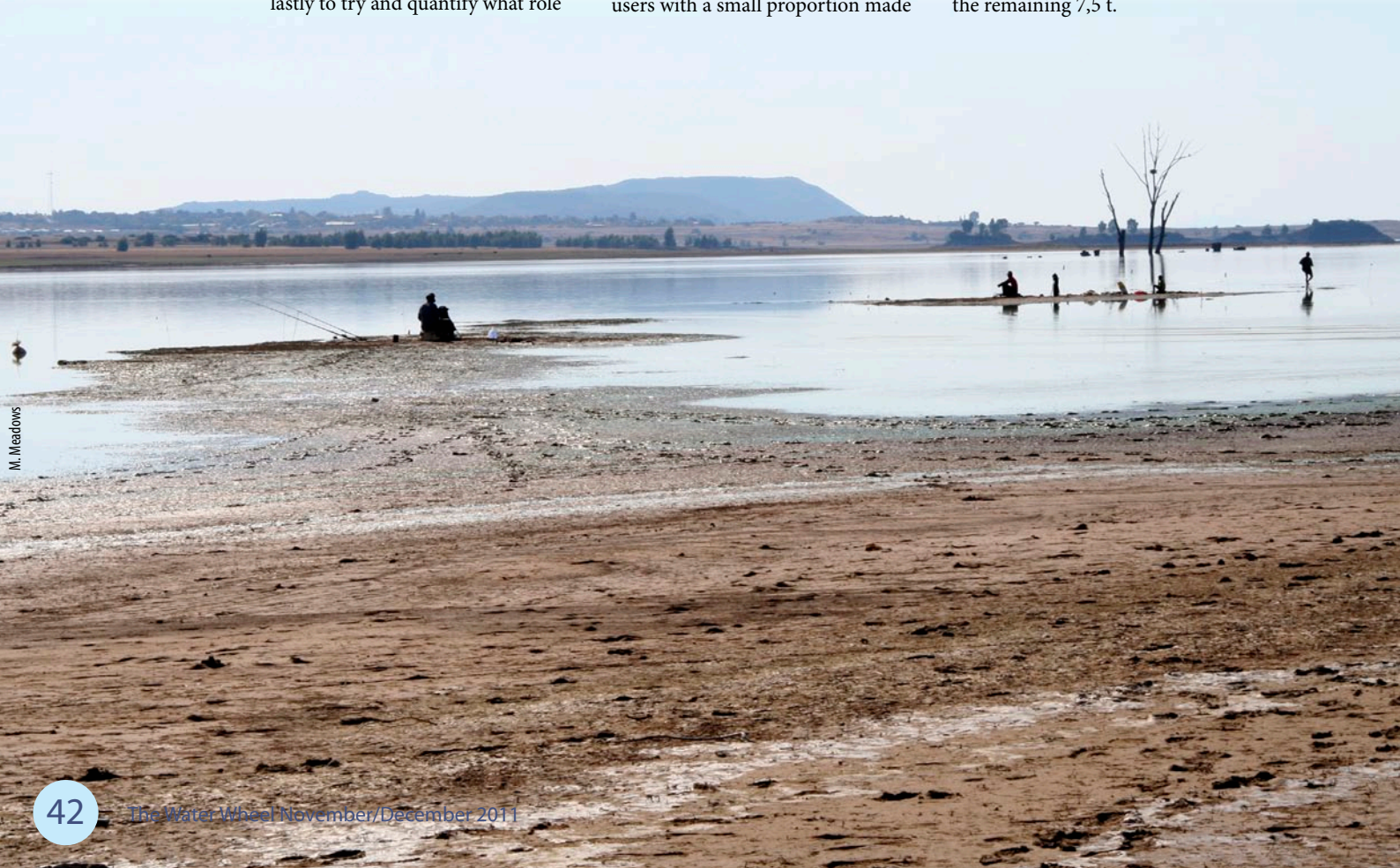
Two user groups were identified from the Lake Gariep fishery, namely subsistence and recreational anglers. Subsistence fishers are individuals who live on or near the lake, use basic transport methods to access the lake (walk, bicycle, and lift), predominantly use artisanal type gear (handlines) and the primary motivation to fish is as a source of food. For the subsistence fisher, the fish may also be a primary or supplementary source of income.

Recreational anglers, on the other hand, utilise the resource primarily for leisure purposes but may sell some of their catch. They access the resource by vehicle and sometimes lift; they have permanent employment, use high-tech gear, and may consume or sell a portion of their catch. The demographic make-up of the lake Gariep fishery is heterogeneous, although the subsistence fishery is dominated by coloured users with a small proportion made

up of black Africans while the recreation fishery is dominated by white individuals and a small amount of black Africans.

This is in contrast to the demographics of the surrounding communities where black Africans are the dominant race. This disparity between user group and local demographics is not surprising, as there are few large natural inland waters where fisheries could have developed in the past. It is only more recently through dam construction that many inland water bodies have been established.

Total annual yield from Lake Gariep is approximately 78,5 t per year. Greater than 75% of the catch consists of common carp, which is an alien invasive fish and at current harvest levels, the fishery can be considered sustainable. Subsistence fishers are the dominant user group on the lake constituting 61% of anglers and the recreational anglers the remaining 39%. This translates in a subsistence yield for the lake of approximately 43,5 t and the recreational yield 27,5 t with catches from angling competitions contributing the remaining 7,5 t.



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The Lake Gariep subsistence fishery is estimated to have 448 participants. This equates to 96 kg/angler/year, which is a fairly large injection of protein into the local communities. A household survey of the lakeshore communities also indicated that reliance on the fish as an easily accessible food and income resource is high. Unemployment rates are high and 85% of people rely on some sort of social grant for income. Lake Gariep provides a vital alternate source of food and income for the lakeshore communities. This is clearly evident as 95% of households consume fish weekly and 57% of households define themselves as 'fishing households'.

Considering these findings, the development of impoundments is therefore not just a matter of implementing a fishery on an untapped resource. South African inland fisheries are more complex than originally thought. Taking into account the reliance of the local communities on Lake Gariep as a resource, the implementation of fisheries development in any form on the lake will impact the local communities.

Right: Lake Gariep was completed in 1970 to supplement urban and agricultural water demands, and provide hydroelectricity.

Bottom right: A typical Lake Gariep recreational angler on the Lake Gariep shoreline.



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In the Lake Gariep situation, an implemented commercial fishery would most likely not provide 448 people with a livelihood, as subsistence angling currently does. Even if a fishery were to develop, the injection of protein would also not be into the local communities as fish would rather be supplied to larger markets further afield. This, coupled with a probable clash with the existent recreational sector, make developing fisheries on Lake Gariep complicated, and most likely unfavourable. The growth and expansion of inland fisheries will therefore require the development of management plans. These should be based on sound knowledge of the social dynamics of the resource users.

In conclusion, this inland fishery contributes significantly to the livelihoods of the rural poor who use the lake on a subsistence basis and that recreational-angler based tourism may contribute to increased income and employment opportunities through related service industries. The Lake Gariep fishery contributes a major source of protein and income to the lakeshore communities, as well as supporting a fairly large recreational angling sector. Perhaps the continued expansion of inland fisheries relies on better understanding the multiple needs that fisheries are able to satisfy rather than concentrating on a specific role that they may fulfil, such as economic gain. □