

The positive role of trout in South Africa

Ed Herbst | 0 November 2021

The anti-trout lobby has always focused on trout's allegedly detrimental environmental impact while ignoring the positive socio-economic benefits of trout in terms of tourism income and job creation.

The anti-trout lobby suffered two significant setbacks in 2021.

The first was an interview by Tudor Caradoc-Davies for *The Mission* fly fishing magazine with freshwater conservation biologist [Dr Jeremy Shelton](#) whose doctoral thesis was about the threatened indigenous fish species of the Fynbos Biome.

In the interview, Shelton argues that the socio-economic benefits of trout to the country outweighed whatever adverse environmental impact trout might have.

The second was [a court judgment](#) on Friday, September 10 when the Pretoria High Court handed down its judgment in Federation of South African [Flyfishers] v Minister of Environmental Affairs.

It ordered that Government Notices GN 112 and GN 115 – which proposed amendments to the existing alien and invasive species (AIS) regulations and were published in Government Gazette No. 41445 on February 16, 2018 – be declared null and void as due process was not followed – see [here](#) and [here](#).

The motivation for FOSAF's court application can be found [here](#).

As the *Daily Maverick's* [Ed Stoddard](#) put it:

In the 130 years since the original introduction, an industry has grown that contributed around R1.8-billion annually to South Africa's GDP and sustained the employment of around 13,000 people in 2014, according to an analysis that year by Cobus Venter, an economic consultant.

The industry includes hatcheries and distribution networks, retail and restaurant food sales, fly fishing venues with accommodation and dams or river access, retail shops catering to fly fishers and the bewildering assortment of gear they sport, a small local manufacturing sector that produces flies and other equipment, professional guides, and so on. The sector is also capital intensive with significant investment sunk into it. The economy of entire towns such as Dullstroom depend on trout.

Pivotal in this question and the viability of the trout value chain is the fact that, because trout need running water to breed, dams must be stocked from hatcheries.

In 2007 government formulated plans to eradicate or control alien and invasive species including brown and rainbow trout.

An onerous permit system would have had a detrimental effect on the efficacy of trout hatcheries and, during the workshops held during the Operation Phakisa Oceans Economy meeting in 2014, FOSAF thought it had reached a compromise agreement with the Department of Agriculture, Forestry and Fisheries (DEFF). In terms of this compromise, trout would be removed from the invasive list and trout hatcheries would be allowed a greater degree of self-regulation.

When, to FOSAF's surprise, DEFF unilaterally reneged on the principles agreed at the Phakisa, FOSAF was forced to seek its recently-successful redress through the courts.

Trout must have had an impact when introduced more than a century ago but we don't know its extent because no records were kept at the time.

The greatest threat to our endangered fish species is not trout but environmental degradation, in particular water extraction by invasive alien plants and trees and [by agriculture](#).

What we do know is that no proof exists that trout have exterminated any other aquatic species.

About twenty years ago, I interviewed the late Dr Douglas Hey, the former head of Cape Nature.

His father, Sydney Hey, was tasked by government with stocking South African rivers and streams with trout in the 1920s.

Douglas was taken on fishing trips in the Eastern Cape by his father as a boy and his job was to gut the trout they caught.

He told me that the predominant food in the stomachs of these trout were aquatic insects and crabs, not minnows which swim swiftly and are accordingly difficult for trout to prey upon.

His empirical findings of what trout eat were confirmed in an [examination of the stomach contents](#) of 235 trout caught in ten Natal streams in the mid- 1940s by Bob Crass, senior scientific officer of the Natal Parks Board:

The results indicate that mayfly nymphs are the most important food of adult Natal trout, with crabs second and dragonflies third.

Crass makes no mention of minnows being found during this research.

Trout are alien to South Africa but not invasive because in a hot, arid country plagued by frequent droughts, they cannot survive outside the tiny fraction of the country where the water is cold enough for them to survive.

Furthermore, in many streams, for example those in the Garden Route, the water might be cold enough to sustain trout but the high humic acid content of these peat-stained streams results in a colloidal coating which suffocates the trout eggs and prevents more than a single generation from surviving after stocking.

A typical example is the Liesbeeck stream which has its source above Kirstenbosch Botanical Garden.

It was the first Western Cape stream to be stocked, but the trout never survived because their breeding was not successful for the above-mentioned reason – Dr Douglas Hey did his Ph.D. thesis on this.

The indigenous Galaxius Zebratus minnow in this stream has suffered no ill-effects from sustained trout stocking – which ceased some 20 years ago – over decades because it can survive [even in the absence of water](#).

Very useful information on this subject can be gleaned in [an interview with Dr Jeremy Shelton](#) who did his Ph.D on the threatened indigenous fish species of the Fynbos Biome:

Shelton's reference to trout and minnows co-existing is corroborated by a [1986 study of the Klipplaar River](#) near Hogsback in the Amatole Mountains of the Eastern Cape by Ken Willan of the Biology Department of the University of Natal in Durban and Monde Mayekiso of the Zoology Department at the University of Fort Hare at Alice in the Ciskei.

Despite repeated stocking trout had not thrived in the Klipplaar - in the main due to drought and floods - and the survey was conducted a) to research its viability as a trout fishery and (b) to ascertain to what extent the introduction of trout had impacted on the indigenous chubbyhead barb minnow (*Barbus anoplus*) and smallmouth yellowfish (*Barbus holubi*).

Both indigenous fish species were present in good numbers and were not found in the stomach contents of 17 trout that were caught and examined.

The stomach contents of the trout were revealing: the most common prey items were Odonata and Notonectidae nymphs and small crabs (Potomon sidneyi). The stomach of the largest fish contained 14 nymphs and five crabs. Barbs were not included in the stomach contents.

Barbs were comparatively abundant along the entire river, occurring in stickles, shallow runs and small pools.

By the time this survey was conducted in 1986, trout had been present in the Klipplaat for decades yet they had had no discernable impact on the indigenous fish species and clearly did not have the ability to reproduce because their presence was dependent on repeated stocking.

An analogous situation of different species co-existing occurs in the Bushman's River in the foothills of the KZN Drakensberg. Fly anglers routinely catch both yellowfish and trout in fair numbers and both are in good health. Both species appear to have maintained a homeostasis which makes a mockery of the alleged threats posed by trout.

Ecotourism value and benefits

Dr Shelton's reference to the eco-tourism value of fly angling for trout is important because, under the NEMA principles, any potential environmental harm caused by trout must also be weighed up together with socio-economic benefits and other considerations like alternative sanctuaries, mitigation measures, etc.

In this regard, the presence of trout is the aquatic equivalent of the canary in early coal mines – if the trout dies, then it is a signal that the water has become too hot or polluted. Its presence, on the other hand, is proof of a healthy water system.

The contribution of fly angling for trout to the country's tourism income is substantial particularly in the context of job creation which is very relevant in South Africa, where two out of three people under the age 25 are unemployed and, in total, more than eleven million out of a population of some 55 million are out of work.

Tourism based on fly angling plays a not insignificant role in redressing that situation.

In Kwa Zulu Natal, it generates 9% of the tourism income for the province and in the small town of Dullstroom, a three-hour drive from Johannesburg, the majority of its residents work in the trout-related sector.

A study by [Dr Gareth Butler](#) of the University of Johannesburg highlights, in particular, the benefits of trout-related tourism accruing to the residents of the Sakhelwe township near Dullstroom and, in particular, to the black women living there:

The findings reveal that tourism development in Dullstroom has had a profoundly positive impact on both black and non-black community members and that these benefits exceeded economic gains. From the perspective of local business owners, tourism development had not only provided a stable economy but a stable community. Here, it was observed that generations of families have remained in Dullstroom, as tourism employment provided them with jobs that not only paid well but included opportunities that were likely to provide skills and educational development too.

Consequently, local businesses retained highly experienced and well-trained employees for long periods and many of these workers were also empowered with positions of responsibility that reduced management workloads and stresses. Indeed, many local businesses owners and managers suggested that the retention of highly trained, loyal staff was a key factor in the success of many local establishments throughout Dullstroom and the surrounding area.

From the perspective of employees from Sakhelwe, tourism development had provided them not only with stable incomes and higher standards of living, but also with the opportunity to gain extensive work experience, new skills, and even the opportunity to pursue formal qualifications that included university diplomas and degrees. Thus, tourism employment in the Dullstroom region empowered members of the local community by enabling them to become financially self-sufficient.

Moreover, many of these positions permitted local community members to pursue career paths that transcended low-skilled or low-paid jobs. Indeed, a range of positive impacts were identified of which some of the key outcomes included:

- ***Direct employment opportunities in the tourism sector***
- ***Indirect employment opportunities in a range of other sectors***

- **An increased appreciation by the community of natural assets and the environment**
- **The building of skills and influence amongst community members**
- **The building of capacity both collectively and individually**
- **Community empowerment (both from a gender and social perspective).**

Google 'The contribution of trout fly fishing to the economy of Rhodes, North Eastern Cape, South Africa' and you will be taken to a [2010 academic study](#) which shows that the annual benefit to the village was about R5 million with 39 people employed in this sector.

According to Stephan van der Merwe, CEO of [Lunsklip Fisheries](#), the 21 hatcheries in South Africa have an estimated turnover of R200 million. They employ about 1000 people in rural areas where employment opportunities are minimal.

This is one of the reasons why the Federation of Southern African Fly Fishers felt it important to challenge the legality of legislation which it felt was inimical to this commercially-important sector.

Commenting on the recent High Court judgment in FOSAF's favour, national chairman Ilan Lax said:

"I think the most important considerations now and in the future are ensuring that South Africa is able to achieve sustainable development (necessary to ensure that our enormous socio-economic disparities are addressed) without significantly impacting on the ecosystems and biodiversity that we and future generations are dependent upon."

What the recent court judgment shows is that FOSAF punches well above its numerical weight because this ruling will have a profound effect on our political life for years to come as it binds government to the consultation over the promulgation of laws which the Constitution demands.

On the environmental side, one only has to look at the ['Milestones'](#) section of the FOSAF website to see how important and significant a role it plays on behalf of society as a whole when it comes to conserving sensitive ecosystems.

What is interesting is to compare the New Zealand government's response to the benefits which trout-based ecotourism brings to that country with the approach adopted by our Department of Environment.

Like us, it is a southern hemisphere country which introduced trout more than a century ago from Great Britain.

It also happens to be one of the world's most egalitarian democracies being the first country in the world to give women the vote and it is also a country where environmental concerns are [given top priority](#).

It does everything it can to encourage trout-based tourism which adds a billion NZ dollars to its economy annually.

In email correspondence with me, Dr Adam Daniel, the Fisheries Manager at Fish and Game New Zealand, said that his department would intervene if trout became a threat to an endangered indigenous species - but this had not proved necessary.

In Australia, the government uses money derived from the sale of recreational angling licences to run its hatcheries on the basis of 80% indigenous fish and 20% trout. It strongly promotes all forms of recreational angling and considers its trout breeding and stocking program to be an integral element of that approach.

In the past, South African recreational angling licenses were sold through the post office but the monies so derived went into the central pool and, with our postal service becoming [increasingly dysfunctional](#), the Australian system will not work here.

In summary then, the following:

1. Trout are not the kind of problem species in South Africa that the popular invasive species narrative likes to proclaim;
2. The trout value chain makes a significant socio-economic contribution to South Africa;
3. The current science appears to confirm that no significant harm is being caused by trout and that this is in any event outweighed by the benefits;
4. The presence of trout in South Africa is thus doing more good than harm;
5. Accordingly, there is no need to remove trout or to attack the species.

FOSAF seeks to make fly fishing in all its aspects a positive force that contributes in a constructive and beneficial way to South African society.

In an environmental context, trout have brought another benefit to South Africa – FOSAF.

The Federation of Southern African Fly Fishers was founded in March 1986 and its record of conserving our riverine environment in particular is significant – you can read about these [accomplishments](#) on its [website](#).

South Africa's unemployment situation is stark:

- 11.9 million people unemployed out of a total population of 55 million
- 73% of unemployed people under 25 do not have a matric certificate – Cosatu
- Two out of three people – 64% - under 25 are unemployed

South Africa needs to embrace the positive contribution that trout bring to the country – as New Zealand and Australia have.

Now another round of negotiations between FOSAF and DEFF begins.

Hopefully, given the research findings of Dr Jeremy Shelton and the recent judgment in the Pretoria High Court, government will - in good faith - reach a conclusion which tempers its need for control with the best interests of South African society as a whole.