

Trout stocking controversy

by Nicholas PE James

A recent proposal to stock a stream in the Southern Cape with trout has stirred up a debate that promises far reaching repercussions. This has again focused attention on the 'trout controversy' that has been simmering since the changes in legislation regarding trout of the 1980's. The proposed development is viewed as a 'test case' of stocking policy by the Cape Nature Conservation Department, scientists and conservationists alike.

Background

Peter Thorpe, who has an MSc in Ichthyology from Rhodes University, is the new owner of Farm 236, The Craggs, 20km east of Plettenberg Bay. The farm consists of the upper Salt River catchment, and its upland tributary, the Wit River. On the lower slopes of the property is a 14 ha fern farm under shade cloth. To the east of this fern farm is a small dam covering 0.5 ha which is filled by rainfall runoff and a spring arising from irrigation seepage from the fern farm. Further east still is a large expanse of many hectares of black wattles (*Acacia mearnsi*), that extends to farm 237 which lies in the Hol River catchment. This river joins the Salt River near the national road, before plunging steeply down a ravine towards the sea approximately 8km to the south.

Peter Thorpe's proposal is to stock his section of the Salt River with brown trout; to construct a dam in the area currently occupied by the wattles which will be fed by the spring; and to build 15 log-cabin type cottages in the hills overlooking the upper Salt River, but otherwise hidden from view. Ten of these cottages would be luxury units sold on a month-per-year basis to flyfishermen who wish to fish a wild river in a pristine mountain environment. The balance would be for local anglers. The dam would be stocked with rainbow trout, and a restaurant built on its edge for tourists and locals alike. The river would have no in-stream modifications whatsoever, as these would be unnecessary, nor would any water be extracted from it. Stocking of trout would be limited to the sections of the river below two barrier falls, leaving the upstream sections of both the Salt and its tributary the Wit as reserves for indigenous aquatic fauna. The income from the sale of the cottages would finance the clearing of invasive vegetation and the declaring of 250ha of the farm as open space 3 (effectively a Heritage Site status).

Conservation status of the Salt River catchment

The entire Southern Cape is currently suffering a huge invasion of exotic vegetation. Much of this is the black wattle *Acacia mearnsi*, but also increasing numbers of *Hakea sericea*, blue gum *Eucalyptus*, and pine. The Salt River catchment has not escaped this invasion with the eastern section on farm 236 heavily invaded with wattle which has completely choked out the natural vegetation and formed a monoculture. The upper slopes have fire-ravaged mature pines, and the western parts of this property above the fern farm have several hectares of blue gum that are fast spreading up the course of the Salt River. The upper kloofs in the vicinity of the barrier falls above the Salt/Wit River confluence are largely pristine fynbos, but wattles and pines are now invading in places. The upper Salt

River itself is currently in very good condition: there are large deep pools with little siltation, riffles and rapids. Even in the recent dry conditions the river is flowing well. The water does not have the heavy humic-acid stain so typical of streams of the Tsitsikama, such as the Storms River, and although still acid (pH 5.8) would be tolerable to trout. Trout eggs will not hatch at lower pH values than 5.6 (Harrison 1950, Hey 1953), but juvenile and adult brown trout *Salmo trutta* tolerate and thrive in even the very acid waters (pH 4.2 - 4.8) of Steenbras Reservoir near Gordon's Bay (Harrison 1961, de Moor and Bruton 1988). The Salt River appears to have no freshwater fish with the exception of occasional smallmouth bass reported from lower down, although there are largemouth bass and (allegedly) some trout in farm dams in the middle and lower catchment.

At present the working policy of the Cape Nature Conservation department towards stocking of alien fish is that no new stockings should take place in what are called 'sensitive' catchments where these aliens do not occur at present. However the problem is more complicated than that. This working policy is aimed at preventing a further reduction in the natural range of such redfin minnow species as *Pseudobarbus afer* which are natural to this general area, and other aquatic fauna that may be unique to this area. This working policy was not formulated to take into account the realities of other threats to the rivers of the Southern Cape, particularly the current wattle invasion, that will destroy these streams and their fauna anyway, if not controlled.

Development to date

Peter Thorpe currently lives on a smallholding near the Craggs (there is no house on farm 236) where he has built a two-tank hatchery to hatch out trout eggs. His water supply is a small ground dam filled with rainwater runoff and ground seepage. His hatchery water is recycled through this dam. He applied telephonically for a permit to bring in and hatch rainbow trout eggs in September 1999, intending to sell fry to interested parties who had suitable established trout waters. His written permit application (dated October 13, 1999) also requested a permit to stock the Salt River with brown trout in accordance with his development plan for farm 236.

After several months without reply from CNC, he contacted them telephonically to be advised that his permit application had been mislaid and he therefore re-submitted applications both to CNC Jonkershoek and George on 6 April this year. He included a topographical plan of his hatchery and pond and stressed that he was under pressure to place an order for trout eggs, as these would only be available during the three winter months. He again contacted CNC on July 28, and re-faxed his application to CNC. At this stage he was given verbal permission to bring in the eggs, on strict condition that he did not stock any waters without a permit. This he did. CNC are currently overworked and understaffed which had caused delays in issuing of the permits, as there is but one aquatic scientist who has to handle all such matters in the South Western Cape.

With guidance from Andrew West of CNC George, he then commenced clearing the mass wattle invasion on the eastern section of 236. This area was virtually a monoculture of black wattles that had invaded since the devastating fires of two years ago. He used his own bulldozer and also hired this machinery out to his east side neighbour who cleared many hectares on the adjoining farm (237) in the Hol River catchment. At the same time other heavy machinery was also active in the area, as his immediate neighbour on the west



The September 4 meeting. Left foreground with his back to the camera is Dr Jim Cambray of the Albany Museum in Grahamstown. He is opposed to a trout fishery being established to finance the costs of removing the alien vegetation that will eventually choke the Salt River.



Massive stands of Australian Black Wattle (foreground) and Eucalyptus on Peter Thorpe's farm. It will cost almost a quarter of a million rand to clear the farm of these water thirsty trees.

side was bulldozing large tracts of land to create irrigated polo fields and dams, on a property owned by Anglo Vaal. Peter Thorpe's approach to this invasion was to push the wattles into contoured windrows where they were burnt. He would then disc the ground by tractor, after which much of the seedbank of natural vegetation still in the soil would germinate. Any regrowth of new wattles could then be tackled by hand, as would the invasion on the steeper slopes unsuitable for machinery. All this was at his own cost. During June he initiated the Environmental Impact Study for the fishery and various experts under the leadership of Dr Malcolm Logie of BESC (East London) were contacted to undertake the surveys required.

Involvement by other parties

The sounds of machinery soon brought various 'interested parties' upon the scene. Objections were raised to the clearing of wattles by machinery and further objections were raised to the proposed development. Heeding these objections, the clearing was halted, and a permit to clear weeds using machinery was duly obtained on 7 August from the Department of Agriculture. However this did not halt the objections by various self-proclaimed environmental activists locally. A huge disinformation operation was initiated by these individuals who linked the proposed development on farm 236 to other activities in the area such as the multi-million rand polo fields development to the west and another development proposal on farm 237, neither of which were under his jurisdiction. Further enquiries directed to CNC as to the whereabouts of the trout permits (dated 15 August) produced nothing at this stage.

At the same time the EIA surveys of the fish and aquatic invertebrate fauna took place. A three day survey was undertaken by Dr Anton Bok and myself (fish) and Mrs Helen James an aquatic invertebrate expert from the Albany Museum in Grahamstown. The results of this survey will, in due course, be formally published in the EIA. However, a summary of the results indicated again that the Salt River contained no indigenous primary freshwater fish species (like redfin minnows, or Galaxias species). The invertebrate fauna was found to be species diverse, and typical of the streams of the Tsitsikama mountains. As with other rivers without fish the caddisfly larvae were abundant and particularly large, and not surprisingly several unusual species were collected. However, Dr Ferdy de Moor (blackfly and caddisfly expert) and Helen James (mayfly expert) confirm that knowledge of the aquatic invertebrate species diversity of the many fishless streams of the Tsitsikama area is inadequate at present, and further surveys of other similar streams need sponsorship to establish the true diversity of the area.

CNC soon found itself under mounting pressure from local opponents of the development, who secured the support of Dr Jim Cambray, an ichthyologist from the Albany Museum, well known for his opposition to trout per se. CNC proposed a meeting of experts to visit the site and discuss the proposed development. This would allow them to assess the practicality of their working policy guidelines, as they saw this as a test case. Dr Cambray and Mr Johan Brummer (a resident of the Craggs) objected to the meeting being closed to the public, and threatened to reject any decision taken by CNC if they (the public) were not included. CNC bowed to this pressure, and a public meeting took place on 4 September.

Kurland Club 4 September meeting

Dr Malcolm Logie acted as chairman of the meeting and described the EIA process. He

also described also the procedures required in planning the cottages and access road, sewerage systems, the dam and other facets of the proposed development. Ten minute presentations were then given by various experts. After this a rather heated general discussion ensued.

Mr Dean Impson, aquatic scientist at CNC Jonkershoek summarised the existing legislation, and his version of the permit application history. After describing the regulatory permit system, he stressed that although verbal permission had been given to bring in and hatch trout eggs, the onus to wait for the actual permit before importing trout into the Cape Province was on the developer (Peter Thorpe). He described the conservation threats imposed by trout, and also the many other factors such as poor land use, invasive vegetation and development in certain catchments, especially in sensitive regions such as the Southern Cape. He viewed this particular development as a test case because the policy of CNC was a 'working policy' as trout are not considered to be a pest species like smallmouth bass or bluegill, and legislation had yet to be gazetted regarding their further distribution. He stressed that CNC were open to constructive input regarding their policy, and that no decision would be taken on the stocking of trout until all opinions had been considered. He concluded by saying that the impact of trout in the Southern Cape streams had yet to be quantified and that there was an urgent need for this. If the purely precautionary approach to stocking trout were to be taken, the permit to stock would be rejected. However if the impact could be shown to be acceptably low, and at the same time other benefits to the catchment resulted from the development, a conditional permit could be granted.

Peter Thorpe then described in detail the proposed development. He described the long and often frustrating process undertaken to acquire permits, and how he had accommodated interested parties who had raised objections. He also clarified the various other developments in the area which had nothing to do with his proposal, but which were being linked to him. He emphasized that the Salt River had not been found to have an indigenous fish fauna, and that sanctuaries above the barrier falls would safeguard any unusual invertebrate fauna that may be identified at a later stage when more information was available. He stressed that the type of investor in his development was expected to be the well-heeled overseas flyfisherman who would expect to fish in pristine fynbos, not a weed patch of Australian trees.

Dr Jim Cambray emphasized that this was a test case to gauge the efficacy of CNC's conservation policy towards stocking alien fish. He raised many objections to the further introduction of trout on the lines that the Salt River was a unique upper catchment stream, and that a future wildlife 'megapark' was proposed for the area for ecotourism. He felt that trout had no part in ecotourism in South Africa. He considered the EIA conducted so far as inadequate, and that the surveys had not been thorough, well-planned or even well executed. He speculated that *Galaxias zebratus* might occur in the Salt River catchment. He questioned whether there was enough water in the Salt River to sustain the development, and was under the impression that dams, weirs and a trout hatchery would be constructed along the Salt River to enhance the fishery which he felt would have a negative impact on the aquatic fauna, including the downstream estuarine reserve. He also criticized the clearing of wattle invasions using machinery, and felt that the entire problem of the invasive vegetation could be handled (and financed) without the proposed trout-based development. He regarded the working policy of CNC regarding 'no new stockings' as worthless if a

permit to stock trout were to be granted in this case. He concluded by saying that laws had been transgressed by the developer and that increased fines including the confiscation of vehicles and trailers should be implemented.

Dr Anton Bok described the fish survey that had been carried out during August for the EIA. No primary freshwater fish species had been found anywhere in the Salt River. The lower reaches within Die Vasselot Nature Reserve above the estuarine part had only yielded eels and other catadromous species such as *Monodactylus falciformis* and mullet. Despite the river water quality appearing to be ideal for redbfin minnows, none were collected. As a comparison the lower reaches of both the Groot River to the east and the Matjies (Buffels River system) to the west were sampled: both yielded *Pseudobarbus afer* redbfins, which were collected in large numbers without difficulty. The upper Salt and Wit Rivers on the developer's farm yielded no fish, not even bass, which had been reported from the system. Sampling conditions were ideal with high water clarity, and if fish had been present they would have been easily collected as they had been in the adjacent streams. Dr Bok described the barrier falls on the Salt and Wit Rivers as impassable hindrances to any upstream fish migration with the exception of eels. He stated that while the priority of keeping catchments free of alien fish was desirable this did not take into account the realities of development, and in this case the stocking of trout within certain limitations would offer an opportunity to quantify their impact on the riverine fauna. There was an urgent need for such information from rivers in the Southern Cape (De Moor and Bruton 1988).

Mrs Helen James, an invertebrate expert from the Albany Museum described the importance of the Cape Fold mountains as a refuge of aquatic invertebrate species not found elsewhere in Africa. She stressed that these insects clearly indicated the state of a river as 'bio indicators' and that the survey had indicated the Salt River to be, at present, in good order. However the acidic streams of the Tsitsikama are not well studied and many unreported species from this area could yet be collected. Rivers that were invaded by alien vegetation would suffer irreversible changes to their invertebrate fauna due to the shading effect, increased siltation, loss of habitat and reduced flow regimes. The impact of introduced trout in South Africa was equivocal: she quoted examples of where trout had reduced invertebrate species diversity (De Moor 1988, De Moor and Bruton 1988, Samways 1994) and others where there had been no apparent impact (Crass 1960, De Moor & Bruton 1988). She concluded with the recommendation that each catchment should be assessed separately for conservation and development purposes, and that the diversity of aquatic invertebrates in the whole Southern Cape region needed much further investigation.

Nicholas James, formerly of the JLB Smith Institute of Ichthyology, Grahamstown, and now owner of Rivendell Hatchery (near Grahamstown), outlined the threats to the Salt river catchment as a whole to put the trout-based development into perspective. (The main conservation threat to all rivers in the Southern Cape was that of uncontrolled invasive vegetation coupled with poor land use and increasing water extraction.) This was degrading streams at a rapid rate for both the fish and invertebrate fauna, as well as reducing flow, and increasing siltation. While the Working-for-Water initiative was being very successful on state land it was not realistic to expect this to spread to private land in the foreseeable future, and indeed at a cost of R4600/ha (1999 costs, DWAF) it was debatable whether even all State land could be cleared. While small invasions could be cleared by



The pristine upper reaches of the currently fish-less Salt River which will eventually be choked by alien invasive vegetation unless action is taken.



The Salt River on farm 236 showing the clarity of water, fynbos riparian vegetation and lack of siltation, all of which will be adversely affected if the threat of alien invasive vegetation is not countered.

landowners at an affordable cost, large invasions such as occurred on farm 236 would be prohibitively expensive (circa R230 000) for marginally productive land. Therefore high-income earning developments with minimal environmental impact were the obvious solution. Time was not on the side of the slow 'precautionary approach' that entailed years of research: there was an immediate problem now that required an urgent solution. Catchments such as the Salt River could be completely destroyed as had the nearby Hol River in less than five years if clearing of wattles, gums and pines was not undertaken soon on a massive scale. He stressed that the controlled stocking of all-female triploid trout into restricted reaches of an otherwise fish-less river would result in a small, predictable impact. In return the catchment vegetation would be returned to, and maintained in a pristine state financed by the conservation-friendly development proposed. He quoted the example of the degraded state of the North Eastern Cape rivers such as the Tsitsa and Pot Rivers as an example of how inaction on the part of conservation departments and land owners had led to many formerly pristine streams being now choked with wattles and sediments that had heavily impacted both indigenous and introduced fauna (trout). Van Wilgen (in Davies and Wishart 2000) warned that "the entire fynbos biome ...may disappear under alien vegetation by the middle of the 21st century unless urgent action is taken." This situation must be avoided in this case.

Discussions

The extent of the misinformation that had been disseminated prior to the Kurland Club meeting was evident during the discussions that ensued. Several farmers, conservation officials and scientists were under the impression that the Salt River was under threat of structural modification (dams, weirs etc) and water extraction for hatchery and other purposes. This had not been proposed at any stage.

There was considerable debate regarding the findings of the recent fish and aquatic invertebrate surveys. Dr Jim Cambray (Albany Museum) and Roger Bills of the JLB Smith Institute of Ichthyology both urged that at least a three year survey should be initiated to study the Salt River, and that there were already enough trout waters available to flyfishers. Dr Cambray suggested that Peter Thorpe should look at other methods than trout to earn a living from his farm and to finance the creation of the pristine reserve that he desired. When asked what these alternatives could realistically be, bearing in mind the costs involved, he suggested 'nature related' projects, but did not elucidate further.

The local problem of invasive vegetation was mentioned by several landowners who were currently attempting to clear their properties of weeds. It was however conceded that they could finance this clearing from their current operations, and that the scale of invasion on Farm 236 was in a different category to theirs.

Peter Behr, manager of the polo fields development on 235, adjacent to farm 236, expressed his opposition to the proposal to build cottages on 236 (without giving reasons) and offered the use of ten labourers 'to help clear the wattles'. It was felt by many that this was a ploy to divert attention from the current bulldozing activities, dam building, and water extraction from the Salt River, on 235. He also did not explain why he objected to the proposed development on 236 when there was a similar cottage development plan for his own property.

Much reference was made to the alleged illegal hatcheries, either owned or advised on by Peter Thorpe. The debate that ensued indicated that the permit application history was indeed anything but a cut-and-dried case, and CNC officials felt that no advantage would be achieved by apportioning blame in this case. Dean Impson and Dr Kas Hamman of WCNC concluded the meeting by requesting that the developer support another fish and invertebrate survey of the Salt River during early summer, to expand on the findings of the August survey results. This he undertook to do.

Subsequent developments

In the weeks subsequent to the meeting the massive disinformation campaign continued with inaccurate articles appearing in the local *Knysna/Plett Herald* accusing the developer of 'toying with the environment' (*Knysna/Plett Herald* 7 Sept). At the same time the scientific community locked horns over the biological aspects of the case with the various parties taking two separate stances:

○ That the introduction should not be allowed on policy grounds, in that there were already too many alien fish in South African rivers, irrespective of the other threats to the catchment.

○ That the impact of trout was a worthwhile trade off for the declaration of the upper Salt River catchment as 'Open Space 3', with the prospect of sustained removal of exotic vegetation, and the refuges for any rare aquatic fauna above the barrier waterfalls.

Some scientists speculated that the development and existence of trout hatcheries spelt doom for the Tsitsikama area as a whole, in that widespread introductions of trout would inevitably follow in an illegal and uncontrolled manner, devastating the aquatic fauna. The recent flyfishing industry developments in the Barkly East area were cited as examples of what could happen. Others felt that the streams in the two regions were so different that this association was not valid, and that Peter Thorpe's proposals should not be damned by speculative association in this way. The authorities at CNC undertook to consider all views...

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