

TROUT IN SOUTH AFRICA

COLLOQUIUM, ETC.

In the mid-1980s the Cape Department of Nature and Environmental Conservation (CDNEC) concluded that its brief was the conservation of indigenous fish species.

It accordingly decided to stop breeding trout at its Jonkershoek hatchery in Stellenbosch.

As a result fly anglers from throughout the country gathered at the Eagles Ride Hotel near Stutterheim in the Eastern Cape on the weekend of 1 and 2 February 1986 to create the Federation of Southern African Fly Fishers, (FOSAF) a lobby group which would endeavour to promote their interests and conserve the environs in which they fished.

FOSAF's first committee meeting was held at the Cape Piscatorial Society offices on 22 March 1986.

Subsequently, Rhodes University in Grahamstown hosted a colloquium, 'Trout in South Africa'.

After an introduction by Professor M. N. Bruton, the CDNEC perspective was articulated by Dr. K.C.D. Hamman to which Dr Tom Sutcliffe replied on behalf of FOSAF.

INTRODUCTION

PROFESSOR M. N. BRUTON

This colloquium is hosted jointly by the J. L. B. Smith Institute of Ichthyology and the Department of Ichthyology and Fisheries Science of Rhodes University. One of the objectives of these two institutions is to contribute to the knowledge and promote the understanding and wise use of marine and freshwater fishes. The issue which faces us today — what role do trout play in South Africa, is a classical environmental dilemma, and one which needs to be viewed from different angles in order to achieve a balanced perspective. The Ichthyology Institute has, throughout its 40-year history, attempted to be receptive to the views of anglers, fish farmers, commercial fishermen etc. while still retaining the right to express its own point of view based on scientific research.

It must be accepted that the trout is an introduced alien animal which did not naturally evolve in the inland waters of Southern Africa. Its presence here will therefore cause an imbalance, and it is the nature of this imbalance which is the issue. While some introduced organisms are of no use to man, the trout is of considerable value for aquaculture and recreational angling. Furthermore, because of their preference for cold or cool well-oxygenated waters, their area of distribution in South Africa is limited.

The impact of trout and other alien organisms should be viewed broadly from the perspective of the World Conservation Strategy (IUCN/UNEP/WWF, 1980). This strategy emphasizes the need to come to terms with the reality of resource limitation and the limited carrying capacities of ecosystems and to take into account the needs of future generations. Whereas the object of development is to provide for the social and economic welfare of man, the object of conservation is to ensure that the earth retains its capacity to sustain development and support life.

The aims of the World Conservation Strategy are to maintain essential ecological processes, to preserve genetic diversity and to ensure the sustainable utilization of species and ecosystems. One of the main obstacles to achieving these aims is that conservation is seen by many to be a limited sector activity instead of a matter which should concern everyone. A feature of our time is the almost limitless capacity of humans to be creative and to do good, which is unfortunately matched by equally great powers of destruction and perturbation.

The introduction of alien aquatic species could potentially affect all three functions of the World Conservation Strategy by interfering with the essential ecological processes, reducing genetic diversity and reducing the sustainable utilization of ecosystems. It is therefore essential that their impact should be minimized, while at the same time ensuring that their contribution to beneficial activities e.g. aquaculture or recreational fisheries, is maximized. One of the most dramatic impacts of introduced organisms is that they may cause the local or total extinction of other species. Of the approximately half billion animal species that have ever lived, only about 2% are extant today. The other 98% have either evolved into new species or (most often) become extinct (Ehrlich & Ehrlich, 1981). Extinction is therefore a natural process. The problem is that rates of extinction have been greatly increased by man. For example, rates of extinction of birds and mammals have increased 5 to 50 fold for the period 1600–1975 compared with all previous time, and the rate is likely to be 40 to 400 times above the average in the last two decades of the twentieth century (Ehrlich & Ehrlich, 1981). The respected conser-

vationist Norman Myers estimates that 20% of all extant species will be extinct by the year 2000. Many extinctions take place as a result of cataclysmic events e.g. earthquakes and volcanic eruptions, but most are due to more subtle changes. The near cataclysmic changes which man has caused to the physical and biological environment have caused the increased extinction rates.

Introduced rainbow trout are regarded with mixed feelings by environmentalists in South Africa and abroad (Welcomme, 1984) i.e. they are highly desirable for the original purpose for which they were introduced but may pose problems to the indigenous fauna. It is my belief that there is a place for trout in South Africa today, just as there is a place for the 240+ indigenous fish species in the subcontinent. It is our role to define that place today.

ALIEN FISH SPECIES AND CONSERVATION WITH SPECIAL REFERENCE TO THE CAPE PROVINCE

K. C. D. HAMMAN

THE ANOMALY

The primary function of the Cape Department of Nature and Environmental Conservation (CDNEC) is to conserve the indigenous fauna and flora of the Cape Province. The present Ordinance (1974) on nature and environmental conservation, provides for the allocation of specific waters or areas exclusively for trout angling. The following additional regulations apply to these waters; open and closed seasons for angling are prescribed; angling methods are specified; a daily bag limit (number of fish caught) per angler is stipulated; and a minimum size limit applies to all trout caught.

From the above it is clear that an anomalous situation exists in the Cape Province, where an alien or introduced fish species enjoys far greater protection than any indigenous species. The objective, therefore, with the proposed changes to this section of the present Ordinance, is to remove this anomaly and provide legal protection to the indigenous fish species of the Cape Province, especially to those species that are rare and endangered.

THE EXTENT OF THE PROBLEM

The well known biologist K. H. Barnard was the first to realise that the introduction of predatory fish species such as trout, during the 1890's and bass, during the 1930's could pose a major threat to the survival of the indigenous fish species of the south-west Cape. Research findings since 1943 indicate that of the 38 indigenous freshwater fish species in the Cape Province, at least 22 can today be considered threatened (see Table 1). A few relevant references in this regard are:

Barnard (1943), Jubb (1959), Gaigher C. (1973 a,b, 1981), Gaigher I. (1975, 1979), Gaigher *et al.* (1980) and Cambray and Stuart (1985).

The South African Red Data Book on fishes lists 12 species which occur in the Cape Province (Skelton 1977; Table 1). In the revised edition (Skelton in prep.) this figure is increased to 16 (Table 1). Several other Cape fish species are not listed in the red data book but are known to have declined and therefore require conservation attention. Due to the continuing and escalating threats to fishes in the Cape Province the CDNEC have specified 22 threatened indigenous fish species in the revised Ordinance.

Table 1. Threatened fish species in the Cape Province.

SCIENTIFIC NAME	COMMON NAME	RIVER SYSTEM
** <i>B. andrewi</i>	Whitefish/Witvis	Berg
* <i>B. calidus</i>	Clanwilliam redfin	Olifants
* <i>B. capensis</i>	Clanwilliam yellowfish	Olifants
* <i>B. erubescens</i>	Twee River redfin	Olifants
† <i>B. pallidus</i>	Goldie barb	(Eastern Cape)
† <i>B. paludinosus</i>	Straightfin barb	Orange

* <i>B.hospes</i>	Namaqua barb	Lower Orange
** <i>B.serra</i>	Sawfin	Olifants
* <i>B.trevelyani</i>	Border barb	Buffalo/Keiskamma
† <i>B.trimaculatus</i>	Threespot barb	Orange
* <i>B.afer</i>	Eastern Cape redbfin	(S & E Cape)
* <i>B.asper</i>	Smallscale redbfin	Gamtoos/Gourits
* <i>B.burchelli</i>	Burchell's redbfin	Breë
* <i>B.burgi</i>	Berg River redbfin	Berg
* <i>B.phlegethon</i>	Fiery redbfin	Olifants
* <i>B.tenuis</i>	Slender redbfin	Gourits
** <i>Labeo seeberi</i>	Clanwilliam sandfish	Olifants
** <i>Austroglanis barnardi</i>	Barnards rock-catfish	Olifants
* <i>A.gilli</i>	Clanwilliam rock-catfish	Olifants
** <i>A.sclateri</i>	Rock-catfish	Orange
** <i>Sandelia bainesii</i>	Eastern Province Rocky	(Eastern Cape)
† <i>S.capensis</i>	Cape kurper	(Western Cape)
*Species included in Skelton (1977).		
**Species included in Skelton (in prep).		
†Species considered threatened in Cape waters.		

Today it is accepted that introduced or alien predators are only one of several factors which threaten the continued existence of indigenous fish species. A combination of detrimental factors contribute to the present adverse situation and a summary of these factors is presented in Table 2. The CDNEC however, only has control over a limited number of these factors and it is imperative therefore for the Department to do what it can to minimise or eliminate the effect of those factors over which it does have control. Alien predatory fish species, such as bass and trout, fall into this category.

It is reasonable to assume that any organism, introduced into a natural aquatic system from elsewhere, will cause some effect on the plant and/or animal community to which it is introduced. Alien fish species, such as bass and trout, not only feed on small indigenous fishes and on the juveniles of the larger species, but as predators they compete aggressively for available food and living space. The small cyprinid species of the Cape Province (excluding the Orange River) evolved in an environment largely free of major piscivorous fish species. The natural defences of the indigenous species are not well tuned to cope with heavy predatory pressures of introduced sport fishes.

It is not simple to isolate the effect of introduced predatory fishes on indigenous species from the impacts of other adverse factors on the environment, but it can safely be assumed that there would be less problems had no introductions of these alien fish species been made. For the past 40 years several researchers warned about the detrimental effect of this specific threat to indigenous fish species but there is a need for more precise research on the impact of alien fish species on sensitive local aquatic communities.

In the Transvaal, the Province with the highest population density in the R.S.A., only about 3 000 trout angling licences are issued annually out of a total number of 124 000 angling freshwater licences. The corresponding figures for Natal are 6 000 out of 38 000 (including sea angling licences) and in the Cape it is estimated that of the 24 000 angling licences issued annually, only 1 500 are in fact active trout anglers. From these figures it seems that trout angling constitutes a relatively small proportion of freshwater angling in the R.S.A. An anomalous situation again exists whereby trout angling is substantially subsidized by the CDNEC, but subsidies are not applied to any other form of outdoor recreation. The basis on which the CDNEC produces and distributes trout to a relatively small and privileged group of anglers is therefore questionable.

FUTURE STEPS AND PROPOSALS

The CDNEC's proposed changes to the existing legislation and related issues involves the following:

- (i) Trout should be placed on a par with other alien fish species which have been introduced to waters in the Cape Province, i.e. no special measures of protection

shall apply and additional control over the selling and transport of live trout will be implemented.

Additional protection measures will at the same time be made applicable on the 22 rare and endangered indigenous fish species, by declaring them endangered wild animals under the proposed new Ordinance.

- (ii) All inland waters will be classified into two groups; namely "sensitive waters" where viable populations of rare and threatened indigenous fish species still occur and "non-sensitive waters" where alien fish species are already established, often together with several other factors which have a detrimental effect on the natural aquatic ecosystems. In "sensitive waters" no stockings of alien aquatic organisms will be sanctioned and angling will be strictly controlled, whereas no restriction will be placed on the stocking of, for example, trout in "non-sensitive waters". At present, "sensitive waters" comprise certain upper tributaries of the larger river systems, such as the Olifants, Berg, Breë, Gourits, and Gamtoos, whereas "non-sensitive waters" include virtually all the known traditional trout waters in the western and eastern Cape. In this respect, the status quo regarding trout fishing will for practical purposes remain as it is.
- (iii) The fish hatchery at Jonkershoek will not be closed, but in future this hatchery will play an important role in the artificial breeding of rare indigenous fish species. Species which have already received attention are: the witvis *Barbus andrewi*, the Berg River redbfin *Barbus burgi* and the Cape kurper *Sandelia capensis*. Burchell's redbfin, *B.burchelli*, will be the next species to be propagated.
- (iv) In recognition of the rights of trout angling to continue in the Cape Province, the CDNEC undertakes to assist organized angling bodies to acquire angling rights on non-sensitive waters, which will enable these bodies to apply their own rules and regulations, including the levying of entry fees. In the western Cape this strategy has already been successfully implemented at several popular angling waters.
- (v) For the foreseeable future the CDNEC intends to continue with the supplying of trout fingerlings to angling societies for the stocking of non-sensitive waters. The breeding of trout at Jonkershoek is, however, dependent on the regular supply of ova from provincial hatcheries in the Transvaal and Natal. These authorities are apparently under continuous pressure to privatise these hatcheries, on the grounds of unfair competition from the State with private enterprise. For the time being, rainbow trout will be available from Jonkershoek, but the future supply cannot be guaranteed.

The CDNEC has grown over the past 40 years, from the then Department of Inland Fisheries, which distributed various kinds of alien fish species, indiscriminately, into virtually all rivers of the Cape Province, to an organization which today has as its prime mandate the judicious conservation of the indigenous plants and animals of this Province. The conservation of unique aquatic ecosystems, will in future be one of the priority functions of this Department.

TABLE 2. Factors threatening indigenous fish species in the Cape Province.

1. Obstructions or barriers in rivers, such as weirs and dam walls, prevent breeding migrations of indigenous fish species and cause unnatural flow patterns.
2. Excessive water extraction from rivers and vleis restricts and destroys aquatic habitats.
3. Bad farming practices damage or destroy aquatic habitats by e.g. increasing sedimentation through erosion; pollution from pesticides and herbicides; illegal channelisation of streambeds; fertilisers cause excessive enrichment of aquatic ecosystems;

- poor control of invasive noxious weeds.
4. Pollution of various forms (industrial, agricultural, domestic and aquacultural) degrades and destroys aquatic systems.
 5. Alien predatory fish species such as black bass and trout eliminate indigenous species
 6. Other alien fish species such as carp, bluegill sunfish, mosquitofish and certain hardy aquarium fishes, as well as translocated species indigenous to South Africa, compete for food and space.

THE ESSENCE OF TROUTFISHING

T. SUTCLIFFE

Because trout fishing is so complex and captivating, it tends to produce few casual dabblers and fistfuls of infatuated fanatics, so that those who do not fish for trout tend to view us fly-fishermen as the lunatic fringe in angling circles. We tend also to be accused of being elitist and of elevating our quarry, the trout, to the heady heights of some minor sub-aquatic Einstein. As we are watched going about our devotionals, this sport must seem to the layman about as confusing as advanced algebra, defying easy understanding and demanding of inordinate skill and intelligence, the whole lot wrapped in a seemingly impenetrable mantle of myth, mystique and mumbo-jumbo. Nothing of course could be further from the truth, because trout fishing is as easy as flying a kite and if the mystery surrounding it persists, it is simply because the layman does not understand the sport and the trout fisherman is disinclined to correct the misconception, preferring to bask in any reflected glory that the catching of salmonids might bring him.

World-wide trout are revered as noble and subtle creatures even if the anglers who pursue them are not. They are perhaps *the* most desirable freshwater game fish combining tremendous fighting power with a discerning wariness and a powerful instinct for self-preservation. This of course makes them a marvellous quarry on which man can focus his atavistic hunting instincts.

Of course there is more to fly-fishing than just fishing. We enjoy the environs where trout are found, which are invariably beautiful, and shun those where man abounds, which are invariably ugly. We fish to escape the tedium and clamour of our hide-bound city lives; to escape also the daily intrusions of television, smog, jetlag and traffic jams. To us trout fishing is at once an escape from civilisation and a welcome return to a civilised state.

We number among our band in South Africa a broad cross-section of the community, people from all walks of life, from a variety of professions that spans everything from joiners to judges. How many we are all told defies any accurate analysis but with the annual unlocking of Spring upwards of 7 000 will take out licences in Natal alone. My belief is that we can't number much fewer than 15 000 nation wide and if this figure is in any doubt the fact that we are growing fast certainly is not.

We are catered for by many angling clubs and organisations, probably as many as thirty, some of which by any South African standard are old and time-honoured institutions steeped in traditions that span nearly a century in this country. We are further supported by a vast world-wide literature that is deeper and broader than that of any other sport known to man. In essence we are not a new star or a passing phase in South Africa, but an institution that is now as firmly established as part of the South African way of life as rugby at Newlands or springbok shooting in the vast plains of the Karoo.

THE PHILOSOPHIES AND BELIEFS OF THE SOUTH AFRICAN TROUT-FISHERMAN

I have had my ear to the ground swell of South African trout fishing opinion long enough to know that we share as a group many common attributes and beliefs. For

example I believe we are conservation-minded people, more concerned with supporting our environment than plundering it. In fact this particular philosophy is pivotal to our sport, given the narrow and critically confined parameters that are necessary for trout survival. Whilst this might be seen to be motivated more by the selfish requirement for a pristine environment in which our salmonids can thrive, than from any pure ideals for an ecologically sound environment, nevertheless our motivation does little to alter the fact that we are supportive of conservation in the broadest sense.

Most of us believe that as members of the taxpaying public we are at least contributors to the various coffers of the professional conservationists and as such we deserve their consideration and support. Certainly we seek to be their allies and to make a contribution, scientific or otherwise, to the programmes of research into our freshwater environment. This certainly has been the case overseas where men like Bachman and Goss, La Fontein and Whitlock have added enormously to this knowledge. On the local front our contributions in such fields as trout behaviour, stomach contents, sub-aquatic entomology and more are much appreciated and sought after, particularly by the Natal Parks Board.

In illustrating the scope of the role that fly-fishermen can play in aiding the scientist and advancing our knowledge, mention should be made of the massive, virtually unparalleled contribution, made by A. C. Harrison during his years as secretary to the Cape Piscatorial Society. Sydney Hey, father of Dr. Douglas Hey, a leading South African Conservationist was also a valuable amateur contributor to many aspects of freshwater science.

As fly-fishermen we cannot emphasise this role enough and I stress again the important need that has been identified in the Cape for improved communication between professional conservationists and the trout anglers. It is our view that matters relating to the management of trout fishing venues *which constitute a major national asset* will be more effectively handled with what I'd like to describe as "user" input. This system is in operation in Natal and it has produced a healthy and co-operative climate for progress and orderly management.

HOW DO TROUTFISHERMEN REGARD THE RECENTLY STATED VIEWS OF THE CAPE DEPARTMENT OF NATURE AND ENVIRONMENTAL CONSERVATION?

In a nutshell we would accuse the Cape Department, of a selective discrimination against trout and I say this for a number of reasons.

On flimsy evidence trout are singled out as a contributory factor in the demise of certain redfin minnow species. We don't deny this possibility exists. But seen against the other environmentally damaging forces such as the perturbations of man (overgrazing, over-irrigating, ploughing along the very edges of river banks, pollution and riverine afforestation), the explosive growth of wattle along our streams and much more, it seems to us that the Department is locked into a minutia, whilst the rest is conveniently ignored. In short we think they have developed a particularly malignant form of tunnel vision. We find it difficult to relate sympathetically to such a one-sided philosophy and most anglers I'm afraid regard the utterances of this department as the vicarious dilations of some whimsical academics, who would wilfully bring their own ideologies into risk of head on collision with a powerful national asset.

In the light of the total onslaught against the delicate riverine environment, the Cape Department's obsession with the trout seems analogous to the situation where a crowd of speculative doctors is busying themselves about some ingrowing toenail, while the patient is fast sinking in the terminal stages of miliary tuberculosis.

We are confused as well by what appears to be a radical difference in thinking

between the Cape's Department of Conservation and that for example, of Natal, who in contradistinction, promote and encourage fly-fishing. This dichotomy of thought on an apparently basic tenet of conservation suggests such marked differences of belief that to call them simply divergent is euphemistic; or, worse still, it suggests that the facts are so debatable as to render them all completely unreliable and speculative at best. Further we believe that the Cape's unilateral action in seeking to divest themselves of any responsibility for trout has turned the relationship between this body and the Cape trout fishermen from what it should be, one of communication and mutual accord in striving toward a common goal, into an internecine one, in which both sides risk the ridicule of the onlooking public. In this regard certain statements made in the press by a senior CDNEC official (Neethling 1986), albeit in his personal capacity, are looked upon by troutfishermen as particularly counter-productive. He referred to trout anglers as "self-confessed elitists who without blinking or blushing refer to all other freshwater anglers as coarse fishermen". This introduced an element of subjectivity to the argument that has further widened the gap between the fly-fishing community and the CDNEC and heightened our misgivings as to the scientific honesty of their various pronouncements.

In summary let me say that as a fly-fisherman I am keen to resolve the problems attendant on trout being exotic. This calls for an objective approach, one that is rational and balanced. But I am keener still to help resolve all the other threats to our riverine environment fully realising that this can only be done if we give our maximum co-operation to the scientists of conservation. We hope that they adopt a pragmatic view of these mutual problems, and co-opt rather than alienate us, to form part of a common task force. The impact of trout on our environment is over. I believe it was small and that our environment has now balanced this impact and is at terms with it. Meanwhile the sport of fly-fishing is established in South Africa as a major recreation for a broad spectrum of people. Trout fishing is a way of life for many people and we expect, and if necessary will demand, that our traditions and values are upheld and respected and never ignored. You could pay us no greater compliment than to recognise trout fishermen as fellow conservationists, striving to bring some sort of order to our gasping and fast expiring world.