

FACT SHEET

What a landowner should know about the **INDIGENOUS FISH** of the Cape Floristic Region:

DIVERSITY, THREATS AND MANAGEMENT INTERVENTIONS



CapeNature

The Cape Floristic Region, mainly within the Western Cape Province, is one of the six plant kingdoms of the world. This area, however, is not only home to a remarkable number of plant species but also has a number of unique indigenous freshwater fish species.

The majority of the freshwater fish of the Cape Floristic Region are listed as either Endangered or Critically Endangered and face a very real risk of extinction!



Cape kurper



Cape galaxias



Fiery redbfin



Clanwilliam rock catlet

INDIGENOUS FISH are a critical component of healthy aquatic ecosystems as they form an important part of the aquatic food web and fulfill several important ecological functions. These fish need suitable habitat and good quality water, free of sediment and agrichemicals, in order to survive. The presence of indigenous fish is one of the signs of a healthy riverine ecosystem, making indigenous fish good bio-indicators of healthy rivers. There are four main river systems in the Western Cape, namely the Berg, Breede, Gourits and Olifants, and each system has unique fish species which only occur in ecologically healthy parts of these rivers. A good example is Burchell's redbfin in the Breede and neighbouring river systems. Genetic research on this species indicates that there could be three distinct species in the Breede system. The Olifants River system is however recognised as the hotspot for indigenous fish diversity as this system has the highest number of unique indigenous species. Research is ongoing and further genetic diversity is being uncovered for other species such as the Cape kurper and the Cape galaxias.

The smaller indigenous fish species are pictured here, but the Western Cape rivers are also home to a number of larger species, some of which are of angling importance. Angling species in the Olifants system are the Clanwilliam yellowfish, and the Clanwilliam sawfin. In the Berg and Breede rivers the whitefish is the largest indigenous fish while the moggel occurs in the Gourits River system but is not a major angling species. Here the Vaal-Orange small-mouth yellowfish is present as an alien invasive species. In addition to the larger freshwater species, some estuarine-dependent species such as the freshwater mullet and the estuarine round-herring occur in the lower sections of some of the rivers of the Western Cape.

CONSERVATION STATUS

What does it mean?

The International Union for the Conservation of Nature (IUCN) assesses the conservation status of potentially threatened species. **According to a 2009 assessment on freshwater fish of Southern Africa, the majority of the freshwater fishes of the Cape Floristic Region are listed as either Endangered or Critically Endangered and face a very real risk of extinction.** This is mostly due to the very limited natural distribution range of most of these species and the severity of the threats facing them. An example of this is the Barrydale redbfin that has a distribution range limited to only the Tradouw River near Swellendam. Most other indigenous species are not listed as Critically Endangered yet, but **the distribution ranges of most indigenous species have contracted in recent years as a result of a number of threats.** For example, the Berg-Breede River whitefish, a once abundant fish in Breede and Berg Rivers, is now extinct in the Berg River system. This species now occurs mainly in large public dams in the Breede River catchment, such as Brandvlei and Kwaggaskloof and there are very few wild populations left. Similarly, the Clanwilliam sandfish which used to be very common in the Olifants-Doring River system is now a rare sight in this area.

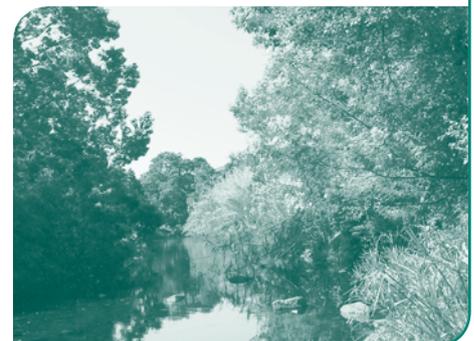
The riparian zone and its importance

The riparian zone refers to the plants occurring along the banks of the river and on the edge of the river channel.

Palmiet is a good example of an instream plant forming part of the riparian zone. Riparian plants and other marginal vegetation play an important role in providing habitat for aquatic animals such as small fish and insects. Riparian vegetation is also a critical part of the structure of the riverbank and this provides stability to the banks during flood conditions. Riparian plants are adapted to the moist conditions of the river channel and can therefore be negatively affected when water is over abstracted. Riparian plants are also sensitive to the effects of alien invasive plants such as black wattle and poplars. These species can in time displace indigenous riparian zones of rivers.

A very good example of this can be seen in the Riviersonderend catchment where there is very little indigenous vegetation left.

River banks infested with aliens





THREATS TO INDIGENOUS FISH

Indigenous fish and their associated ecosystems are threatened in many ways and the threats can be divided into two broad categories:

A. Physical threats which include:

- **Agricultural and residential development** in sensitive areas such as floodplains and riparian zones.
- **Bulldozing of riverbeds** which results in the loss of instream habitat for fish and aquatic invertebrates.
- **Over-abstraction of water**, mostly for irrigation purposes, which often results in rivers running dry in summer months, thereby destroying entire ecosystems.
- **Dam construction** for ensuring water supply can block migration routes for larger species such as yellowfish. In addition, the changes in the natural flow patterns of rivers may disrupt spawning signals for some species.
- **Water pollution** as a result of ineffective sewage treatment plants and the use of agricultural chemicals (fertilizers and pesticides). Nutrient enrichment, mostly a result of sewage spills and fertilizer use, often results in algal blooms which are extremely harmful to fish and other aquatic animals.

B. Biological threats which include:

- **Alien plant invasions** in riparian zones: Alien plants displace indigenous riparian vegetation and destabilize river banks, resulting in excessive flood damage in periods of high rainfall.
- The presence of **alien fish species** such as rainbow trout, black bass, carp and sharptooth catfish. These alien species threaten indigenous species through predation and competition for food and habitat resources. Alien fish species have displaced indigenous species from large sections of all major Western Cape rivers and alien species now dominate these river systems with indigenous species restricted to smaller mountain tributaries. Fish conservation experts agree that alien fish species are the *most important* threat to the indigenous fish of the Western Cape Province.

These alien fish threaten indigenous fish species:
L-R: Sharptooth catfish, Rainbow trout, Carp and Smallmouth bass



What can landowners do?

Ensure sound land use management through:

- Not expanding farming operations into sensitive areas such as floodplains and riparian zones. No farming activities or residential development should be done within the 1/100 flood line of a river system. This will prevent most flood damage and subsequent bulldozing of riverbanks and protect already threatened fish species and their associated aquatic ecosystems.
- Preventing grazing animals such as cattle from trampling riverbanks and damaging riparian vegetation.
- Removing and managing alien invasive vegetation such as wattle in riparian zones.

Ensure healthy aquatic ecosystems through:

- Not over-abstracting water from rivers during low flow summer months and ensuring that all water use is registered with the Department of Water Affairs.
- Not bulldozing or canalizing a river as it destroys the instream aquatic habitat.
- Never moving or stocking live fish without a valid permit from CapeNature.
- Rehabilitation of impacted sites by re-establishing riparian vegetation and preventing further impacts.

PHOTO: Ernst Swart



Barrydale redfin minnow

A MANAGEMENT PLAN FOR THE BARRYDALE REDFIN AND THE CLANWILLIAM SANDFISH

Managing the conservation of indigenous fish is challenging due to the number of threats to them and the number of stakeholders that need to play a role in ensuring the conservation of a species and its habitat. Here the National Environmental Management: Biodiversity Act (Act 10 of 2004) has a critical role to play for two reasons. Firstly, it guides the stocking of alien invasive species through a zoning scheme which prevents alien species from being stocked into ecologically sensitive areas, thereby helping to protect indigenous species. Secondly, this legislation allows for an integrated approach to species conservation whereby all stakeholders, ranging from conservation authorities to municipalities to private landowners have the opportunity to be involved in the development and implementation of conservation plans. Conservation plans are currently being developed for the Critically Endangered Barrydale redfin in the Tradouw system and for the Endangered Clanwilliam sandfish in the Olifants-Doring river system.

