Ecological State of the Berg River

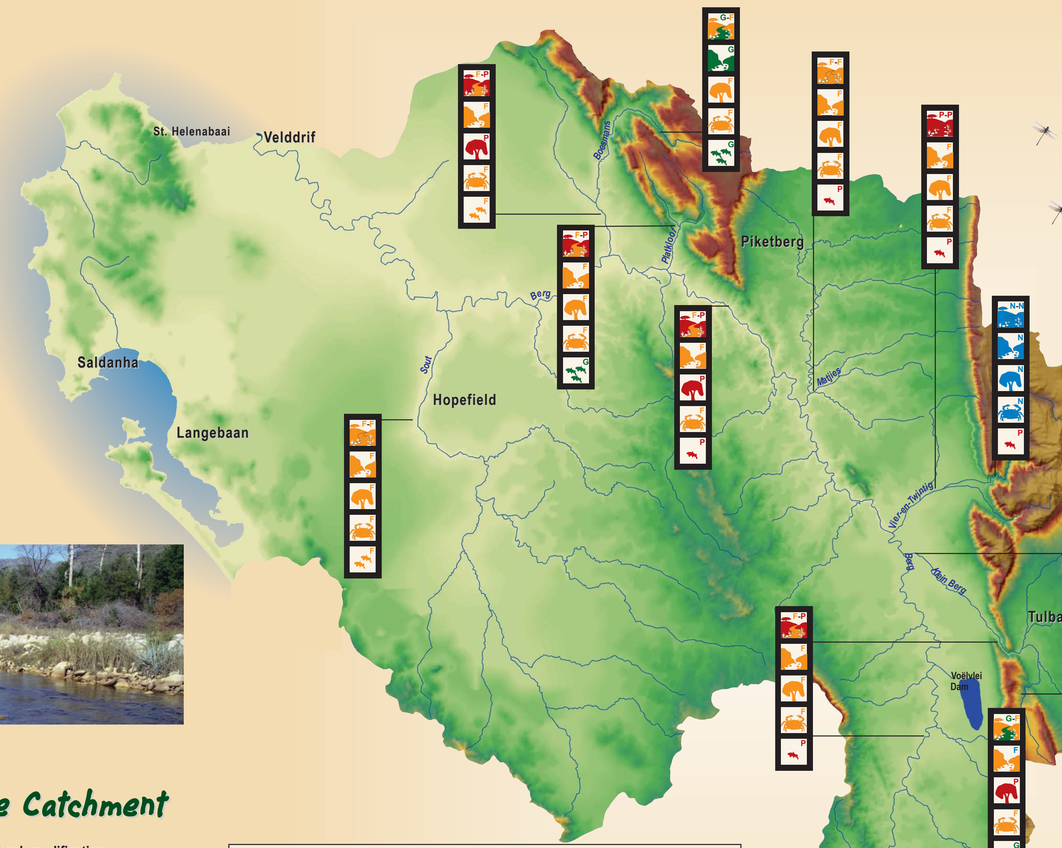
health

river

The Berg River Catchment

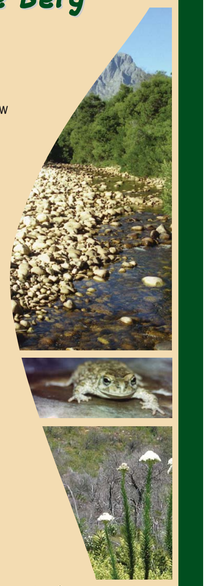
The Berg River rises in the Franschhoek Mountains north of Cape Town. It then flows in a north-westerly direction to enter the sea at St. Helena Bay at Velddrif on the west coast.

Cultivation of grapes and deciduous fruit is the backbone of the economy in the Berg River catchment. North of Wellington, dryland grain farming and sheep farming predominate. Commercial pine forests occur near the headwaters, around Franschhoek. The major industries in the Berg River basin are agriculturally based and include wineries, canneries and other food processing factories. Only the upper catchment of the Vier-en-Twintig River remains in a natural state.



Management interventions for the Berg River and its Tributaries

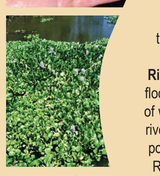
- **MANAGE RELEASES FROM INSTREAM DAMS** to simulate natural downstream flow patterns. Also restrict water use, e.g. abstraction, particularly during the dry summer months.
- **IMPROVE LAND-USE PRACTICES** by maintaining a disturbance-free buffer zone along river banks to reduce sedimentation and water quality problems.
- **CLEAR ALIEN VEGETATION** from the surrounding catchment and riparian zone and re-introduce indigenous riparian vegetation.
- **STOCK FARM DAMS WITH INDIGENOUS FISH** rather than alien fish. Protect the best areas for fish conservation. Construct a weir above the Berg River Dam to prevent migration of alien fish upstream.
- **IMPROVE WATER QUALITY MONITORING AND MANAGEMENT** of stormwater runoff and wastewater discharges from agricultural and urban areas.
- **INVOLVE LOCAL COMMUNITIES** in the rehabilitation of riverine habitat and river health initiatives.



Overall State of the Catchment

The overall river health of the Berg River decreases from its source towards its mouth. This is as a result of alien vegetation and fish infestation as well as agricultural and urban development. The interbasin transfer of water in the upper Berg River, diversion weirs and dams throughout the catchment alter the flow regime, water quality and habitat. Alien fish have severely impacted on indigenous fish populations.

Impacts & Development in the Catchment



River channel and river bank modification: Straightening and stabilising of river channels have reduced habitat diversity and caused the loss of sensitive aquatic species. The construction of levees along river banks have intensified flood flow and reduced the natural ability of the floodplain to absorb flood water, which led to increased erosion and siltation.

Alien species infestation: Centuries of cultivation and invasion by alien vegetation and fish have caused habitat degradation and the localised extinction of indigenous fish. River gum, wattle and poplars use large amounts of water, reduce runoff and river flow, cause incised channels and destabilise river banks. Mozambique tilapia, carp, sharptooth catfish, smallmouth bass, and rainbow trout have infested most of the lower reaches of the tributaries and the main stem, where they prey on and compete with indigenous fish.

River flow modification: Dams and diversion weirs have eliminated most floods and have altered low flow conditions in the catchment. High levels of water abstraction and alien vegetation infestation have further reduced river flow with an increased loss of goods and services e.g. dilution of pollutants. The transfer of water from Theewaterskloof Dam to the Berg River has reduced water quality and disrupts the flow regime.

Wastewater discharges and runoff: Urban and agricultural runoff containing pesticides, fertilisers and wastewater discharges have resulted in poor river water quality and hence a loss of pollution sensitive aquatic invertebrates e.g. stoneflies.

New developments: Construction of the Berg River Dam in the La Motte State Forest near Franschhoek was initiated in mid-2004 under the management of TCTA and is due for completion in 2007.

What is River Health?

The term "river health" refers to the overall condition of a river. Many physical, chemical and biological factors influence river ecosystem health. Indicators used to measure river health are representative of the larger ecosystem. They are summarised and expressed as indices (see below) which are easy to understand. This poster is a summary of the Berg River data collected during 2003 and 2004 (See River Health Programme (2004) State of River Report: Berg River System, obtainable from the Department of Water Affairs and Forestry at the contact details given below).

Indices of River Health

Index of Habitat Integrity (IHI)	A measure of the availability and diversity of riparian and in-stream habitat.
Geomorphological Index (GI)	A reflection of the channel condition and channel stability.
Riparian Vegetation Index (RVI)	A measure of the degree of modification of the river bank vegetation from its natural state.
South African Scoring System (SASS)	Index based on the aquatic invertebrates (e.g. crabs) found at a site. Indicates the localised river condition.
Fish Index (FAII)	Measure of the fish diversity deviation from its natural state, which indicates the long term impacts on the general habitat.

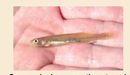
River Health Categories

River Health Category	Ecological Perspective	Management Perspective
Natural N	No or negligible modification	Relatively little human impact
Good G	Biodiversity and integrity largely intact	Some human-related disturbance but ecosystems essentially in good state
Fair F	Sensitive species may be lost; with tolerant or opportunistic species dominating	Multiple disturbances associated with the need for socio-economic development
Poor P	Mostly tolerant species; alien species invasion; disrupted population dynamics; species often diseased	High human densities or extensive resource exploitation

Indigenous fish in the Berg River

Invasive alien fish and reduced habitat integrity have caused the Berg River redfin, Cape kurper and Cape galaxias to be confined to the upper reaches of the Berg River and its tributaries. The once abundant Berg-Breede witvis is now extinct in the system, while the Berg River redfin is critically endangered. The Cape galaxias and Cape kurper are listed as near threatened.

Cape kurper: near threatened



Cape galaxias: near threatened

Berg River redfin: critically endangered

Berg-Breede witvis: extinct in catchment

The Lower Berg River Wetlands

The floodplain and the Berg River Estuary, collectively called the Lower Berg River Wetlands, are listed as an Important Bird Area (Ramsar Convention). This area is critically important for bird conservation and is a nursery area for estuarine dependent saltwater fishes such as leerfish and kob. The floodplain supports 127 water and 250 resident bird species, including; the white pelican, african spoonbill and flamingo. Migratory waders from the East Atlantic, Mediterranean and Middle East flyways use the estuary as a feeding ground.

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For further information, contact the Department of Water Affairs and Forestry, Private Bag X16, Sanlamhof, 7532 Tel: (021) 950 7100

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