



river health

Ecological State of Rivers of the Overberg Region

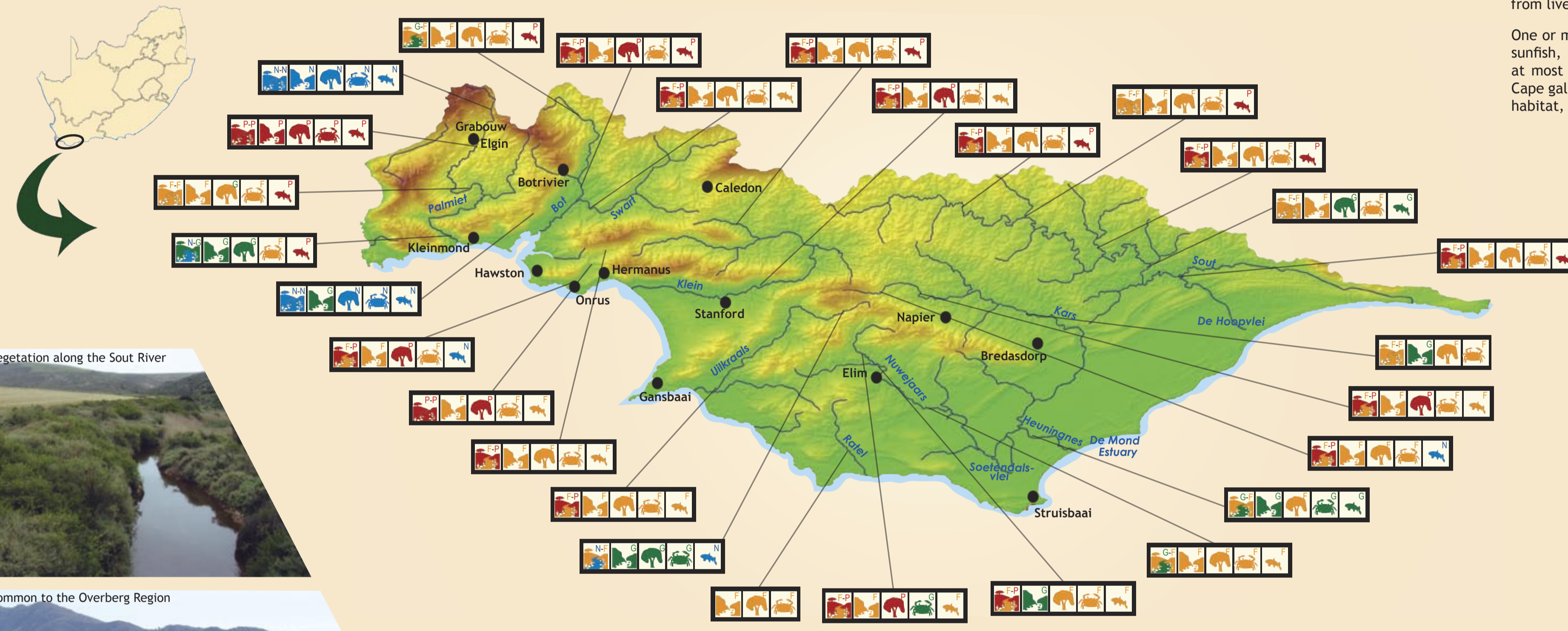
RIVERS OF THE OVERBERG REGION

The Overberg region is situated at the southern tip of Africa and stretches from the Palmiet River at Grabouw in the west to the Breede River near Bredasdorp in the east. This region has a rich variety of rivers from fast-flowing, low salinity, acidic clearwater rivers in the west, to slower flowing, more turbid and saline rivers on the Agulhas Plain that are associated with a number of inland water bodies and wetlands.

The main land-use in the west is the cultivation of cereal crops (wheat and barley) and canola. Other land-use in this area includes livestock farming (sheep, cattle and ostriches), commercial forestry (pine plantations) and irrigated agriculture (fruit), especially in the Palmiet and Bot river catchments. The fruit farms in the Elgin Valley are the largest exporter of apples and pears in southern Africa. Here, the previously Fynbos covered landscape has been completely altered by farming, with the exception of the Hottentots Holland Mountains in the north and the Kogelberg Nature Reserve in the south.

Landcover on the Agulhas Plain, in the east, is still largely natural and includes shrubland, grassland, bushland, wetlands and waterbodies such as Soetendalsvlei. Wheat and livestock farming are a significant industry for this area.

Urban development comprises only a small percentage of the catchment and includes the towns of Botrivier, Bredasdorp, Caledon, Elgin, Elim, Gansbaai, Grabouw, Hawston, Hermanus, Kleinmond, Napier, Onrus, Stanford and Struisbaai.



Middle reaches of the Sout River



Intact riparian vegetation along the Sout River



Blue crane are common to the Overberg Region

MAJOR IMPACTS

River Channel and Riverbank Modification
Flood protection measures and construction within the river channels have modified riverbanks (straightened channels and levees). This has resulted in habitat loss and change to the riparian zone and reduced aquatic species diversity.

Instream dams and water abstraction have modified river flows and altered downstream channels. The attenuation of small floods by instream dams has narrowed river channels and encouraged further invasion of alien trees, particularly in the Nuwejaars River.

Alien Species Infestation
Most of the rivers have been invaded by alien vegetation with the exception of the upper reaches of the Hermanus River and the upper and lower reaches of the Palmiet River, which occur within protected areas. Reaches of the Sout River have also been protected from alien plant invasion where fences along the river have provided a buffer from livestock and farming disturbance.

One or more alien fish species (smallmouth and spotted bass, bluegill sunfish, rainbow trout, mosquito fish, tilapia and carp) were present at most sites surveyed. These species compete with the indigenous Cape galaxias, Cape kurper and Heuningnes redbin minnow for food and habitat, or prey on them.

Natural Channel Impacts
Flood events during April 2005 severely modified river channels, particularly altering the aquatic habitats of rivers in the eastern Overberg (upper tributaries of the Nuwejaars River). The dense growth of alien trees at most sites exacerbated the impact of the floods on the river channel and resulted in extensive scouring of the channel.

MANAGEMENT ACTIONS

- Remove alien vegetation from the riparian zone and wetland areas. Ensure that they remain cleared by conducting follow-up operations
- Delineate riparian zones according in the Department of Water Affairs and Forestry policy. Re-establish these riparian zones with indigenous vegetation
- Create a 30 metre buffer zone between agricultural lands and rivers
- Ensure that environmental flow releases are made from dams
- Improve farming practices to reduce sedimentation and water quality problems
- Eradicate alien fish from highly sensitive river reaches
- Discourage the introduction of alien fish into farm dams
- Maintain the upper Kars and Nuwejaars rivers sanctuary areas for indigenous fish, as these rivers have unique aquatic life
- Identify priorities for conservation of biodiversity within these rivers



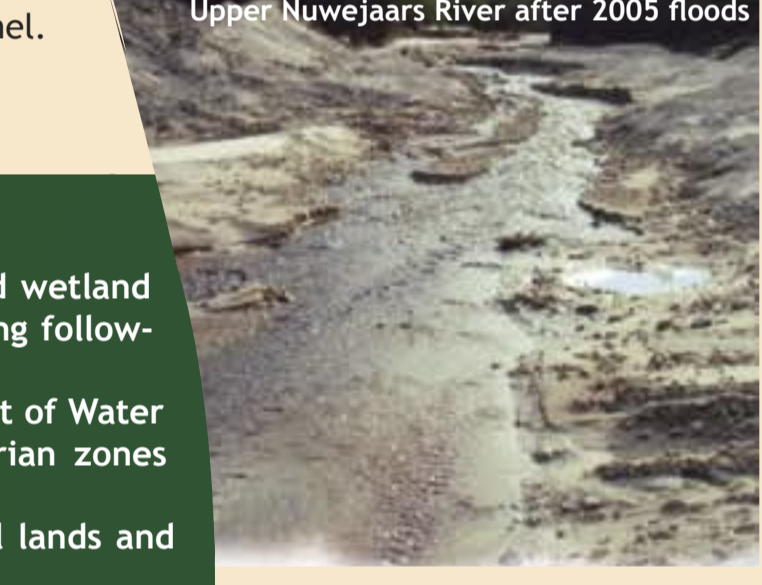
Weir in the Uilkraals River



Modification of the Nuwejaars River bank by alien trees prior to 2005 floods



Smallmouth bass



Bluegill sunfish



Upper Nuwejaars River after 2005 floods



Cape kurper: near threatened



Cape galaxias: near threatened



Flathead mullet

OVERALL STATE OF THE OVERBERG RIVERS

The rivers of the Overberg Region are generally in a fair ecological state, with only the upper reaches remaining in a good or natural state. Where good farming practices are not followed and where urban areas occur, the health of the rivers deteriorate into a poor state. Large instream dams, particularly in the Palmiet River, have altered flow, while the excessive use of fertilisers have led to eutrophication and habitat modification in some river reaches (Sout River).

Reaches of rivers draining the Agulhas Plain, such as the upper Kars River, are impacted by alien vegetation (port jackson and river gum) but the presence of sensitive invertebrates and good populations of indigenous fish suggest that these rivers can easily be rehabilitated. Alien fish (smallmouth bass and bluegill sunfish) are abundant in the lower reaches of many rivers and impact on indigenous fish populations.

WHAT IS RIVER HEALTH?

Healthy rivers provide goods and services (water supply, breakdown of pollutants, conservation, flood attenuation, natural products, recreation and spiritual rituals) which contribute to human welfare and economic growth. When people use rivers, they impact on river health. The National River Health Programme assesses the health of rivers by measuring selected ecological indicator groups that represent the condition of the larger ecosystem. The data are simplified and represented as indices.

Rivers of the Overberg Region have largely been excluded from studies and monitoring surveys to date. As a result not much historical data exists on the state of these rivers. This poster is based on river health surveys conducted during 2004/2005.

River Health Indices	
Index of Habitat Integrity	Measure of the availability and diversity of riparian and instream habitat
Geomorphology Index	Reflection of the channel condition and stability
Riparian Vegetation Index	Measure of the degree of modification of river bank vegetation from natural
South African Scoring System	Indication of river condition based on aquatic invertebrates present at a site
Fish Index	Measure of fish diversity deviation from natural

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

INDIGENEOUS FISH OF THE OVERBERG REGION

Indigenous freshwater fish found in the Overberg Rivers include Cape galaxias, Cape kurpers and the unique Heuningnes redbin minnow. Estuarine round herring, freshwater goby, Cape kurper, Cape moonies and sole were common in the lower Heuningnes River. Freshwater mullet were found at some lower sites, where instream dams or low water bridges did not prevent the migration of estuarine fish.

The indigenous fish were impacted mostly by alien fish as good habitat availability occurred at most sites, except where the floods in 2005 had caused major habitat changes.

THE AGULHAS BIODIVERSITY INITIATIVE

The Agulhas Plain (270 000 ha) is the largest habitat of lowland Fynbos and Renosterveld located in the Cape Floristic Region. The vegetation of this area has a high irreplaceability and vulnerability status. This area is particularly unique for its significant amount of wetlands that occur, including Soetendalsvlei, the second largest lacustrine wetland in South Africa. Two Ramsar sites, De Hoop Vlei on the Sout River and De Mond estuary on the Heuningnes River, provide important feeding grounds for several rare and threatened bird species.

The Agulhas Biodiversity Initiative is a joint partnership between South African National Parks, Cape Nature and Fauna and Flora International as part of the Cape Action Plan for People and the Environment. The Initiative was designed to address the main threats to these lowland habitats and improve the livelihoods of local communities. The four main components are:

- conservation management in the productive landscape of the Agulhas Plain;
- sustainable harvesting of wide fynbos;
- development and implementation of nature-based tourism activities; and
- building local support for biodiversity conservation on the Agulhas Plain through a public awareness programme.



Soetendalsvlei

