



# Rural Communities and River Health

Our livelihood depends on rivers -  
What do we need to know ?  
Why do we need to know ?



March 2003

In many places in South Africa, rural people depend, for their livelihood, on products derived directly from rivers. As a result, their relationship with rivers is close and their need for healthy rivers, critical. The aim of this booklet is to share an understanding of this relationship, and in the process, to help rural communities become participants in promoting river health. In doing so, rural communities may achieve improved livelihood through the continued supply of benefits from their rivers.

River Health activities and outputs are aligned with legal principles contained in the National Water Act and the National Environmental Management Act.

This booklet is an attempt to communicate river health principles to rural communities. We hope, in future, to improve on this version, and to see it distributed, enjoyed and used in a range of languages.

# Why do we need to know about RIVER HEALTH ?



South Africa is regarded as a semi-arid or water-scarce country. Our rainfall is unpredictable and common periods of drought limit our water resources even further.

Rivers that used to flow throughout the year are now dry, while others flow only during rainy seasons. In 20 years from now, the demand for water might exceed the amount of available water in our country. This means that we must use and share our water more effectively.

The health of the rivers in our country is threatened by excessive use of the water and the river banks. If we pollute the river in one place, we affect the condition of the river for a long distance downstream.

A river performs functions such as the ability to clean itself, best, when it is healthy.

We all should take responsibility for the health of the rivers that we use and live close to.



Rivers are the main sources of water for many people living next to our rivers. We fetch water from the rivers to drink, cook, bath, water our gardens and wash our clothes and cars, to make bricks and to build our huts and houses. We also catch fish and use river plants. Our livestock depend on our rivers for drinking water. We must keep our rivers clean in order to have, and continue to have, these river benefits which relate to a good quality of life.

If we look after our rivers (protect and conserve) we can continue to use river water in our daily activities.

Healthy rivers provide clean, good water that support many of our activities.

# What is a healthy river ?

Healthy rivers have clean water, healthy fish, trees, grasses and shrubs on the river banks and places for fish and other water animals (aquatic organisms) to live.

## A river is healthy when the water is clean

A river is healthy when you can drink its water, swim in it and eat its fish without the fear of getting diseases or sick.

When the water in our rivers is clean we do not get sick when we use it for drinking and cooking.



Many animals live in healthy rivers. Fish, frogs, crabs and other animals that live in the rivers require clean and healthy rivers to live and lay their eggs in.

## A river is healthy when there are healthy indigenous fish populations

A good indication that a river is clean and healthy is when there are different kinds of healthy fish living in it.

Indigenous fish are those that were originally found before fish from other areas or countries (alien species) were released in our rivers. These alien fish species often feed on indigenous fish, destroying our indigenous fish populations.

A river is also healthy when there are different kinds of habitats or homes for fish to move freely and breed. These habitats include deep pools and shallow fast flowing areas, also called rapids and riffles.

Good, clean, flowing water is important for the life cycle of different fish. Some fish swim upstream when it is time to lay their eggs.



## A river is healthy when there is a healthy riparian zone

The riparian zone is the area next to a river that helps the river to functioning as an ecosystem.

The roots of trees and plants in the riparian zone stabilise the river bank and prevent excess siltation, which occurs when soil and sand is washed into the river. The trees, plants and ground cover on the riverbank trap soil and waste materials before it enters the river.

The roots of plants also create safe areas where fish can breed, feed and hide. Wild animals and birds also hide in the trees and in the dense bushes found in the riparian zone. Therefore, destroying the riparian zone means disturbing the natural life cycle in this zone.



The indigenous vegetation of South Africa is best suited to maintain the function and the health of rivers. We must protect the vegetation in the riparian zone.

Indigenous plants and trees in the riparian zone stabilise riverbanks and help to prevent sediment and waste materials from entering the river during rainy seasons and floods. Indigenous vegetation is made up of plants that originally occurred in a certain area.

Examples of rivers with healthy indigenous vegetation in the riparian zone (below and below right). Healthy indigenous riparian vegetation differs from region to region.



# How do we benefit from healthy rivers?

## DOMESTIC BENEFIT

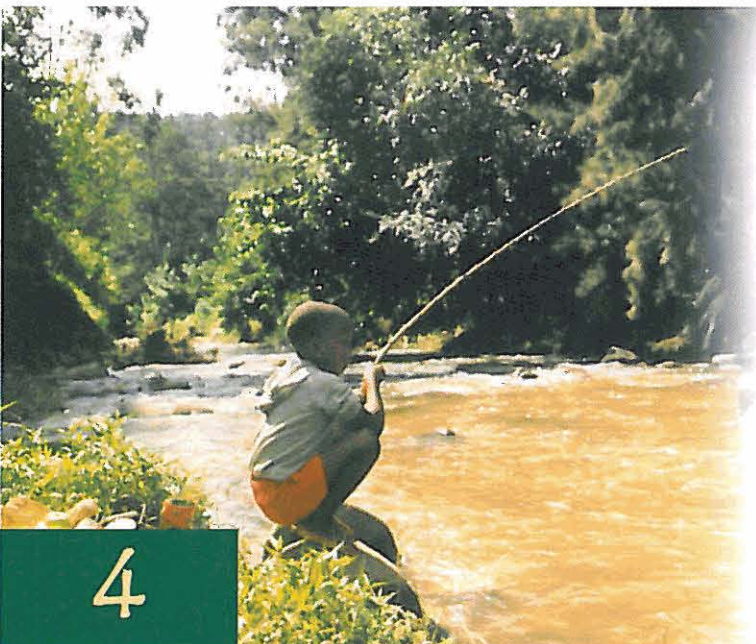
We benefit from clean and healthy rivers. Clean, fresh water helps us to do our daily activities, such as cooking and washing.

The fish that live in healthy rivers can be used as an excellent food source. The dense indigenous riparian vegetation around healthy rivers also attracts animals and birds.

We and our livestock stand a better chance of an improved quality of life when our rivers are clean and healthy.

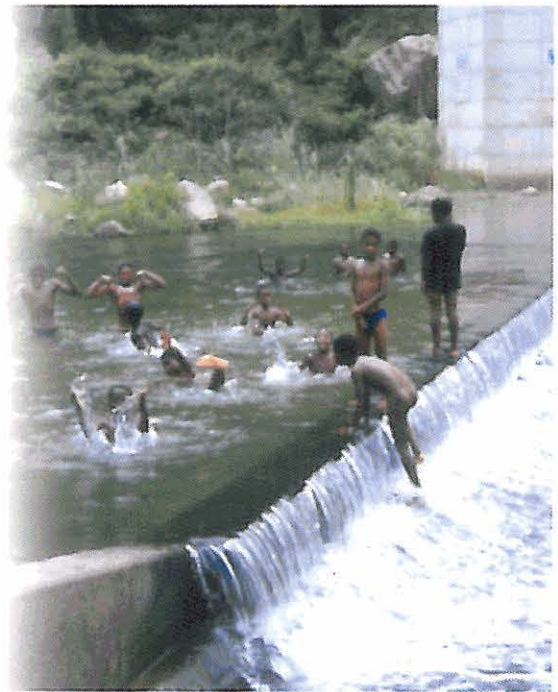
We gain more from healthy rivers.

## CULTURAL BENEFIT



4

Rivers are places of inspiration, relaxation, excitement and amusement. These fun activities relax our bodies and minds and uplift our spirits.



Swimming is a good form of exercise and a way of cooling down.

We use clean and healthy rivers to perform our cultural rituals, for making sacrifices and for communicating with our ancestors. Rivers serve as sacred places for different religious and spiritual practices such as worship and ceremonial cleansing, for example baptism.

Fish is an excellent source of food. We can feed our families with the healthy fish that we catch. We can also sell the fish at the market to support our families.

## ECONOMIC BENEFIT

Different types of plants grow in and on the banks of our rivers. Some of the plants provide us with building materials such as roofing for our huts and/or houses. We also use reeds and other wetland vegetation, to make baskets, mats, curtain blinds and handbags.



Wetland vegetation can help our economic development if we harvest it in a sustainable way. Do not harvest more than what nature can replace to ensure future use.



Many animals and birds live in or near our rivers. South Africa's diversity (many kinds) of animals and beauty of nature attract many tourists to our country. We benefit from tourism because tourists buy our crafts and pay for accommodation and our services.

A healthy riparian zone is habitat for different types of birds and animals.

## What happens when we do not look after our rivers?

When the quality of water in our rivers is not good, there will be:

- NO safe and clean water for us and our livestock to use without getting sick
- NO clean water to swim in
- NO financial benefits from tourism
- NO food such as fish, birds and other wild animals
- NO building materials
- NO place for us to perform our cultural and spiritual activities that we use rivers for

Unhealthy rivers sometimes have stagnant pools where water does not flow for lengthy periods. Stagnant rivers are breeding ground for mosquitoes that, in some parts of the country, may carry malaria. We can also get other illnesses such as cholera or diarrhoea from the dirty water in unhealthy rivers.

Many of our rivers are not healthy. This means that benefits for people are reduced.

# How can we improve the Health of our Rivers?

The State-of-Rivers reporting in South Africa uses the DPSIR framework to explain how good or bad environmental conditions are and what we can do and are doing about environmental changes. The diagram below represents a simplified explanation of the DPSIR framework.

## Driving Forces

(underlying social, political and economic activities)

## Response

How can we repond to environmental change?  
What can we do?

Human behaviour and activities put pressure on the environment.

## Pressure



## Impact

The consequences (results) of the pressures on the environment.

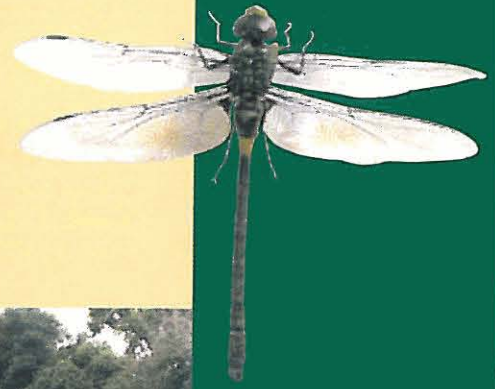
## State (health)

The River Health Programme measures the health of rivers.





# Agricultural Practices



Bad agricultural practices along rivers lead to poor river health. Farming on steep slopes of rivers or removing plants and trees that grow along riverbanks for agriculture and gardens (crops and orchards) are examples of bad agricultural practices. These practices destroy the riparian vegetation and impair important river functions. If there is no riparian vegetation it is easier for sand, soil and other unwanted materials to enter the river, resulting in poor river health.



Soil and sand that enter the river can stop or block river flow. Too much sediment (sand and soil) in a river also clogs the gills of fish and causes them to suffocate and die. This river (above) has too much sediment and is, therefore, not healthy.



Continued soil erosion can cause the land to become degraded or barren (left).

Farming in the riparian zone, on the riverbanks and on the steep slopes along the river can increase the rate of soil erosion.



Protect our rivers by:

- farming at least 20 meters from the edge of the riparian zone;
- removing only alien vegetation from the riparian zone;
- ploughing away from the steep land along the rivers.

# Riparian Vegetation Usage



We use trees and plants for firewood, for building our fences, furniture, and for medicinal or healing purposes. River health deteriorates (becomes worse) when we cut down trees and plants that grow along the riverbank. Such activities disturb the riparian zone, leaving it with fewer trees and plants. Alien plants invade and flourish in disturbed riparian zones.

We must not disturb or destroy the indigenous vegetation in the riparian zones.

Cutting of the riparian trees for firewood is usually a bad practice that results in an unhealthy river.



We must protect our indigenous plants and grasses against alien plants so that the riverbank can remain stable and a healthy riparian zone can be maintained.

## Be Aware of Alien Plants in the Riparian Zone

Alien plants do not grow naturally in South Africa. They were brought into our country either by man, by floods or by wind.

- Alien plants replace the indigenous plants along the riverbanks especially where the natural vegetation has been disturbed.
- Alien plants do not protect the river like the indigenous vegetation that grows on the riverbank.

Where alien plants are abundant, river banks become unstable. They also use plenty of water and have to be removed in order to prevent soil erosion.

Alien plants that should be removed include the following:

- bugweed
- bramble
- lantana
- black wattle
- hakea
- castor-oil plant
- large cocklebur
- triffid weed
- syringa

# Fishing Practices



Fishing is one way of providing food for our families. We can also sell the fish.

When we catch fish with shade nets, traps, gill nets or seine nets, we are involved in unsustainable fishing practices. The small fish cannot escape from the shade nets to grow larger and to breed. This leads to fewer or no fish in the river.

We must practice sustainable fishing methods. This means that we adjust our fishing activities so that future availability is ensured.



We must not catch fish with shade nets. Shade nets have very small holes that cannot allow small fish to escape.



The use of line and hook for fishing is a better fish harvesting method than shade nets. Enough young fish, that can lay eggs when they are older and bigger, will remain in the river.

Fish is a good source of protein and can replace red meat in our diet.

## Be Aware of Alien Fish

Alien fish do not occur naturally in our country. They were either accidentally or purposefully released into our rivers.

Trout is an example of alien fish in South Africa, and can destroy the natural fish populations in our rivers.

Trout feed on smaller fish, fish eggs and other invertebrates in our rivers. Trout also disturb the breeding of our natural fish populations and as a result, only a small number of indigenous fish remains in the river systems.

# Livestock Grazing

Overgrazing increases the rate of soil erosion and sedimentation in the river. The land becomes bare and has no vegetation that protects the soil from being washed into the river when it rains. Healthy riparian vegetation reduces the possibility of flooding during rainy seasons.

Overgrazing happens when too many livestock feed in the same area for a long time. This damages the landcover and does not give the grass and plants time to grow again.

We can improve the vegetation cover and decrease the rate of soil erosion on the riverbanks if we keep our livestock away from the riparian zone.



Livestock should not overgraze or trample the riparian vegetation. When the riparian zone is destroyed soil erosion increases.

The continuous movement of livestock along our rivers causes the crushing of grass and plants in the area. The pathways that form are often dusty, without grass to hold the soil. The soil is transported and deposited into the river during windy days or rain.



Water-filled basins, placed away from the riparian zone where it is possible, will make sure that our livestock always have water to drink and that the riparian vegetation is not trampled.

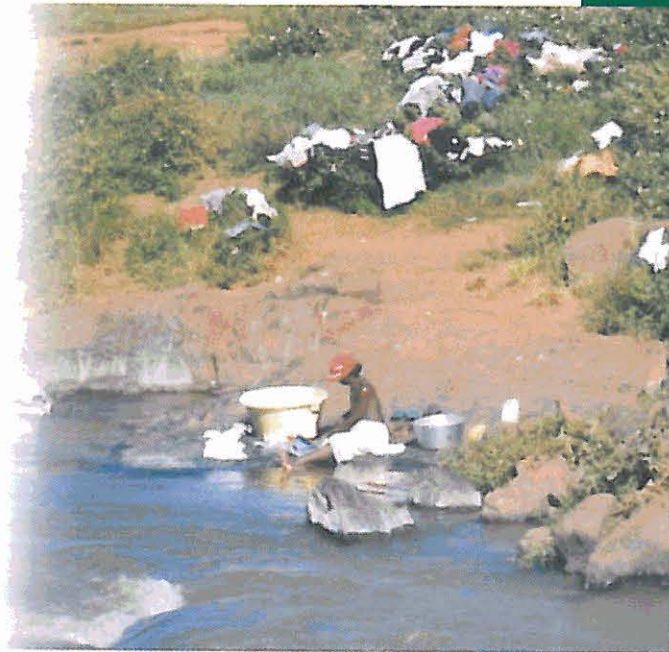
Trampling and grazing in the riparian zone destroy indigenous plants.



# Household Practices



Although washing and bathing are not the main polluters of river systems, some detergents (washing powders and soaps) that we use to wash our cars and clothes contain chemicals (phosphates) that can make our rivers unhealthy. Use soaps that are environmentally friendly (does not harm our environment).



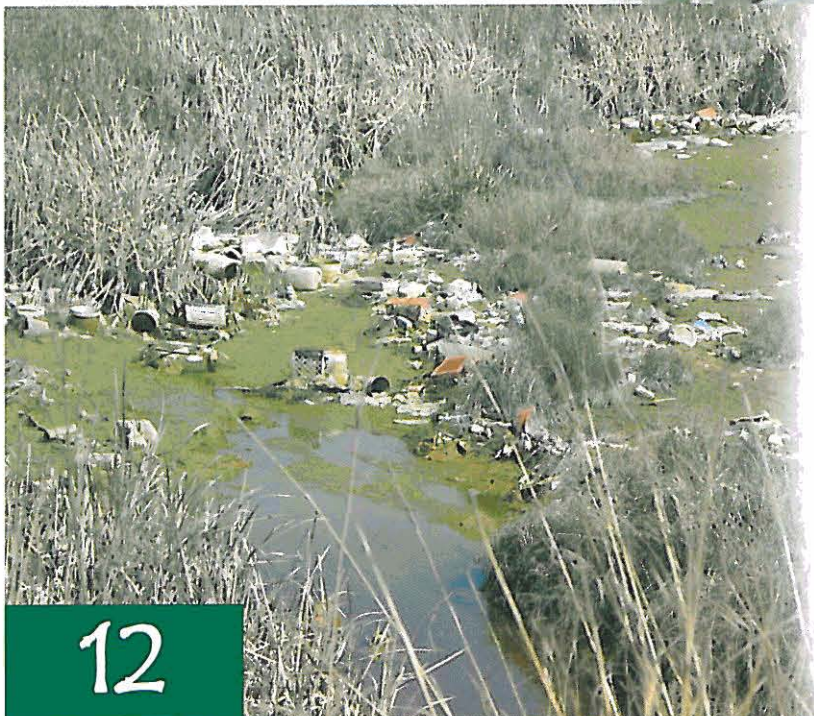
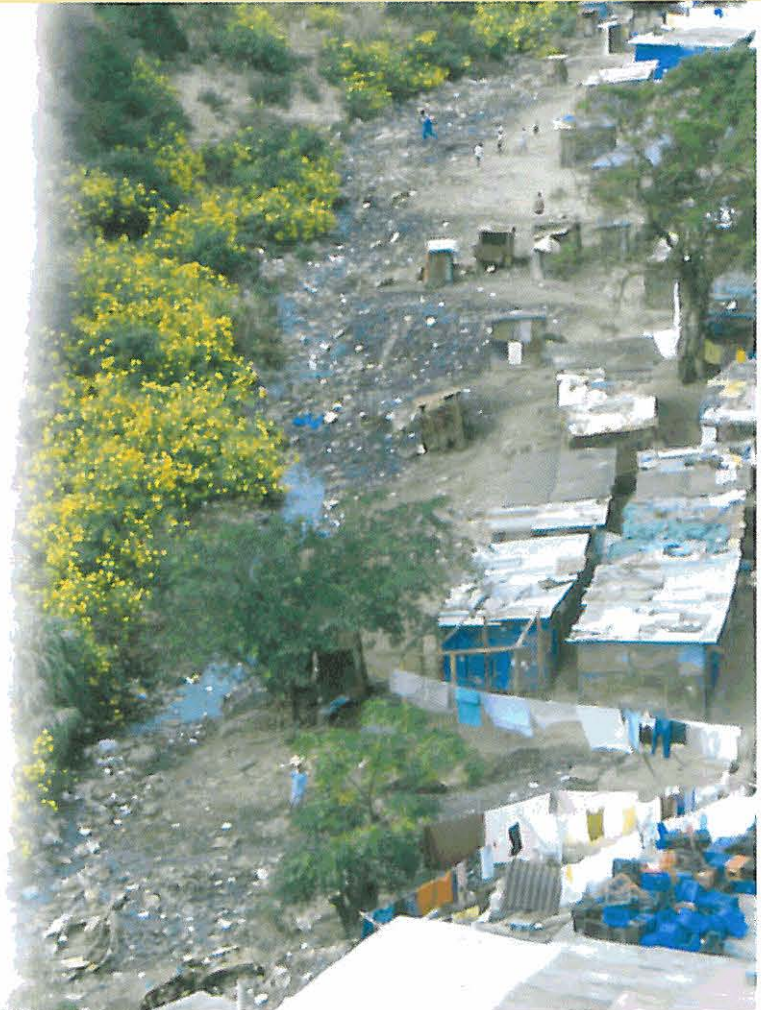
Certain detergents that we use to wash our clothes lead to poor river water quality. It is harmful to the aquatic life (e.a. fish and insects) in the river.

We could decrease the amount of polluted water that flows back into our rivers if we use buckets to wash our clothes and cars away from the river.

# Waste Disposal

Waste materials such as papers, plastics, empty cans and unwanted clothes that are thrown into our rivers are not only unsightly but also unhealthy. The water quality in our rivers is reduced when we use our rivers as dumping areas for waste.

We should keep our rivers healthy by not littering in our rivers.



Our rivers lose their aesthetic value (our enjoyment of rivers as beautiful places) and it becomes unpleasant for those living near the rivers when we use rivers to dispose of our waste.

# Do you have a healthy river?



The **River Health Programme (RHP)** measures the health of South Africa's rivers.



River health workers collect samples in our rivers.



## Be a Responsible Citizen

Rivers are our main sources of water. It is our duty, as a rural community, to look after our rivers so that we can benefit from having healthy rivers. All other organisms that are dependant on rivers will also benefit.

We can be responsible citizens by:

- Taking care of the rivers in our area.
- Making wise decisions that will benefit river health.
- Practising activities that will not harm our rivers.
- Creating awareness of practices that promote healthy rivers.
- Forming a group in your area that care about the rivers.
- Attending river health meetings and workshops.

Think about the river(s) near your home.  
What practices could possibly impact on river health?  
How can you contribute towards healthy rivers?

When you see people from the River Health Programme taking samples in rivers near you, you will now understand what they are doing.

Spreading the word on River Health.





BLOEM Water 

