We are losing species because of habitat degradation

Systematic collection of and reporting on data is needed for the management of aquatic ecosystems. Information obtained from biological indices is used to assess the health of river systems. When the present ecological health does not meet the desired state, management actions must be taken to improve the ecosystem components. Healthy rivers sustain ongoing use of the rivers. This poster presents a summary of river health data collected between 2000 and 2002.

What is river health?

The health of river systems. When the present ecological health does not meet the desired state, management actions must be taken to improve the ecosystem components. Healthy rivers sustain ongoing use of the rivers. This poster presents a summary of river health data collected between 2000 and 2002.

What is impacting on our rivers?

URBAN DEVELOPMENTS: Formal and informal housing, paving and road networks seal natural surfaces. In this way 47% of Gauteng is urbanised and does not allow natural infiltration of rainwater. Urbanisation also harms rivers through concentrated waste disposal, natural plant removal and effluent discharges into rivers.

INDUSTRIALISATION: Industries such as steel mills, paper mills, power stations and factories in the East Rand and the Vereeniging/Kaapdalepark areas contribute to poor water quality in the catchment. Unregulated liquid and solid waste disposal from smaller industries also contributes to poor river health.

FARMING: Maize, wheat and cattle farming occur mainly in the eastern areas. Overgrazing can lead to erosion and thus poor river habitats. Water running from cultivated fields often contains high levels of salts, nutrients and even pesticides, that damages river health.

We are losing species because of habitat degradation

Rock catfish (Austroglanis sclateri) has disappeared from the Vaal Dam Nature Reserve.

Greater painted snipe (Rostratula benghalensis) has disappeared from Ratanda Nature Reserve.

African grass owl (Tyto capensis) has disappeared from Sebokeng Nature Reserve.

Bullfrog (Pyxicephalus adspersus) has disappeared from Vanderbijlpark Nature Reserve.

Table: Indicators of river health & what they measure

<table>
<thead>
<tr>
<th>Indicator</th>
<th>What it measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habitat</td>
<td>Describes the inherent availability and diversity of habitat</td>
</tr>
<tr>
<td>Aquatic vegetation</td>
<td>Healthy vegetation is typical of the low-flow reaches of natural rivers</td>
</tr>
<tr>
<td>Fish populations</td>
<td>Fish (number of species, sensitivity, size and condition) are good indicators of the longer term influences on the river ecosystem</td>
</tr>
<tr>
<td>Riparian vegetation</td>
<td>Healthy vegetation maintains the life of the river corridor; provides habitat to species (aquatic and terrestrial) and filter nutrients from high volumes of fast flowing urban stormwater runoff</td>
</tr>
<tr>
<td>Water quality</td>
<td>The chemical, physical and biogeochemical properties of water determine its suitability for use</td>
</tr>
</tbody>
</table>

River health categories

- Natural: No or negligible modification of aquatic habitats and biota
- Vulnerable: Some unrecognised impact; biodiversity may be altered
- Fair: Significant pressure from development and land use; sensitive species may be lost
- Poor: Extreme use of river resources; natural functioning disrupted
- Extensive use of river resources; natural functioning disrupted

How should we manage our river systems?

MANAGE and CONTROL the quality and quantity of industrial wastewater, stormwater, sewage effluent and mine water that pollutes the natural drainage systems.

CONTROL the unnaturally high volumes of fast flowing urban stormwater runoff that erode the river channels. Condensed rivers (urban storm water drains) have replaced natural wetlands and streams. These transport large volumes of polluted urban runoff to the rivers causing severe degradation downstream.

Solid waste is unsightly and worsens the already poor water quality.

PROTECT the riparian zones of rivers and streams. Loss of riparian vegetation causes erosion and scarring of riverbanks.

Urban erosion causes siltation of natural pools, leading to the loss of fish and invertebrate habitat.

PREVENT the destruction and disappearance of natural wetlands. Stop the impoundment of natural wetlands and the loss of plant and animal habitat and diversity.

OPTIMISE the use of potable water. Minimise the amount of water brought in through transfer schemes. Manage the release of return-water from water treatment works. Unnaturally high water flows alter river habitat. Aquatic animals and plants may not be able to adapt to the modified environment.

Catchment information

Grassland plains with hills, lowlands and wetlands slope from the escarpment or “reel” in the north down to the Vaal River, which forms the natural boundary between Gauteng Province and the Free State. Land-use has changed dramatically since the discovery of gold on the Witwatersrand in 1886. Greater Johannesburg, with all its industries, mining, agriculture and urbanisation, has transformed much of the once open grasslands – with bubbling springs, natural streams and functioning wetlands – into a bleak city landscape.

The River Health Programme

The River Health Programme (RHP) monitors and reports on the health of river ecosystems in South Africa. Visit the RHP website (www.csir.co.za/rhp) for more information e.g. contact persons in the provinces and where to get your own copy of this poster.

CONTACT DETAILS: http://www.csir.co.za/rhp

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