RIVER HEALTH

NEWSLETTER OF THE RIVER HEALTH PROGRAMME

No 5 • MAY 1999

The River Health Programme RECAP

As we approach the much talked-about deadline for full implementation of the RHP in 2000, this issue of *River Health* steps back to the original objectives of the National Aquatic Ecosystems Biomonitoring Programme.

This is to ensure that everyone shares a common understanding on the RHP and its objectives and operation, since different perspectives have been developing on these as time went by.

Although the Programme eventually will conduct biological monitoring on all aquatic ecosystems, most of its current focus is on rivers. The National Coordinating Committee agreed in 1997 to call the Programme the *River Health* Programme (RHP) - less of a tongue twister.

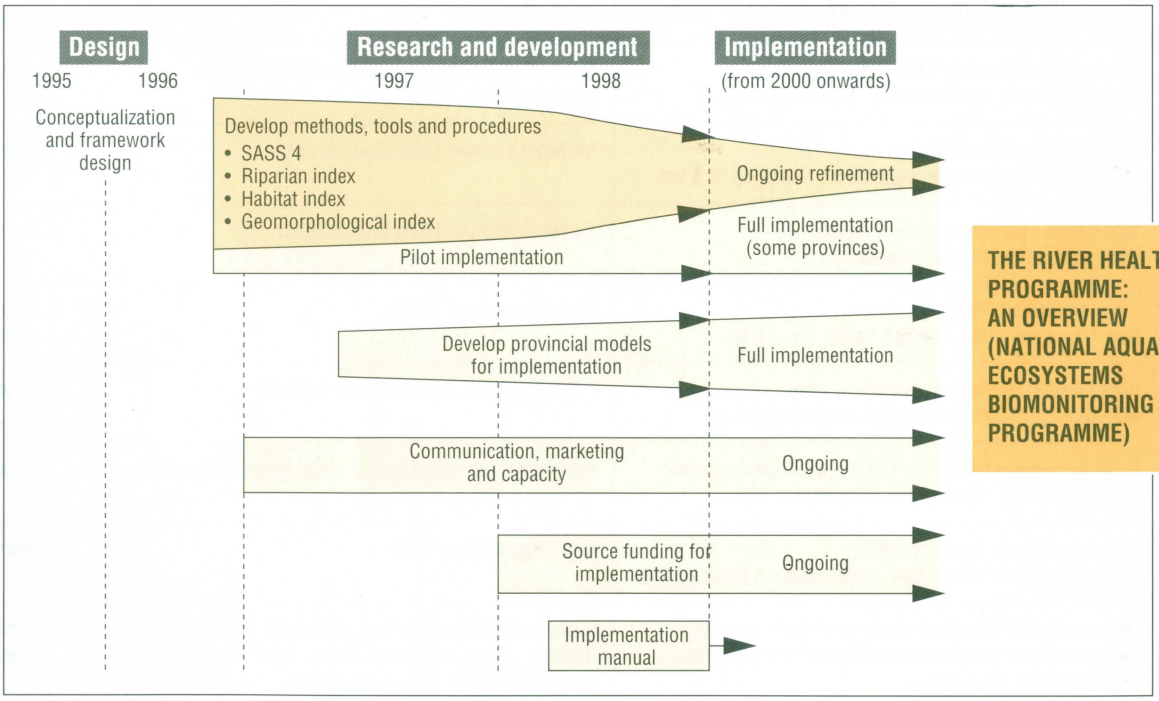
Design, development and pilot implementation

The RHP currently is in a design and development phase.

The figure below indicates the progressive and step-by-step approach to fully implement the programme. Essentially, the programme is currently developing the methods, tools and procedures that will allow biomonitoring to be done in a standardised way all across the country, and testing them in pilot projects.

Part of the current development process is to test different models for implementation at national, provincial and local levels. For example, who should be involved in biomonitoring at provincial level? Who should fund it? Where should the data go?

Continued on page 2 →



THE RIVER HEALTH PROGRAMME: AN OVERVIEW (NATIONAL AQUATIC ECOSYSTEMS BIOMONITORING PROGRAMME)

This is the fifth issue of the River Health newsletter. We focus on a recap of the River Health Programme (RHP), on progress and milestones in the provinces, how and where biomonitoring fits into the new National Water Act and introduce you to some new faces.

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HOW YOU CAN CONTRIBUTE

The success of the River Health Programme depends upon the involvement of as many stakeholders in water resource management as possible. If you or your organisation would like to know more about the programme and how you can become involved, please contact:

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Recap of the RHP *(continued from p.1)*

As can be seen from the figure, the RHP is being developed in phases.

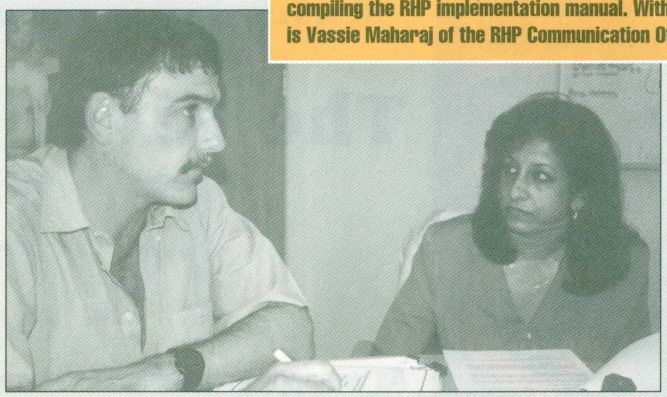
Framework and concept design. During this early phase, which commenced in 1995/6, the RHP was designed in concept.

Implementation design. During this phase, which is approaching completion by early 2000, tools and methods were being developed as well as tested in the field by way of pilot implementation projects. Many of these tools and methods are nearing completion (see box below).

Different models for eventual implementation at provincial or regional level were also tested during this phase, with several provinces developing and testing their own models. In addition, communication with role players country-wide and marketing of the concept of the RHP commenced during this phase, as well as efforts for capacity-building to eventually implement the RHP at all levels.

Implementation. Full implementation at provincial or regional levels, in those provinces where the capacity exists and the manpower and funding are available, is scheduled for 2000. To this end, an implementation manual is currently being developed with provincial input, and drawing from the pilot implementation projects. Methods and tools will be refined on an ongoing basis during implementation.

Implementation manual nearing completion



Kevin Murray of Insight Modelling Services who is compiling the RHP implementation manual. With Kevin is Vassie Maharaj of the RHP Communication Office.

Kevin Murray of Insight Modelling Services is assisting the RHP to compile a manual for implementation of biomonitoring at provincial, regional or local levels. The National Coordinating Committee will at its May 1999 meeting discuss the first comprehensive draft of the manual.

The manual is being compiled with input from all provincial champions and others that have been involved in the RHP to date. It will include practical guidelines for implementation, and will cover for example the kinds of personnel and funding required for implementation.

PROGRESS WITH DEVELOPING METHODS, PROCEDURES AND TOOLS

Below, we provide an overview of progress since the inception of the River Health Programme in 1996 with the development and testing of methods, procedures and tools for biomonitoring.

METHOD / PROCEDURE / TOOL AND ITS USE	DEVELOPED BY	PROGRESS
South African Scoring System (SASS) Biological index, invertebrates. Scale: up to 20 m	Mark Chutter, Afridev and Peter McMillan of Environmentek, CSIR	Mature, well-tested standard method
Riparian vegetation index Biological index, riparian vegetation. Scale: up to 5 km	Mr Nigel Kemper (IWR Consultants)	Mature, well-tested standard method
Site-based riparian vegetation index. Biological index, riparian vegetation.	Mr Nigel Kemper (IWR Consultants)	Partly tested prototype
Index of Habitat Integrity. Non-biological index, habitat. Scale: up to 5 km	Neels Kleynhans, IWQS	Mature, well-tested standard method
Invertebrate habitat assessment system Non-biological index, habitat. Scale: up to 20 m	Peter McMillan, Environmentek, CSIR	Prototype being tested
Geomorphology index. Non-biological index, stream geomorphology. Scale: tens of meters	Kate Rowntree and Gina Ziervogel, Rhodes University	Prototype being tested
Fish Assemblage Integrity Index. Biological index, fish. Scale: homogeneous fish segment	Neels Kleynhans, IWQS	Partly tested prototype
Overview of the design process and guidelines for implementation of the National Aquatic Ecosystems Biomonitoring Programme	Dirk Roux (Environmentek, CSIR) with inputs by Chris Dickens, Jenny Day, Derek Halls, Jay O'Keeffe, Patsy Sherman, Mandy Uys, many others	Completed. To be replaced by implementation manual.
Implementation Manual	Kevin Murray, Insight Modelling Services with inputs by all provincial champions and others involved in the RHP	Nearing completion.
Communication Manual	Manyaka Greyling Meiring (Pty) Ltd, acting as the RHP communication office	Completed. Includes a section for use by provincial champions.

THE RHP IN SA'S WATER POLICY AND LEGISLATIVE CONTEXT

The River Health Programme will play a pivotal role in the implementation of South Africa's new National Water Act (Act 36 of 1998) in terms of the contribution it will make to the establishment and implementation of a national monitoring system to monitor various aspects of water resources.

Balancing water use and protection

According to Dr Henk van Vliet, Chief Director at the Department of Water Affairs and Forestry, the policy and Act do not intend to at all costs prevent impacts to the water environment, because this will stifle much-needed social and economic growth.

"Rather, the key is to balance long-term protection of water resources with short- and medium-term demands for using them," he says. "The challenge is to obtain the right balance between using and protecting water resources. To achieve this balance, there must be some water for everyone (equity), for ever (sustainability)."

The principles of sustainability and equity run throughout the many components of the Act. For example, the Act specifies eleven kinds of water use. One of them is waste disposal such as where an industry may use a river to transport away its effluent. But at the same time, the Act requires that water resources must not be irreversibly damaged while they are being used. This is where the Act makes provision for two broad sets of protection measures, commonly referred to as resource-directed measures and source-directed controls (see figure)

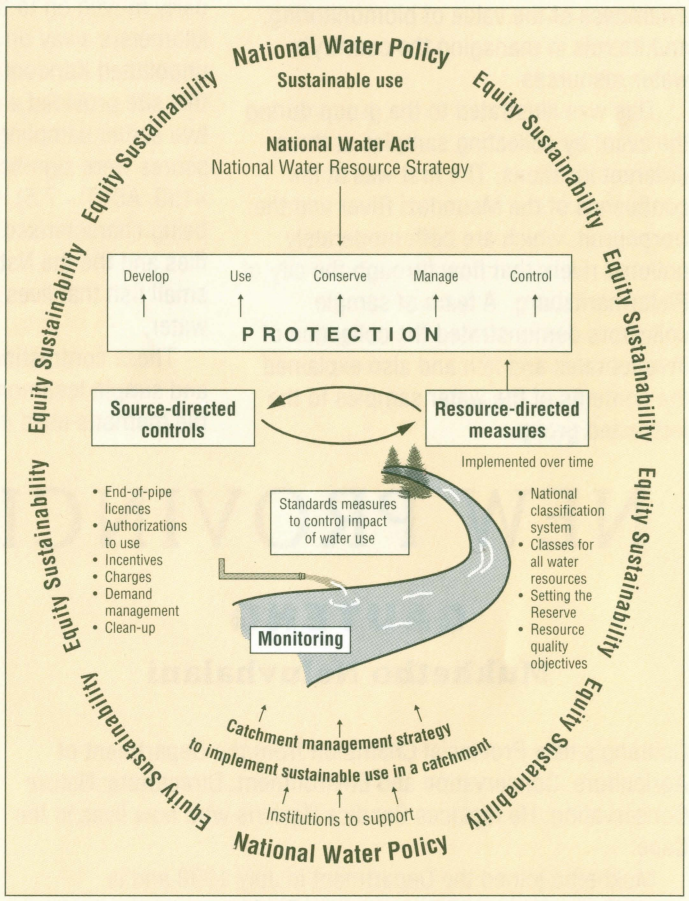
Role of the RHP

Together, these two sets of measures must specify the levels of protection required and the controls and management practices necessary to protect water resources. This is where the River Health Programme comes in. The Act specifies in a number of the places (see for example Sections 137 (1) and 145(2)) the role of monitoring in the protection and assessment of the country's water resources, including early warning systems for risks posed by various events and deterioration in water quality.

According to the Act, the first stage in the protection process is to develop a system to classify the nation's water resources. This will include the so-called "reserve." Once the national classification system is in place, it must be used to determine the management class and resource quality objectives of water resources. The Act determines that resource quality objectives for each water resource must be set based on the management class of the resource and the Reserve.

"Resource quality" according to the Act means the quality of all the aspects of a water resource including:

- the quantity, pattern, timing, water level and assurance of instream flow
- the water quality, including the physical, chemical and biological characteristics of the water
- the character and condition of the instream and riparian habitat, and



- the characteristics, condition and distribution of the aquatic biota.

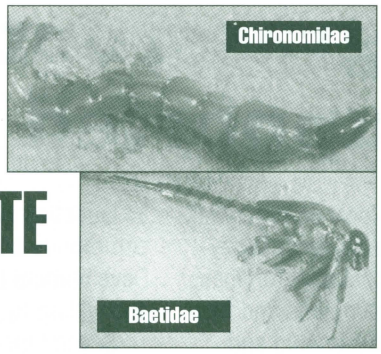
As can be seen on page 2, several of the biomonitoring methods being developed or tested by the RHP are directed at monitoring aspects of resource quality (e.g. biological characteristics of water quality, riparian health, aquatic biota).

Biomonitoring, although not directly as part of the RHP, will also be especially significant where licence applications need to be evaluated for wastewater discharges or the maintenance of a particular water resource in a specific management class.

More information on implementation of the National Water Act

For more information and the opportunity to comment on discussion documents for the development of protection measures, contact Vassie Maharaj (address on cover).

CALL FOR MACRO-INVERTEBRATE SAMPLES



Dr Ferdy de Moor and *Helen Barber-James*
of the Albany Museum report

The Albany Museum in Grahamstown holds the National Collection of Freshwater Invertebrates. This large collection, comprising approximately two million specimens collected over the past 100 years, is the only one of its kind in Africa.

Despite the extensive faunal and geographical coverage of this collection, South Africa's freshwater invertebrate biodiversity remains poorly known and understood. Such large gaps in our knowledge of this ecologically important group may have serious ramifications for the River Health programme. Further taxonomic research is imperative to our understanding of aquatic ecosystem functioning, on which the River Health Programme depends.

This situation is by no means unique to South Africa. Accordingly, Agenda 21, ch.15 has listed aquatic biodiversity research as one of the emerging global priorities. As South Africa ratified the Convention of Biological Diversity in November 1995, we are obliged to document our natural heritage by the year 2000. This will be used as the basis in the formulation of conservation and management strategies.

Furthermore, South Africa's new National Water Act makes provision for research into aquatic ecosystem functioning which is deemed essential for understanding the biological requirements of "the Reserve".

At a recent workshop convened in Pretoria, South Africa's systematists gathered to look at ways of accessing United Nations Global Environmental Facility (GEF) money for biodiversity research for the entire SADC (Southern African Developing Community) region. Museums, by their very nature of holding collections, are considered to be such centres for biodiversity research. However, the lack of trained systematists, especially in the invertebrate fields, remains a serious shortcoming.

The Department of Freshwater Invertebrates would like to hear from organisations which have biomonitoring programmes up and running. It would be appreciated if such organisations could send the Museum representative samples of macroinvertebrates collected during surveys. Notes on field observations are also welcome. In return, your organisation will receive invertebrate identifications of samples sent and any other pertinent information we can provide.

More information

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SASS RECEIVING ATTENTION

Fifteen southern African aquatic scientists met at the Kennaway Hotel in East London in December last year for a two-day workshop on the further development of the SASS (South African Scoring System) index.

Their aim was to identify whether further developments are required for the effective use and application of SASS4 (version 4.0) as a tool for monitoring river health. SASS4 is widely used in South Africa as an indicator of river health, based on the presence of macro-invertebrate communities.

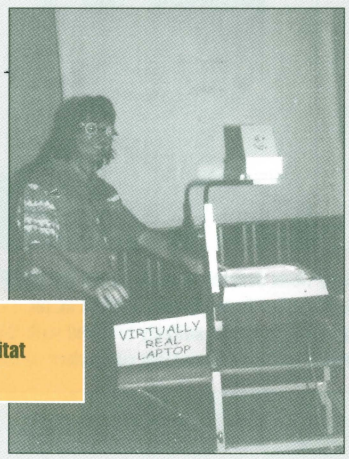
The workshop was convened by Prof Jay O'Keeffe and Dr Patsy Scherman of the Institute for Water Research, Rhodes University, who are responsible for the Research and Development portfolio of the *River Health* Programme. The workshop dealt with issues of further refining the SASS technique and identifying future research needs, such as the regional application of SASS4, riverine habitat assessment, the development of a user guide, and further optimising SASS4 to suit the RHP.

According to Patsy Scherman, the research needs identified during the workshop are being captured in a concept proposal which will be submitted under the auspices of the RHP R&D portfolio, to funding agencies. The proposal focusses on a SASS sub-programme with a number of research projects to be undertaken by independent research teams as identified during the workshop.

SASS Forum established

A *SASS Forum* was also established during the workshop, with Jay O'Keeffe and Patsy Scherman as elected co-ordinators of the *SASS sub-programme*.

Members of the SASS Forum are Dr Mark Chutter and Dr Rob Palmer of AfriDev Consultants (Pty) Ltd, Helen Dallas,of Southern Waters, UCT, Dr Chris Dickens of Umgeni Water, Christa Thirion and Mary-Jean Gabriel of the Institute for Water Quality Studies, DWAF, Peter McMillan and Colleen Todd of Environmentek, CSIR, Stuart Mangold of Department of Tourism, Enviroment and Conservation, North West Province and Dr Ferdy de Moor of the Albany Museum, Dr Eliot Taylor, (UK), Prof Jay O'Keeffe, Dr Mandy Uys and Dr Patsy Scherman of the Institute for Water Research at Rhodes University and Ms Felicity Weir of Safcol.



Peter MacMillan presenting a "virtually real" version of habitat assessment in the year 2048

Biomonitoring at grassroots level: first community-supported project

The RHP's grassroots communication and environmental education programme was established at the end of 1997.

Assisting to establish the concepts and process were the Mpumalanga Parks Board, the Kruger National Park's social ecology section, the Mpumalanga Department of Environmental Affairs and Tourism and the DWAF's Institute of Water Quality Studies.

According to Solly Manyaka of the RHP Communication Office, the main objectives of establishing such a programme are to introduce grassroots communities to the RHP, to create awareness and to promote a sense of responsibility and acceptance of biomonitoring in maintaining river health. In addition the programme will afford grassroots communities the opportunity to contribute their indigenous knowledge of their area to the programme and thus add value.

Sensitivity to local needs

"Rural communities idealise the aquatic environment as an integral part of their lives." says Solly. "For them, it is a cultural, religious and an economic asset. In priority catchments where a community depends on the aquatic environment, a technocratic approach to the implementation of the RHP may be interpreted as insensitive, and may lead to conflict with the community."

Mary-Jean Gabriel recently joined the DWAF's Institute for Water Quality Studies as an hydrologist. She is actively involved with the grassroots communication component of the RHP

The aim of involving local communities is thus not only to create an opportunity for the involvement of local communities, but to help provincial champions and their implementation teams in planning and implementing their programme to be sensitive and responsive to local needs.

"Failure to involve local people in the RHP is likely to lead to failure in the implementation of the programme," adds Mary-Jean Gabriel of the Institute of Water Quality Studies, who is actively involved in the community involvement initiatives.

Community-supported project – Cork community

What better way is there to get local community involvement than to introduce a community-supported project!

The community of Cork situated on the Sabie River near the Kruger National Park in the Mpumalanga Province enthusiastically agreed that such a project be launched in their community. The community-based Reconstruction and Development Committee (RDC) was keen and willing to participate in the programme.

Several meetings have already been held to establish and develop a suitable approach and process ahead to translate the principles of the RHP into practice.

Information gathered and lessons learned from this exercise will contribute to a model for the establishment of further such community-supported projects elsewhere in the country.

More information

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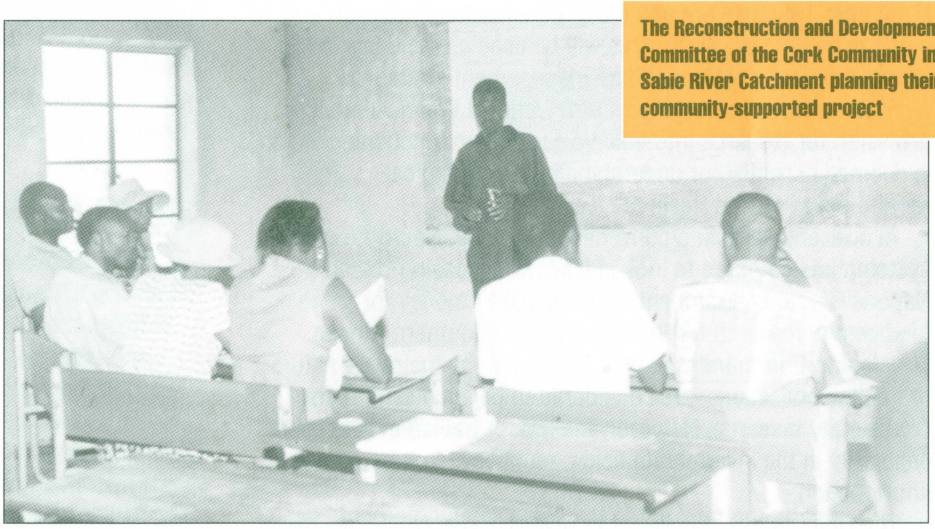

The Reconstruction and Development Committee of the Cork Community in the Sabie River Catchment planning their RHP community-supported project

Geomorphological reports available

Kate Rowntree's and Gina Ziervogel's geomorphological reports, *Guidelines for site assessment* and *a user's field guide* are completed. They are combined and now available as Report 7 of the NAEBP Report Series, titled *Development of an index of stream geomorphology for the assessment of river health.*

If you are interested in obtaining a copy, contact Liesl Hill at the Institute for Water Quality Studies, Private Bag X313, Pretoria, 0001, South Africa
Tel: (012) 808 0374 Fax: (012) 808 0338
e-mail: eee@dwaf-hri.pwv.gov.za

RHP demonstrated to stakeholders in Kwazulu-Natal

One hundred interested stakeholders attended a demonstration of the *River Health* Programme organised by the KwaZulu/Natal Implementation Team in November last year.

They included water authorities, town councillors, local farmers and others.

KwaZulu/Natal provincial champion Chris Dickens of Umgeni Water says events of this nature are essential to create awareness of the value of biomonitoring, and its role in managing the country's water resources.

This was illustrated to the group during the event by collecting samples at three different locations. The first was at the confluence of the Msunduzi River and the Dorpspruit, which are both moderately polluted rivers that flow through the city of Pietermaritzburg. A team of sample collectors demonstrated the collection of invertebrates and fish and also explained the contents of the water samples to the interested group.

A sample was then collected from a second site, a tributary/storm water drain that showed signs of extreme pollution. Data sheets explaining the habitat and riparian vegetation assessments were completed and explained to the group. SASS scores were moderate (Scores ~50, ASPT ~4.5) as very few fish were collected in the larger Msunduzi River.

After a discussion on the results, the party moved on to the next site some 25 kilometers away on the relatively unpolluted Karkloof River. Sampling at this site provided a distinct contrast to the two earlier sampling sites. The SASS scores were significantly higher (Score ~150, ASPT ~ 7,5), with the samples being characterised by sensitive stone flies and the the Natal Catlet, which is a small fish that lives in clean running water.

These contrasting samples bore clear and simple testimony to the efficiency of the methods used in the *River Health* programme and gave those attending the demonstrations a clear understanding of what constitutes a healthy river!

The success of the event was measured by the overwhelming enthusiasm and positive comments received from a number of participants. Participants were invited to become more involved in the Programme. Chris Dickens also welcomes other interested people to become more involved.

More information:

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NEW PROVINCIAL CHAMPIONS

GAUTENG

Mukhetho Neluvhalani

Gauteng's new Provincial Champion from the Department of Agriculture, Conservation and Environment, Directorate: Nature Conservation. He replaces Candice Haskins who now lives in the Cape.

Mukhetho joined the Department in July 1998 and is currently studying for his masters in Zoology. He will continue with the biomonitoring initiatives already under way in Gauteng.

Enquiries about biomonitoring in the Gauteng Province
Mukhetho's contact details:

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Johannesburg
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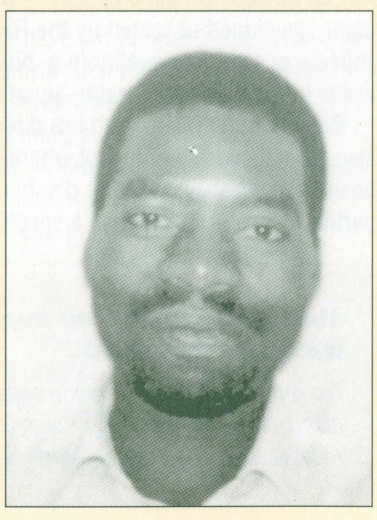
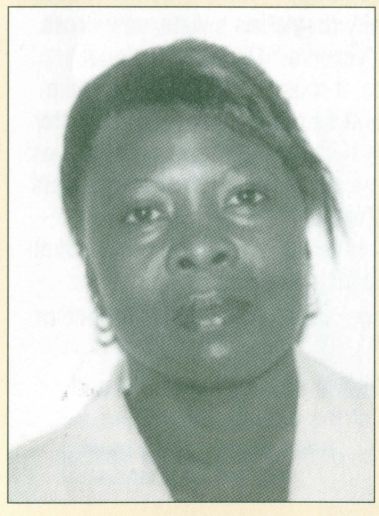


NORTH-WEST PROVINCE

Dr Margaret Kalule-Sabiti

The new Provincial Champion for the North-West Province, Dr Margaret Kalule-Sabiti at the Department of Tourism, Environment and Conservation, Directorate: Scientific and Technical Support replaces Professor Braam Pieterse who has been flying the RHP flag for the province to date.

Margaret, who obtained her PhD in entomology in England, recently joined the Department from the University of the North West. She says the North-West Province now has the capacity to actively participate in the *River Health* Programme.



Enquiries about biomonitoring in the North-West Province
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