The Working for Water Programme

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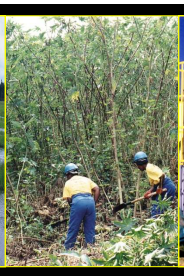
Presentation to the COP17 Side Event on Ecosystem-based Adaptations

Friday 2nd December, 13h30 to 17h00, Rio Pavilion, eThekwini, South Africa

▲ Working for Water

▲ Working for Wetlands



▲ Working for Forests

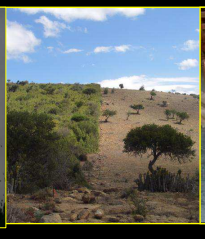
▲ Working for Energy

NATURAL RESOURCES MANAGEMENT PROGRAMMES

▼ Working on Fire

KZN Invasive Alien Species Programme ▼

Working for Land / LandCare ▼

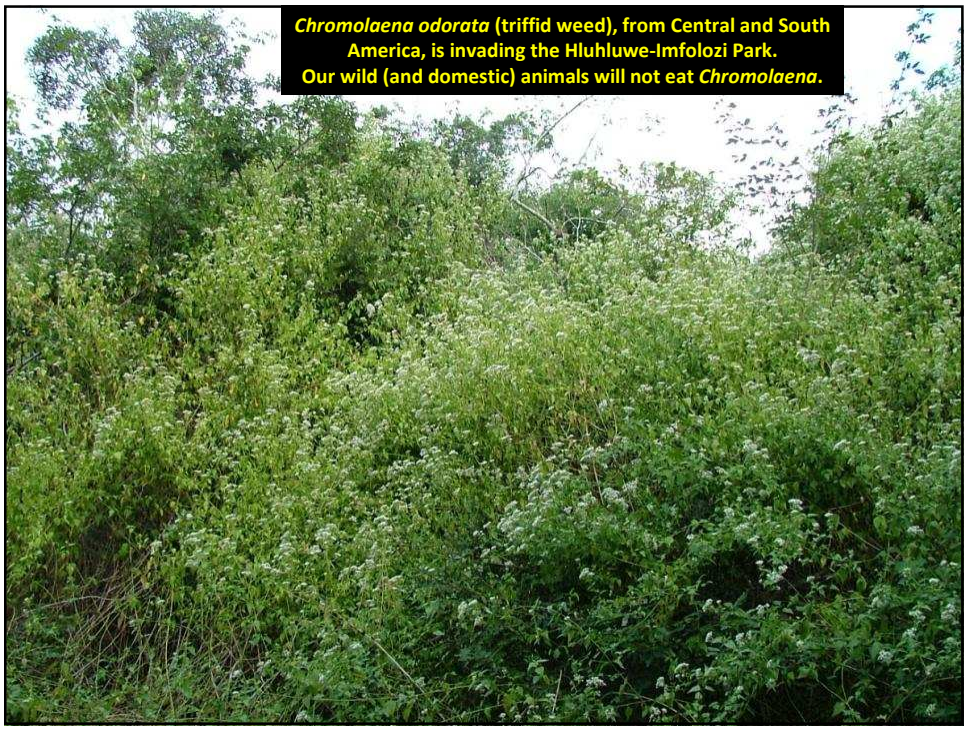


Value-Added Industries ▼

THE WORKING FOR WATER PROGRAMME

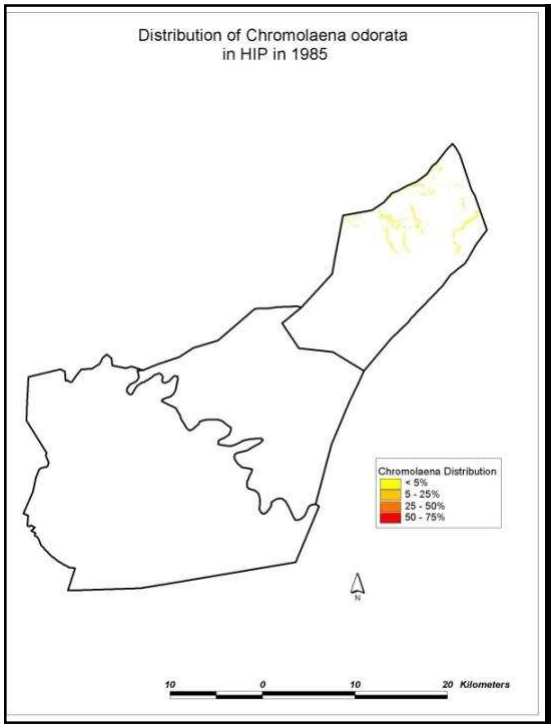
A multi-departmental initiative led by
the Department of Water Affairs and Forestry

Species produce sufficient offspring to ensure the survival of the species, given the prevailing threats and competition in their natural habitats – in general, that they are replaced by their offspring. When moved to new habitats, they may both escape their predators and be able to out-compete the indigenous species, leading to an invasion where each individual produces massive numbers of offspring that themselves live to reproduce.

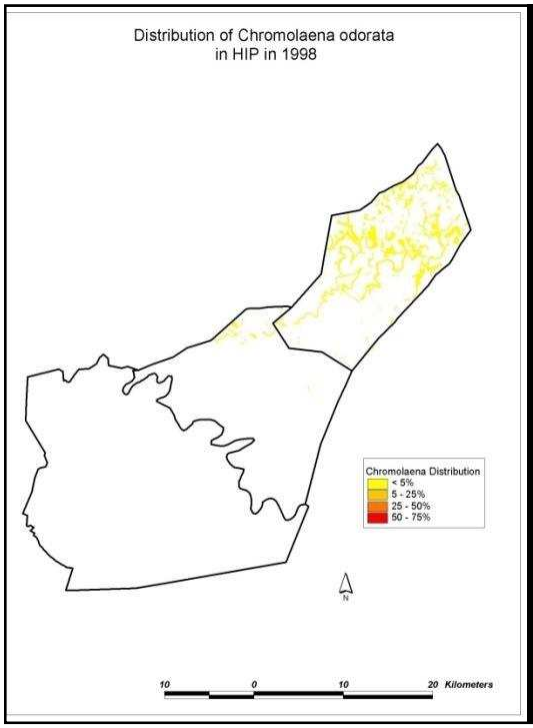


Chromolaena odorata **(triffid weed), from Central and South America, is invading the Hluhluwe-Imfolozi Park.**
Our wild (and domestic) animals will not eat *Chromolaena*.

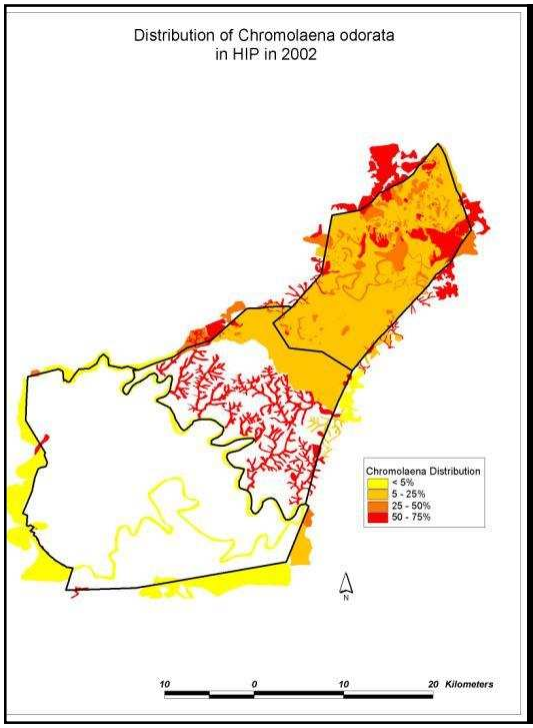
In South Africa's Hluhluwe-Imfolozi Park, what looks like land with a high carrying capacity for game, is being invaded by *Chromolaena*.



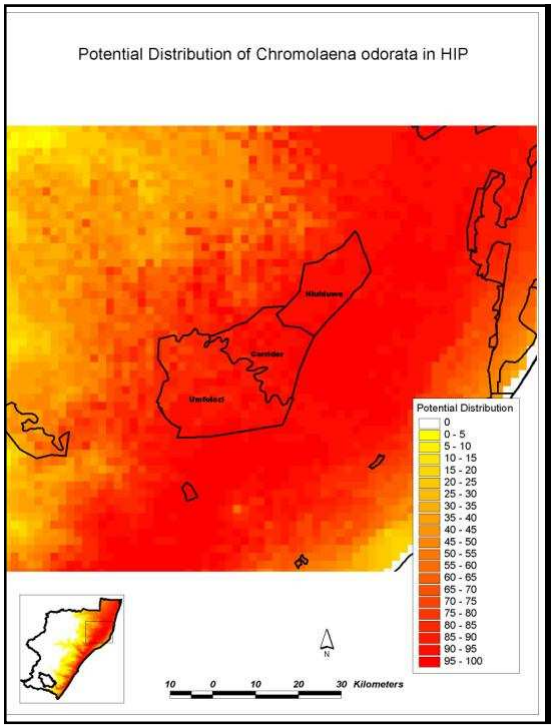
***Chromolaena* was mapped when invading the north-east section of the Hluhluwe-Imfolozi Park in 1985.**



By 1998, the *Chromolaena* was far more widespread in the Park, although still at low densities.

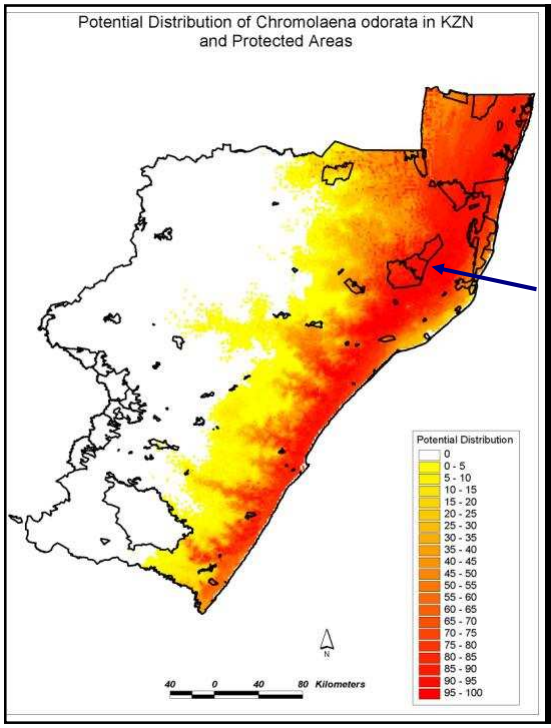


However, by 2002 (just four years' later) the level of invasion had changed dramatically. The *Chromolaena* had spread and grown across much of the Park, and the densities had become far greater as well.

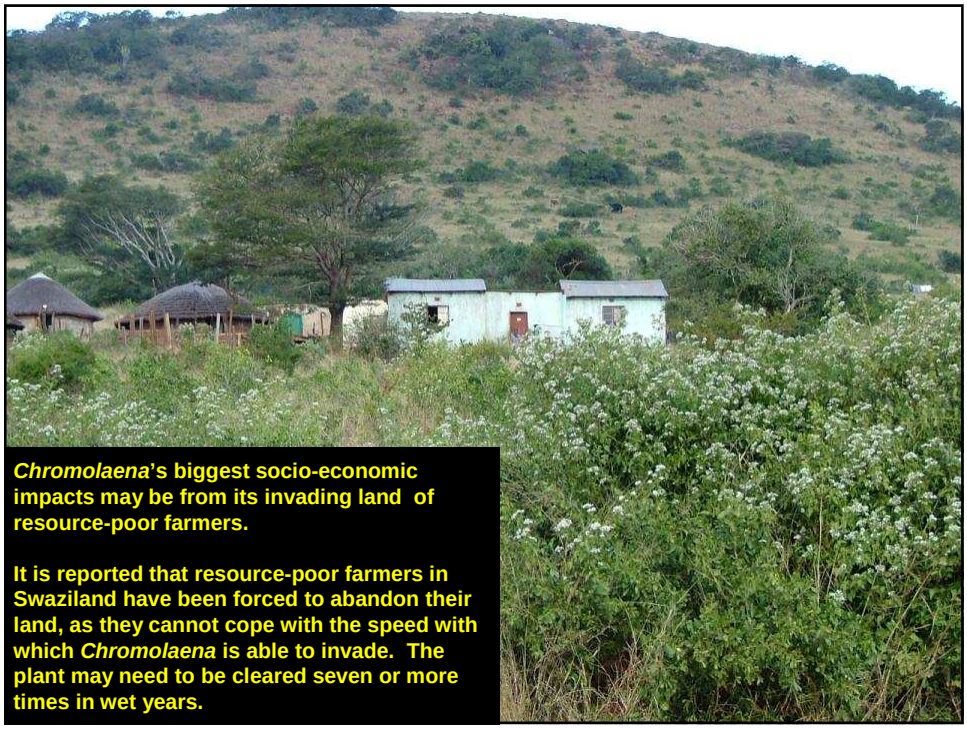


Our 2005 assessment of the invasion by *Chromolaena* was that it could engulf Hluhluwe-Imfolozi Park within ten years. If that was allowed to happen, then the impacts would be predictable:

- Little for animals to eat.
- No animals, no tourists.
- No tourists, no jobs. (Loss of 3,000 jobs.)
- Loss of R100 million p.a. revenue.
- Devastating impact on local economy, in an impoverished part of the country.
- The biggest financial impacts would, however, be felt by the broad support industries that benefit from the tourism in the Hluhluwe-Imfolozi Park – and all of the other Parks that would inevitably face the same fate.



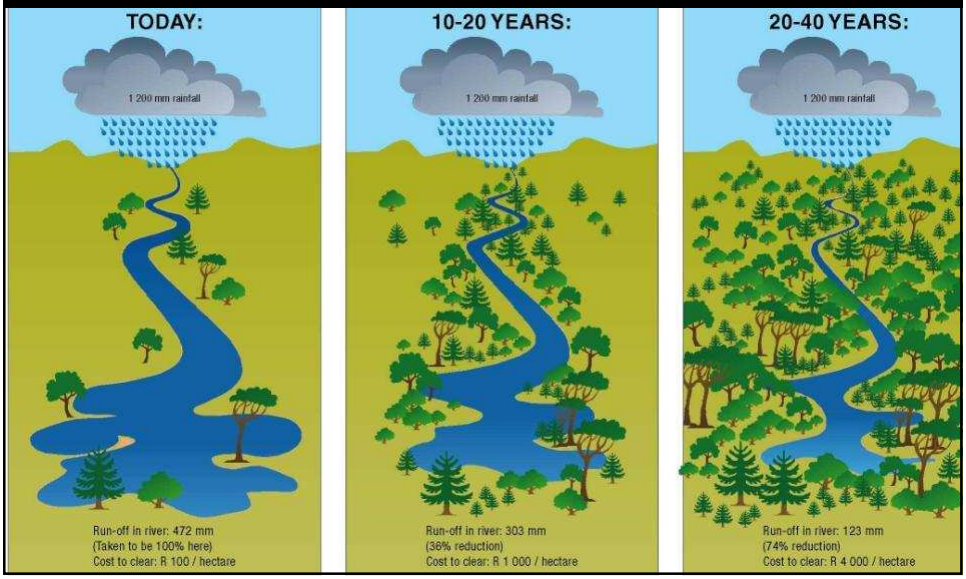
It's not just the Hluhluwe-Imfolozi Park that is being threatened by *Chromolaena*, but all lower-lying areas of KwaZulu-Natal and adjacent provinces in South Africa, as well as Swaziland and Mozambique. This shows the potential spread of the invasive alien plant in KZN.



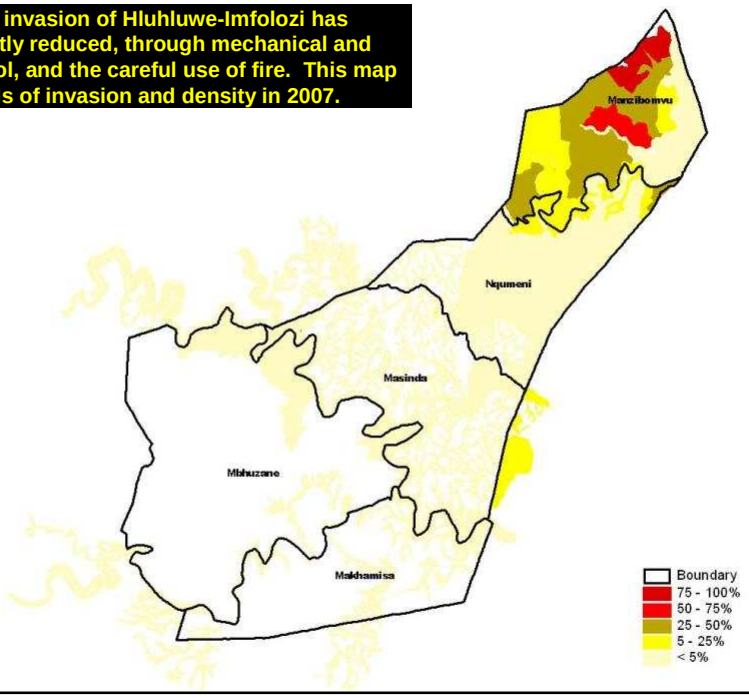
***Chromolaena*'s biggest socio-economic impacts may be from its invading land of resource-poor farmers.**

It is reported that resource-poor farmers in Swaziland have been forced to abandon their land, as they cannot cope with the speed with which *Chromolaena* is able to invade. The plant may need to be cleared seven or more times in wet years.

Recent research has indicated that *Chromolaena odorata* may have impacts on water similar to those of large invasive trees like gums, pines and wattles. It is also known as the "paraffin bush", for the intensity with which it burns.



Chromolaena's invasion of Hluhluwe-Imfolozi has been significantly reduced, through mechanical and chemical control, and the careful use of fire. This map shows the levels of invasion and density in 2007.



Chromolaena is just one threat …

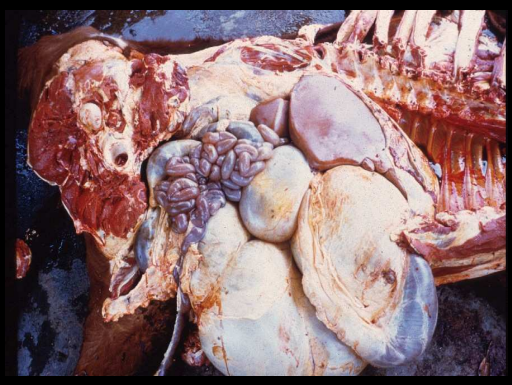
Lantana camara

Parthenium hysterophorus

All three of these species are invading in KwaZulu-Natal and surrounding areas. All pose catastrophic threats to stock and game. *Parthenium* also poses severe health threats. There are over 100 other invasives in KZN.

Stock poisoning by *Lantana camara*

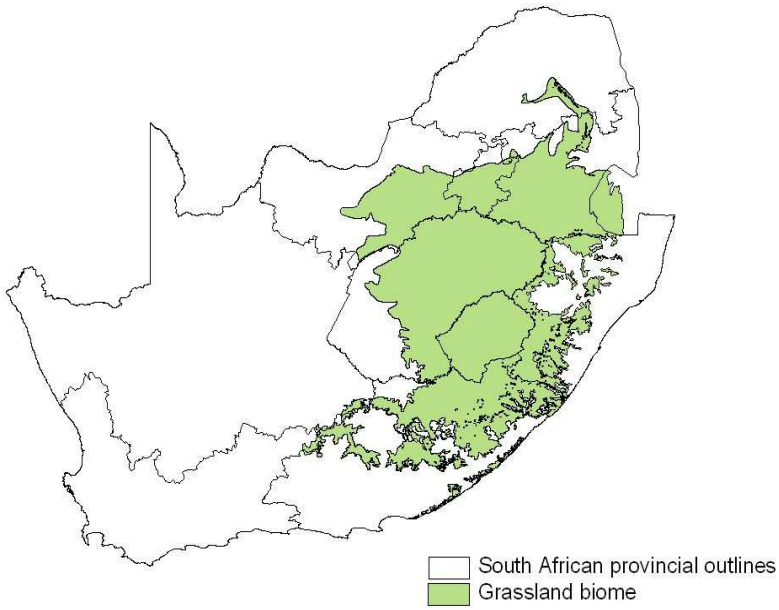
Severe photo-sensitisation of the muzzle of a cow after it had ingested lantana.



Carcase of a cow that died from lantana poisoning, showing enlarged liver and gall bladder.

The pom-pom weed (*Campuloclinium macrocephalum)* from South America

Southern Africa's grassland biome is vulnerable to invasion by the pom-pom weed. It is unpalatable for both stock and game.



Water hyacinth (*Eichhornia crassipes*) on Roodeplaat Dam, near Pretoria/Tshwane.

Pines invading the watersheds of the Western Cape.
If not controlled, any dams in the area would be fruitless expenditure!

The long-term water-related impacts of invasive alien species ...

Value of clearing of invasives on the economic value of water is estimated at R400 billion to date.

R5.8 billion is an additional loss of water quantity each year (and increasing).

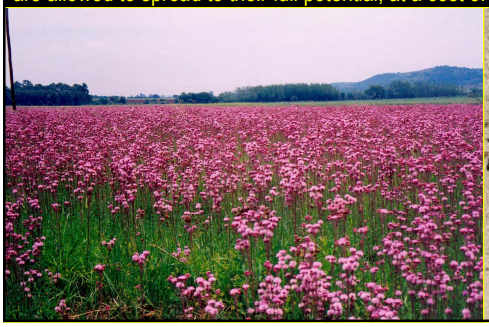
Added should be the impacts of new invasions, and climate change.

Up to 25% of Mean Annual Runoff could be lost to invasives (currently 7%).

(CSIR, 2010).

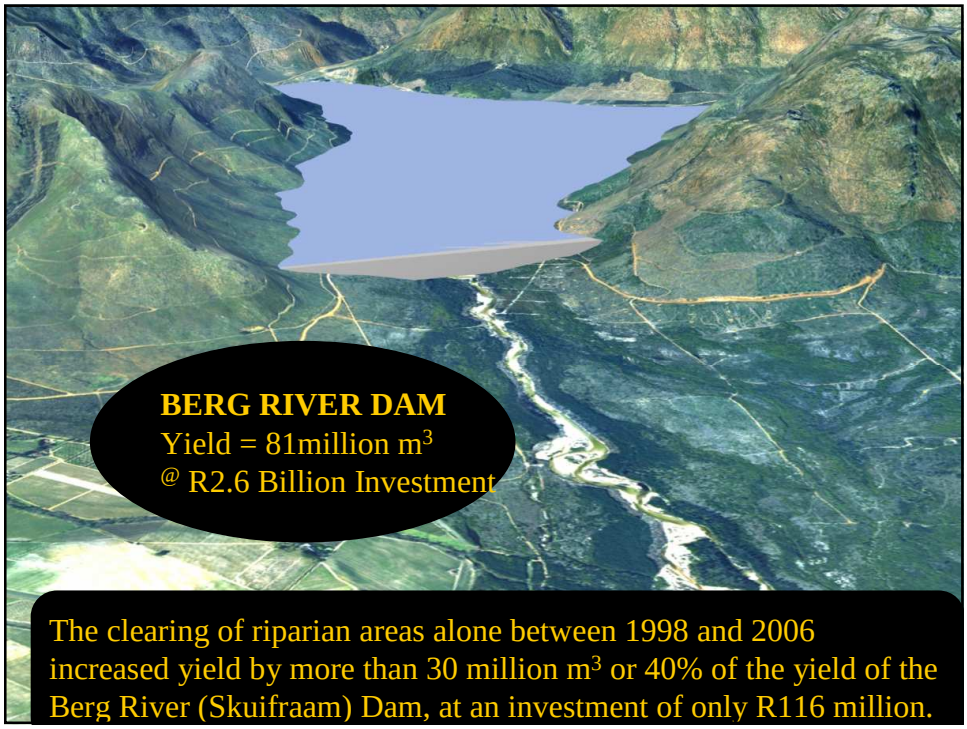
The (massive) impacts of invasives on soil erosion, siltation and mudslides have yet to be quantified.

The carrying capacity of Large Stock Units could decrease by 71% if invasive alien plants are allowed to spread to their full potential, at a cost of R337m per annum (CSIR, 2010).



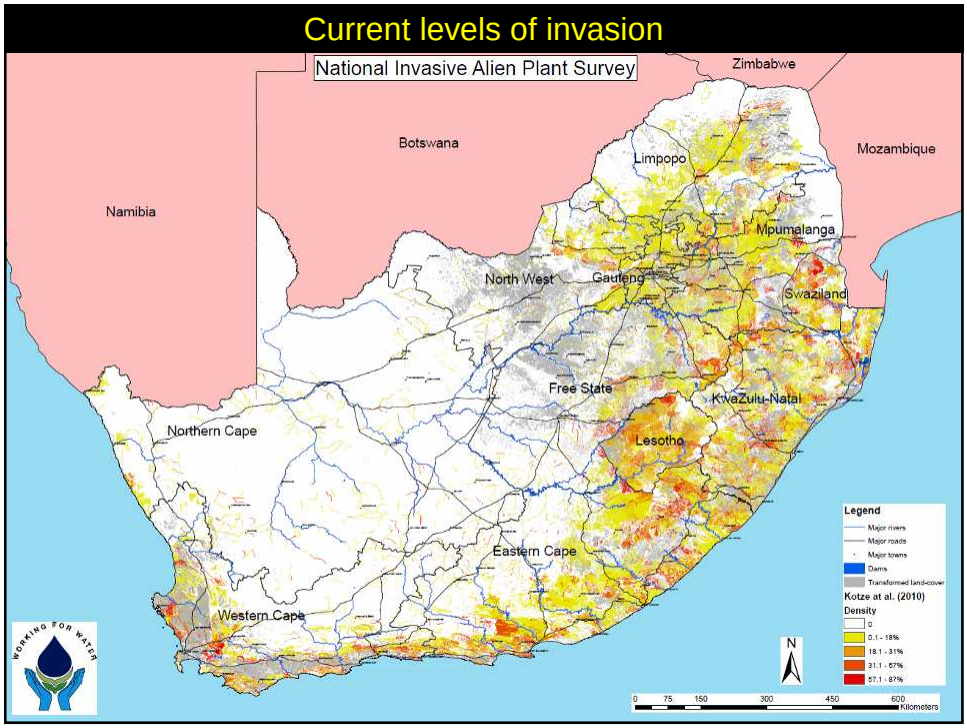
Four WfW workers died in this vehicle when trying to outrun a wild fire in the Craggs area. Nine workers jumped out of the vehicle, and lay in a stream. However, because of the invasions there was little water in the stream and all suffered major injuries.

Certain invasive alien plants exacerbate wild fires, with very significant (but as yet unquantified) impacts, including to stock.

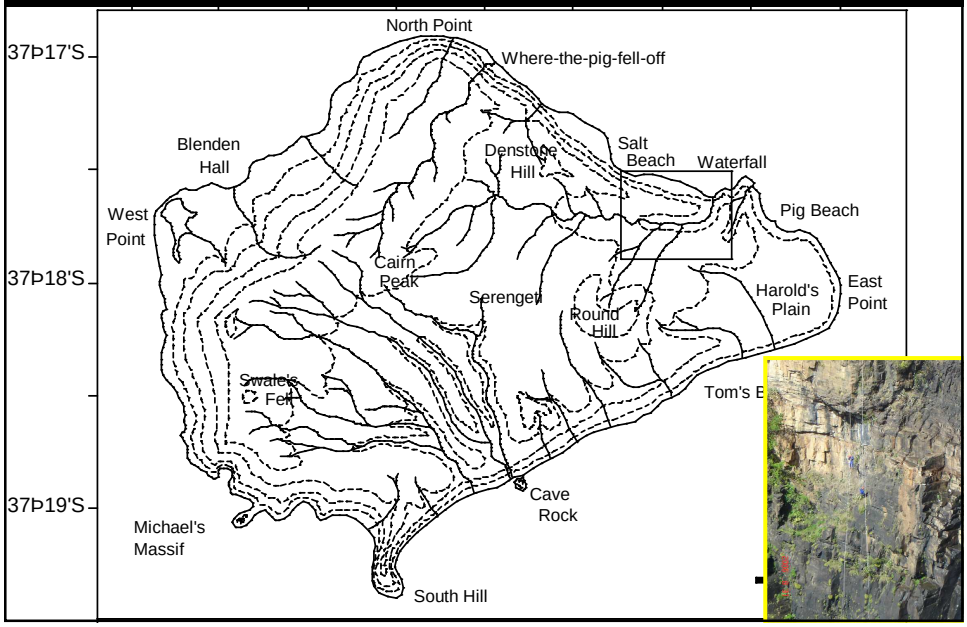


The clearing of riparian areas alone between 1998 and 2006 increased yield by more than 30 million m^3 or 40% of the yield of the Berg River (Skuifraam) Dam, at an investment of only R116 million.

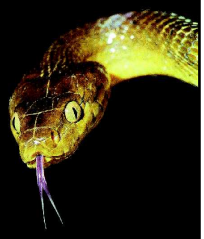
Current levels of invasion



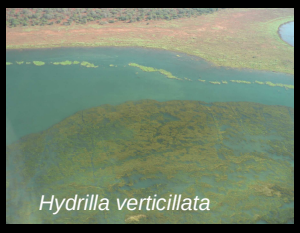
High-altitude invasives are a priority. Left alone, they will reach thresholds where it is not possible to control them. It took two workers 12 hours to kill eight invasive New Zealand flax plants on Inaccessible Island, as they had to abseil down 1,000 foot cliffs.



Prevention



Early Detection of, and Rapid Response to, invasives is (after prevention) the most critical intervention.



Biological Control

Melanterius weevil on *Acacia cyclops*

Species	Benefit :cost ratio
Red sesbania	45 : 1
Lantana	34 : 1
Long-leaved wattle	1 465 : 1
Golden wattle	4 333 : 1
Silky hakea	611 : 1

For many invading species, in many parts of the world, it is the only hope.

Prior to human arrival, a new species successfully colonized Hawaii once every 25,000 to 50,000 years.

Nowadays a foreign species becomes established in Hawaii about once every 18 days.

Pat Bily (The Nature Conservancy)

WORKING FOR WATER – 2011/12 (PLANNED)

BUDGETS	2011/12
Total Budget (EPWP, Exchequer, WI) (+WfL)	R 966,188,000
Trading Account (from DWA - Estimate)	R 31,141,000
Roll-over (Eco-Furniture Factories, IT - Estimate)	R 33,596,000
Total	R 1,020,925,000
EMPLOYMENT	
Planned Persondays	3,780,000
Planned Full-Time Equivalents	16,435
OUTCOMES	
Planned Initial Hectares cleared	146,389
Planned Follow-up Hectares	797,997
COSTS	
Planned Cost-per-personday	R 270
Planned Cost-per-FTE	R 62,119
TARGETS	
% Black	99%
% Women	60%
% Youth (18-35)	50%
% Disabled	3%

Value-added Industries

In partnership with the
KwaZulu-Natal Invasive Alien Species Programme

This series of pictures shows the harvesting of invasive trees for value-added products.

The trees are cut into “cants” in the field, for ease of transportation.

The “cants” are cut into planks and planed, for making value-added industry products.

Health and safety requirements are stringently followed in the Eco-coffins Factory.

The planks are stacked for drying in the kiln.

From the kiln the wood goes to the “finishing mill”, where the various products are made.

Eco-coffins can help to reduce the exploitation of the poor at the time of bereavement. Here 89 jobs have been created making coffins and caskets from invasive alien wood.

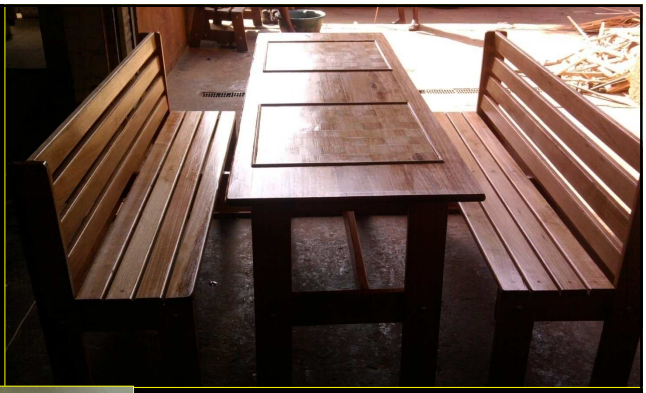
Professor Kader Asmal, who gave life to the Working for Water programme, and all that has followed, chose to use a basic, rope-handled, pine Eco-Coffin for his funeral.

The “Eco-desks” for schools is a major initial focus of the Eco-Furniture Factories – creating jobs, making high-quality, low-cost products from invasive alien wood.

Indoor or outdoor benches are made from invasive wood (here, river red gum).

Chess Table

A multi-purpose work station for schools, where Learners can study, but where chess, Sudoku and other intellectually challenging games can also be played.



Built into the Chess Table will be other games that stimulate logical thinking and promote recreational activities and education. The purpose of the game on the left is to replace the invasive species (pegs) with the indigenous species, whilst only moving forward one hole at a time, or jumping one "tree" at a time. There are many other similar games that will be built into the desk, with the pieces stored in drawers below the table top.

Umsholozi Walking Sticks

Nineteen previously unemployed people in Nkandla, KZN are making walking sticks from invasive wood, and the sticks are given to the elderly and others in need of support.

Working for Land

Including

Payment for Ecosystem Services

LANDCARE SOUTH AFRICA

EXPANDED PUBLIC WORKS PROGRAMME
CONTRIBUTING TO A NATION AT WORK

To the right of the fence is degraded thicket which is the result of over-stocking with angora goats. On the left is intact spekboom-rich thicket delivering a range of ecosystem services to humans, such as retaining topsoil, supporting judicious livestock farming and storing carbon. (L. Ezzy)

Compared to other semi-arid ecosystems with similar rainfall, spekboom-rich thicket can sustain immense biomass in the form of dense vegetation and high numbers of large animals. Its ability to support elephants and rhinos has made it a major tourism attraction. (C. Marais)

Sekhukhune - From this!!

Photograph: Courtesy Prof. Rudi van Aarde

To This!!

Photograph Courtesy: Prof. Rudi van Aarde

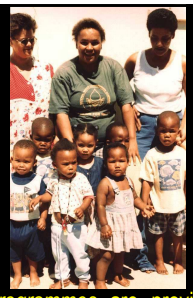
There is massive potential for *Working for Land* in the Eastern Cape, to address the erosion, desiccation, food insecurity and loss of ecosystem services caused by poor land-use practices.

Working for Energy

Electricity generation using invasive plant species and bush encroachment

	Preliminary estimate of total utilisable biomass: t	Biomass per year over 15 years: t	Installed capacity: MW	Electricity generated at 75% op. time: MWh	Value of electricity at 65c/kWh: Rmill	Value of carbon sales at R100/tCO2 Rmill	Total value Rmill
Eastern Cape	22,713,750	1,514,250	144	946,406	615	95	710
Free State	2,532,856	168,857	16	105,536	69	11	79
Gauteng	355,418	23,695	2	14,809	10	1	11
KwaZulu-Natal	7,056,731	470,449	45	294,030	191	29	221
Mpumalanga	13,462,610	897,507	85	560,942	365	56	421
North-West	22,538,617	1,502,574	143	939,109	610	94	704
Northern Cape	19,822,231	1,321,482	126	825,926	537	83	619
Limpopo	19,717,087	1,314,472	125	821,545	534	82	616
Western Cape	5,393,102	359,540	34	224,713	146	22	169
TOTAL	**113,592,402**	**7,572,827**	**720**	**4,733,017**	**3,076**	**473**	**3,550**

Creating 115 million persondays of work (for 50,000 people) per year for 15 years


The *Natural Resources Management Programmes* are providing work for almost 40,000 previously unemployed people (including its sibling KwaZulu-Natal *Invasive Alien Species Programme*). The programmes focus upon opportunities for the most marginalized, including women (target of 60% of wages), youth (45%) and the disabled (2%). Social development foci have included wellness issues, HIV and AIDS, sexual and reproductive health, substance abuse, financial management and other efforts to empower the workers, including through peer educators.



DBSA Analysis of Green Job Opportunities

	2012		2017		2025	
	Number of FTE's	Total budget requirement	Number of FTE's	Total budget requirement	Number of FTE's	Total budget requirement
	#	R'mill	#	R'mill	#	R'mill
Working for Water	15,416	1,238	42,979	5,438	111,632	24,010
Working for Energy (Biomass)	-	-	14,293	2,370	38,480	14,713
Working for Land	3,485	281	23,941	3,058	63,749	15,073
Working for Wetlands restoration	1,266	119	4,936	739	6,945	1,782
Working for Wetlands prevention	509	25	2,115	164	2,976	395
Working on Fire	3,239	220	7,042	758	7,042	1,299
Total	**23,915**	**1,882**	**95,305**	**12,527**	**230,824**	**57,271**

Livelihoods That Matter ...

... in whom they target.

Livelihoods That Matter ...

... in what they deliver.

Political Championing is essential for the Natural Resources Management Programmes to succeed.

Ms Edna Molewa

Minister of
Water and Environmental Affairs

THANK YOU

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