



# Guide to biodiversity in your garden

Pam Golding Properties  
and The Endangered Wildlife Trust



In association with





# What is 'biodiversity gardening'?

Biodiversity gardening is gardening to encourage and protect the stunning variety of plants and animals that occur naturally in your region. It promises increased health and safety, time and money savings and a powerful and enduring sense of environmental connection and wellbeing. In a nutshell, it is a ticket to a deep and long lasting sense of happiness and personal fulfilment.



# Let nature welcome you home



For some time, we have appreciated that in its broadest form, every home, whether castle or cottage, quite simply, either positively or negatively impacts the overall sustainability of our future social development. In fact, we are among many who believe that overlooking the concerns of the greater 'Green Agenda' would be short-sighted. Aside from the long-term vision required to protect life on our planet, we need to consider the behaviour of the growing number of conscious consumers who are undoubtedly reshaping the future economic worth of almost everything. From water bottles to rocket fuel, perceived value has shifted, and this without doubt includes the future value of the home.

When the opportunity arose to become a founding member of the National Biodiversity and Business Network (NBBN) in 2013, it was a privilege for Pam Golding Properties to join the conversation

on how to mainstream and facilitate biodiversity interventions within the forum's various spheres of influence. For us, as estate agents armed with information that has been brought to light by our expert NBBN partners like the Department of Environmental Affairs and the Endangered Wildlife Trust, we intend to use any influence we may have within the vast residential property sector to reduce the footprint on biodiversity, home by home.

Within the pages of this book you will find a combination of fascinating, practical, yet simply-put information on how to make changes, great or small, in order to increase the biodiversity of your garden. Not only does it guarantee to increase what is called your 'Natural Capital' by saving you time, money, your health and our future, but it also promises to gently persuade life and beauty to return to your cherished and most valuable material asset, your home.

A handwritten signature in black ink, reading "Andrew Golding".

Dr. Andrew Golding  
Chief Executive

“Aside from the long-term vision required to protect life on our planet, we need to consider the behaviour of the growing number of conscious consumers who are undoubtedly reshaping the future economic worth of almost everything.”



Nedbank's commitment to our clients, and to all South Africans, is to use our financial expertise to do good for individuals, their families, businesses and society. It is an undertaking that we do not approach lightly. Therefore we aim to optimise every opportunity we have to use banking and finance to enhance the lives of those we are privileged to serve.

Being able to help South Africans to own their homes is one of these opportunities. Like every client looking to buy a home, we recognise that a home is far more than walls and a roof. It is an opportunity to establish roots, to extend the personalities of those who live in it, and serves as a haven of tranquillity.

For Nedbank the value of protecting biodiversity, whether a national park or a backyard garden cannot be overestimated. We have been on our own sustainability journey for some time and our commitment to the environment and continual learning underpins that journey.

By supporting initiatives such as this book and the immensely popular *Nedbank Green Living Guide* we are pleased to contribute to shaping a better, more sustainable future for all South Africans. We thank Pam Golding for inviting us to be a part of their work in this regard.

So whether your garden is an expansive green space or a cosy hideaway, we trust that this book inspires you to transform it into a rich haven of biodiversity that not only enriches your life, but also adds to the immense natural richness of our beautiful country.

**Brigitte Burnett**

Head of Sustainability: Nedbank Group

**For more information on our home loan products or to access the Green Living Guide please visit [Nedbank.co.za](https://www.nedbank.co.za).**



# Contents

## The law of the land

In 2014 it became illegal in South Africa to sell property that supports certain alien invasive plants or to own certain animals without the necessary permits.

**Pages 28 & 29** give a concise summary of the National Environmental Management Biodiversity Act and its implications for homeowners.

<b>Introduction</b> – Gardening for life	<b>2</b>	<b>We are what we eat</b> – Organic vegetable gardening	<b>18</b>
		Five good reasons to grow your own	18
<b>Natural Capital</b> – Saving time, money, your health and our future	<b>4</b>	The epiphany of composting	19
		Ground rules for composting	20
<b>The beauty of biodiversity</b> – Spark the magic	<b>5</b>	Composting tips	21
Indigenous inspiration – our national treasures	5	Nature’s moisturiser – mulch	22
The delight of flight – attracting birdlife	6	Earth wizard – the humble earthworm	23
Flying bullies and bird pests – what to do	6	Super-healthy, super-easy to grow	23
Famed and named for change and beauty – butterfly havens	6	Pesticides – deadly company or safe and friendly	24
		Menacing molluscs – slugs and snails	25
<b>Bringing life back home</b> – Increasing your property’s eco-efficiency	<b>8</b>	Nature’s perfect pest patrol – batty bats and ratting owls	26
Climate – our world in one country	8	Owls	27
Aspect – facing the Sun	8		
Soil – foundation of life	8	<b>Binned at last</b> – Invasive plant species	<b>28</b>
Water-wise is money-wise	9	NEMBA regulations and how they affect you	28
Water-wise tips	10	Forbidden pets	29
Water-greedy lawns	11	What to do if your property has invasive plant species	30
Nice but nasty	11		
What to choose	11	<b>Threatened or Protected Species (TOPS)</b>	<b>31</b>
Eco-friendly lawn tips	12	Plant TOPS – another first for SA	32
Perennials	12	South African legislation	33
Bringing sunshine into your garden on long, dark nights – safe, solar lighting	12	Bird and animal – TOPS	34
A swim made in heaven – natural, non-toxic pools	13		
Wildlife dating sites – reconnecting nature	14	<b>The Sponsors:</b> NBBN; The Enviropaedia; Pam Golding Properties;	<b>35</b>
Some useful landscape design tips	15	Endangered Wildlife Trust; Nedbank	36
Vertical landscaping – give your space a lift	15		
Landscaping for beauty	16		





“Nature holds the key to our aesthetic, intellectual, cognitive, and even spiritual satisfaction. Each species is a masterpiece, a creation assembled with extreme care and genius.”

EDWARD O. WILSON – BIOLOGIST

# Introduction

## gardening for life

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Orbiting the Sun at 107 826 km/h, our blue planet is home to 8.7 million spectacularly different forms of life. It is the only known life in the vast emptiness of the universe, making it a place both exquisitely rare and nothing short of miraculous. But in the next 40 years – a heartbeat away – up to half of all Earth’s species might well be extinct as a direct result of human activities. As the great and marvellous assembly of life on Earth with all its magical biodiversity vanishes before our eyes, it feels as if there’s little we can do about it, as if all is lost. But nothing could be further from the truth...

A new awareness is spreading across the world and it is bringing tremendous hope and excitement. People now understand the vital importance of making our individually small, but collectively massive contribution to the protection of all life on Earth. We are increasingly more willing to practice consumer restraint while back at home we are seeing how surprisingly easy and hugely rewarding it is to play our part in securing nature’s bounty for our children’s future.

This booklet outlines a few simple ways you can increase the value of your property by protecting and encouraging nature’s life-giving biodiversity in your very own patch of the Earth – your garden. It covers a variety of topics all aimed at informing and inspiring you to garden for natural beauty, for personal and planetary savings, for your health and happiness, and for life.

When we begin to see, on a deeply personal level, how absolutely priceless our homes and individual contribution to the world can be, we begin to reap the wonderful spin-offs of ‘going green’. The very real economic, health and time-saving benefits will leave you in no doubt that your role is the most important one of all and that it isn’t difficult to achieve because it’s not about ‘saving the world’.

A little time spent reading this booklet will reveal how rewarding and crucial our individual role in the protection of our environment is. The choice is

ours to be the custodians or the destroyers of this precious living jewel called the Earth and this most rewarding of journeys starts at home.

Most importantly, we hope to inspire a love of biodiversity gardening for it is without doubt one of the purest, easiest and wisest of all human pleasures!

### Top of the world

South Africa belongs to the so-called ‘Megadiversity Club’ and is third only to Brazil and Indonesia in terms of biodiversity. By encouraging biodiversity in our gardens individually we commit to helping conserve South Africa’s growing list of Threatened and Endangered Species (TOPS) that battle to survive in and around our urban areas. **See our section on**

**TOPS on pages 31 – 34.**



## Did you know?

- In the last 20 years childhood has moved indoors. Yet medical science has proved that exposure to natural settings reduces stress levels and boosts body, mind and spirit wellness in children.
- The average child receives up to four times more exposure than an adult to widely used carcinogenic pesticides in mass-produced food. Our food choices today impact our health and the health of our children.
- Chemicals in our food have been linked to breast cancer, damaged brain function, birth defects, Parkinson's, autism, depression, Non-Hodgkin's Lymphoma, miscarriages, prostate cancer and infertility. Organically grown food reduces our exposure to disease-causing chemicals.



# Natural capital saving time, money, your health and our future

“Never doubt that a small group of thoughtfully committed citizens can change the world. Indeed, it's the only thing that ever has.”

MARGARET MEAD

“Look! Look! Look deep into nature and you will understand everything.”

ALBERT EINSTEIN

The world's stock of natural resources which creates a long-term supply of goods or 'ecosystem services' for our survival is known as 'natural capital'. It includes soil, air, water and all living things. Just like every business and home, nature has a budget and our demand for natural capital is exceeding nature's budget as we are currently using more natural resources than the Earth can produce each year. If everyone consumed at the rate of first world countries, we'd need 2.75 Earths to meet our demand for natural resources each year. But we only have one!

**Conserving the natural capital on your property doesn't mean you have to compromise your lifestyle.** In fact, gardening in harmony with nature offers significant time and money savings as well as the peace of mind knowing you are helping safeguard your health and that of your children.

## Saving your pocket and increasing your property value

Joining the worldwide revolution to 'go green' and playing our part in various small, but vitally important ways, gives direct economic and health benefits, including:

- Significantly reduced maintenance and utility bills.
- An irrigation system could save up to 30% of your gardening water costs while a water tank could reduce your monthly water costs to nil.
- Once installed, cheap and easy energy sources like solar lighting provide visual delight while also increasing home security.
- Lawn and garden services can cost thousands of rand on smaller properties annually while larger ones can expect to fork out hundreds of thousands in the long-term.
- Save a fortune on replanting annually by buying indigenous perennials and groundcovers.
- Planting windbreaks and strategically situated shade trees can reduce winter heating bills by 15% and air-conditioning costs by as much as 75%. Strategically positioned trees can end up saving the average household thousands of rand annually.
- Increasing the natural processes on your property will decrease the costs of harmful pest control.

## Saving your health

Our reliance on mass-produced food is one of the greatest threats to biodiversity and has dire, even life-threatening, consequences for our health.

With each rand we spend on mass-produced food and drink, we buy into the devastating impacts of large-scale agriculture that contribute to pollution, the energy crisis, deforestation, extortionist price hikes and the consumption of potentially disease-causing chemicals in our bodies.

Growing at least some of our own food is of huge benefit to planet, pocket and our health. See our organic vegetable gardening tips and solutions on pages 18 - 27.

Approximately half of all synthetic drugs have a natural origin. Protecting biodiversity is protecting current and future cures and remedies.

# The beauty of biodiversity

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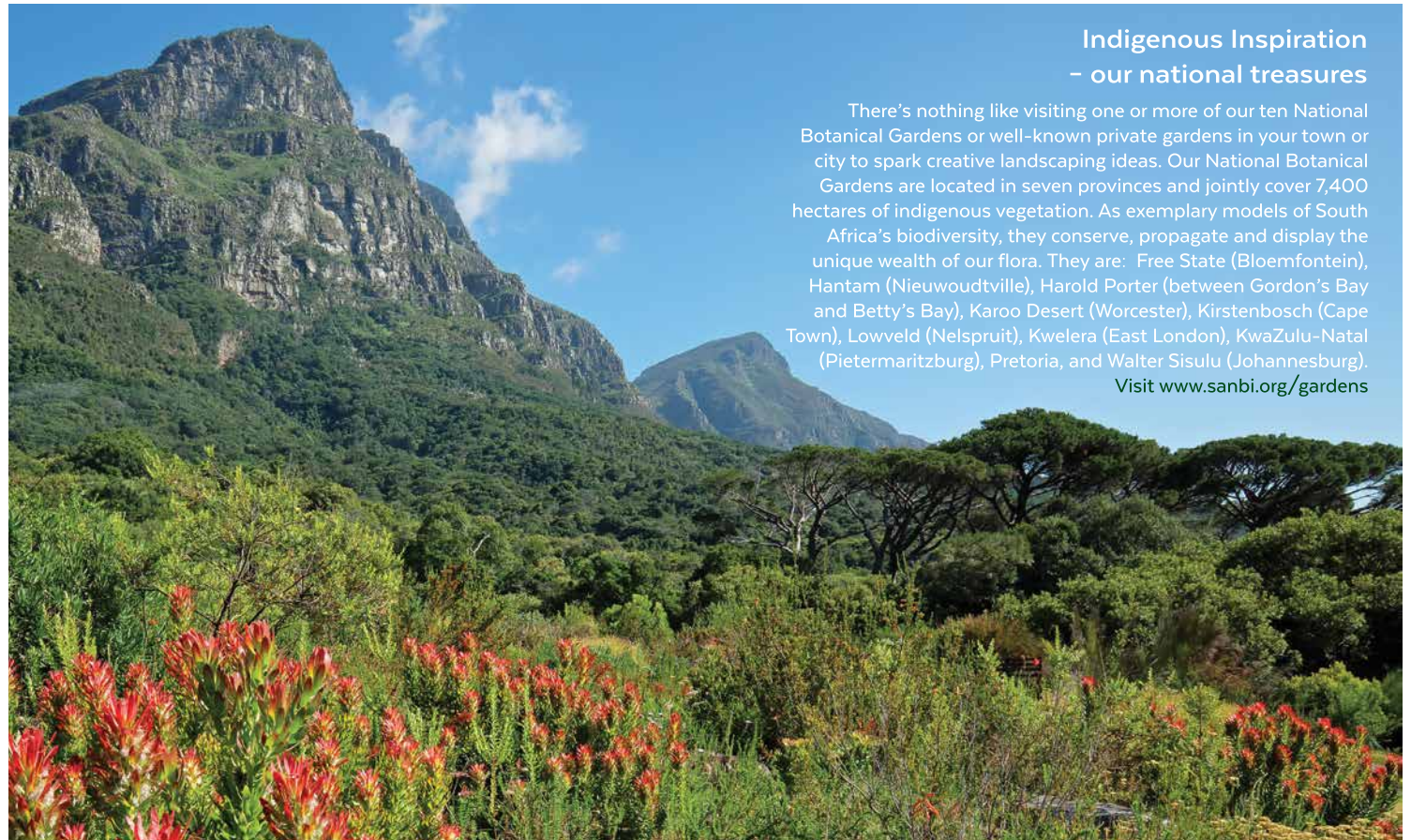
“I owe my being to the hills and the valleys, the mountains and the glades, the rivers, the deserts, the trees, the flowers, the seas and the ever-changing seasons that define the face of our native land.”

THABO MBEKI

## Spark the Magic

Tapping into the beauty of South Africa's biodiversity opens us up to the joy of our connection to the Earth and all other living creatures. This deep appreciation of nature gives us a context and a spiritual foundation for our human existence on Earth. Added to this, the aesthetic delights of a regionally indigenous garden are equally rewarding. A wildlife-friendly, indigenous garden offers lower maintenance and lasting pleasure as nature gradually returns to our urban lives in incremental splendour.

The key that opens us to the magical world of a biodiverse wildlife garden lies with those grand protectors of life – indigenous plants, especially trees. With a little effort, you can become a custodian of all that is rare and beautiful, with birds, bees, butterflies and animals returning to light up your world.



### Indigenous Inspiration – our national treasures

There's nothing like visiting one or more of our ten National Botanical Gardens or well-known private gardens in your town or city to spark creative landscaping ideas. Our National Botanical Gardens are located in seven provinces and jointly cover 7,400 hectares of indigenous vegetation. As exemplary models of South Africa's biodiversity, they conserve, propagate and display the unique wealth of our flora. They are: Free State (Bloemfontein), Hantam (Nieuwoudtville), Harold Porter (between Gordon's Bay and Betty's Bay), Karoo Desert (Worcester), Kirstenbosch (Cape Town), Lowveld (Nelspruit), Kwelera (East London), KwaZulu-Natal (Pietermaritzburg), Pretoria, and Walter Sisulu (Johannesburg).

Visit [www.sanbi.org/gardens](http://www.sanbi.org/gardens)



“If I had to choose,  
I would rather have birds  
than airplanes.”

CHARLES A. LINDBERGH

### The delight of flight – attracting birdlife

South Africa is home to a staggering 858 indigenous bird species. When some of these sky-dancing wonders start visiting your garden, you know you’re achieving some biodiversity success. By supplying the basics of life – food, a home and security – you’ll start attracting them and enjoying that truly wonderful connection to nature. And, with luck, you might even lure one or two rare, threatened or endemic birds.

A diverse habitat of indigenous trees, shrubs, ground covers and flowers provides insects, fruit and seeds for birds that will in time become regular visitors and maybe even permanent residents in your garden.

### Flying bullies and bird pests – what to do

Some bird species like crows, feral pigeons and mynas aren’t always welcome as they can be invasive, annoying, noisy and messy. Try using bird netting, chicken mesh or wire to prevent access to roosting sites. Visual deterrents like scarecrows or reflective materials also work as do ultrasonic devices and audio recordings of the pesky species in distress. Destroy the nests of troublesome birds and don’t leave birdseed on the ground. If they’re targeting your bird feeder, stop feeding for a week. You can also enclose the feeder in a cage that allows smaller native birds in, but bars larger ones like pigeons. And chase them away physically at every opportunity.



For the full list of rare, endangered, vulnerable and threatened birds in your province and bioregion, go to:  
<http://avibase.bsc-eoc.org/checklist>

“There is nothing in  
a caterpillar that tells  
you it’s going to be a  
butterfly.”

R. BUCKMINSTER FULLER

### Famed and named for change and beauty – butterfly havens

Few creatures are more symbolic of beautiful, magical transformation than those delicate, exquisitely coloured ‘angels of change’ – butterflies. South Africa has 801 known taxa and once your garden becomes a haven with the right indigenous plants, butterflies can become a most delightful obsession. Butterflies are indicators of a healthy environment and healthy ecosystems. Areas rich in butterflies are rich in other invertebrates. These collectively provide a wide range of environmental benefits, including pollination and natural pest control.

### Some good ideas for a bird-friendly garden

- Put a bell on kitty’s collar
- Plant with variety to attract variety
- Put up nesting boxes and maybe even an owl box (see page 27)
- Leave a corner patch of lawn unmowed – it attracts insects and some birds like weavers use longer grass for nesting material
- Until your indigenous garden is established, bird feeders and fruit trays (spiking fruit onto a nail in a tree works well) usually brings good results
- Place feeders away from the house to minimise the risk of birds flying into windows.

### THE NAMES OF MAGIC

Even the names of butterflies are intriguing – how about a visit from a Two-pip Policeman or a Mamba Swallowtail? Or perhaps the Small Marbled Elf, Scarce Ranger, Christmas Forester or a Topaz Babul Blue will flip in to drink the nectar your indigenous garden generates.

For comprehensive informational and regionally occurring species, visit: <http://www.sanbi.org/sites/default/files/documents/documents/bioseries16butterfly.pdf>

### SOME MAGICIANS TO LOOK OUT FOR

These widely occurring butterflies have been recorded in five of SA’s National Botanical Gardens: African Clouded Yellow, African Grass Blue, African Migrant, African Monarch, Brown-veined White, Bush Bronze, Citrus Swallowtail, Common Diadem, Common Dotted Border, Common Hottentot, Zebra Blue, Garden Acraea, Geranium Bronze, Meadow White, Painted Lady, Pea Blue, Pansy.

### PLANT INDIGENOUS AND WATCH THE BUTTERFLIES DANCE IN:

- Groundcovers: Trailing Marigold, Asparagus Ferns, Creeping Foxglove, Gazanias and Plectranthus species
- Shrubs and herbaceous plants: Bush Violet, Blue Honeybell Bush, Ribbon Bush, Pentas
- Trees: all Vachellia (Acacia) species, Buddleja species, Mackaya bella, Cork Bush, Dogwood, Wild Plum, Wild Pear and Ironwood.



“The nation  
that destroys  
its soil destroys  
itself.”

FRANKLIN D ROOSEVELT





“We are called to assist the earth to  
heal her wounds and in the process  
heal our own.”

WANGARI MAATHAI

# Bringing life back home – increasing your property’s eco-efficiency

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The reason behind South Africa’s incredible biodiversity – we have some 10% of the world’s total known plant, bird and fish species and over 6% of all known mammal and reptile species – is due to our wide range of climatic conditions and immensely varied topography. Gardening according to your regional climate and soil type is an important key to a successful indigenous garden. With a little guidance, your garden can easily become more eco-efficient and more beautiful.

## Climate – our world in one country

Climatic conditions in South Africa are extremely variable from region to region and from season to season. Droughts, floods, frost, hail and snow cannot be accurately predicted. For this reason, only buy plants that are indigenous to your bioregion. In areas prone to frost, buy frost-resistant or at least frost-tolerant plants. Our western and southern regions are often lashed by high winds and wind-tolerant plants are the best bet here, especially at the coast.

## Aspect – facing the Sun

Before buying any plants, make a special note of your garden’s primary aspect – does it face north, south, east or west? This will determine your choice and placement of plants. North-facing gardens are ideal for sun-loving plants whereas south-facing gardens require shade or semi-shade plants. East and west facing gardens will receive morning or afternoon sun respectively, but some full sun and semi-shade plants can thrive with only half a day of South African sunshine.

## Soil – foundation of Life


The greatest influence on plant nutrient availability is soil pH which can be tested with a home kit from your local garden centre or by using our simple, hands-on test (below). Most plants grow best in soil with a fairly neutral pH between six and seven. When the pH level is lower than five or higher than eight, soil is either too acidic or too alkaline and certain plants won’t thrive.

Soils are generally classified as sandy, clay or loamy. Clay is rich in nutrients but slow in draining water. Sand drains quicker but loses moisture and nutrients more easily.

Loamy soil is ideal. Three simple hands-on tests will give you a good indication of the type of soil in your garden:

- Dig out a handful of moist (but not wet) soil from your garden and squeeze it tightly. Then open your hand and poke it with a finger. If the soil crumbles, you have good, loamy soil with a healthy pH. If it holds its shape when you poke it, you have clay soil. And if it falls apart as soon as you open your hand, you have sandy soil. Depending on your soil type, you might need compost and/or fertiliser supplements in order to achieve a better pH.
- Test your soil’s drainage by digging a hole about a square foot deep. Fill it with water and let it drain completely. Fill with water again. If the water takes longer than four hours to drain you have poor drainage and should seek advice from your nursery on how best to remedy this.
- If you dig a one foot hole in the soil and find earthworms, you have good soil. The more the merrier. No worms probably means you need to supplement the soil with organic compost.



A young boy is sitting on the ground, looking at a small pool of water. The ground is dry and cracked, with many small rocks scattered around. The pool of water is in the upper right corner of the image. The boy is shirtless and wearing dark shorts. The overall scene is one of drought and scarcity.

# Water-wise is money-wise

Ernest Hemingway's words, 'Water, water everywhere and not a drop to drink' have a darkly prophetic ring for each and every one of us at the beginning of the 21st century. It is estimated that by 2030, up to 250 million people in Africa will be living in areas of high water stress which could displace as many as 700 million people. Saving water is now an individual, national and global imperative.

Perhaps the best incentive of all is the money you will save as you actively conserve this most precious of all of Earth's resources.





## Water-wise tips

Saving water is your gift to your pocket and to the planet. Here are some water-wise tips:

- Water your garden in the late afternoon or early evening. The high rate of evaporation in 'sunny SA' from light and heat means less water for your plants when watering in the morning or at midday.
- Install drip irrigation or soaker hoses as opposed to watering with hose pipes or sprinklers. Always override your irrigation system when it rains.
- Indigenous plants are adapted to SA's often very dry conditions and are therefore infinitely preferable to water-dependent exotics.
- Remove water-wasting Alien Invader Species (AIS). See pages 28 - 30 for AIS we are prescribed by law to remove.
- Rain harvesting. If you can't afford a water tank, use rain runoff from the roof by creating furrows leading from the drain pipe outlets into your garden. Collect rainfall in old tins and buckets.
- Mulching and composting conserve soil moisture, add texture and reduce evaporation. They help prevent soil erosion and runoff and provide a free supply of essential nutrients.
- Encourage the development of deep roots by watering for longer periods, but less often. This applies particularly to water-sucking, non-indigenous lawns.
- Indigenous ornamental grasses and ground covers are a beautiful, water-wise alternative to more traditional and exotic lawns. They require less water, are maintenance-friendly as they don't need mowing and are generally pest and disease-free.
- By using natural and biodegradable household cleaning products, soaps and shampoos you can use your 'grey water' from sinks and bathtubs for pot plants and non-food plants in your garden.
- Decrease the area of impermeable surfaces on your property thereby allowing more water to filtrate into the soil. This will reduce the volume of runoff, the likelihood of water contamination and water damage to property.

For more information, go to:

[www.waterwise.co.za](http://www.waterwise.co.za)

## Did you know?

- Water consumed from municipal connections in our towns and cities for gardening purposes amounts to an estimated 36% of all domestic water consumed - a staggering amount for a country whose average annual rainfall is only 497mm.
- The demand for water in South Africa is expected to increase by 50% in the next 30 years and will exceed supply by 2025.

“The future  
depends on what  
we do in the present.”

MOHANDAS K. GANDHI





“We owe our lives to the sun ... How is it, then, that we feel no gratitude?”

LEWIS THOMAS – EARTH ETHICS

### Water-greedy lawns – nice but nasty

Many people love a beautiful, well-manicured lawn but exotic lawns use an enormous amount of water, are maintenance intensive, can be unhealthy (especially for children prone to allergies), and discourage the presence of wildlife. Ideally, they should be banished. It is more eco-friendly to choose indigenous lawn species and replace unused lawn space with indigenous ground covers.

Native grasses are important for holding the soil in place and as larval host plants for many butterflies and pollinating insects. They add peaceful, natural structure and form to a wildlife garden and are particularly beautiful in and next to water. Experiment with a few different grasses if you want your garden to mimic the flow, form and creativity of nature.

### What to choose

Local grasses are adapted to our climatic conditions and are less prone to disease, require less water and are more maintenance friendly than exotics like Kikuyu.

Select hardier varieties like (*Tifwolf*) LMG, *Cynodon* (Kweek) species or *Phyla nodiflora* (Matgrass or Carpet Grass). For light to moderate frost areas, Silverton Blue (*C. dactylon*), Gulf Green (*C. transvaalensis* variety) and Tifway (*C. dactylon* x *C. transvaalensis* variety) are best. For severe frost areas, options include Tifdwarf (*C. dactylon* x *C. transvaalensis* variety), Bayview (*C. transvaalensis* variety), Royal Blue (*C. transvaalensis*), Gulf Green (*C. transvaalensis* variety) and Tifsport. For semi-shade areas, Silverton Blue (*C. dactylon*) is a good choice.



## Eco-friendly lawn tips

If you enjoy a swathe of emerald green, exotic (non-indigenous) lawn, here are some tips for saving water and maintaining a more eco-friendly lawn:

- Apply organic fertiliser just before the rainy season.
- Mow frequently but lightly – don't cut the grass below 4cm in height because this reduces root depth, causing stress on the lawn.
- Aerate the lawn to improve water penetration by pushing a garden fork into the soil (preferably when wet) at a spacing of 25mm and a depth of 100mm.
- Wait until the very end of the dry season before you scarify, top dress, aerate and fertilise the lawn. Once fertiliser is applied, the lawn will start growing and might need watering. By waiting as late as possible, the new lawn growth will be irrigated naturally when the rains begin.
- Don't compact your lawn by parking cars on it.

## Perennials

- Annuals take a great deal of input to grow from seed or seedlings each year, are costly and only briefly rewarding whereas perennials, once settled, need very little maintenance or replacing.
- Perennial plants don't die down or need to be replanted each year, saving a lot of effort digging, sowing seeds and cleaning up.
- A few rewarding indigenous perennials are *Felicia amelloides* (Blue marguerite), *Dietes grandiflora* (Wild iris) and the ever popular *Agapanthus africanus* (Agapanthus). Browse your nursery for more.



## Bring sunshine into your garden on long, dark nights – safe, solar lighting

Energy consumption has a major negative impact on the world's biodiversity. Installing solar powered, outdoor lights is a small but very rewarding way to reduce our contribution to the world's energy crisis. They are very cost-efficient and increasingly affordable. Here are a few great reasons to put captured sunshine into your garden at night:

## Safe and Romantic

- Without electrical wiring and outlets, solar lighting is safe for children and pets and avoids problems arising from lawn mowers, power tools and garden implements cutting electrical lines. This also makes your home safer against fire.
- You choose the mood. Without the restriction of permanent electrical outlets, solar lights can be moved around. Light up secret garden nooks and crannies to create a romantic ambience or move the lights for a luminous el fresco dinner or birthday celebration.
- The aesthetic appeal of illuminating your garden with the sun's energy will not only beautify your garden at night and reduce your carbon footprint, it will lighten your electricity bill as well as your heart.
- You can still have light during night-time power outages, thereby increasing your property's security.



# A swim made in heaven – natural, non-toxic pools

Why not bring the pristine and crystal clear pools and streams found in nature into your own backyard? A natural swimming pool is a well-balanced wetland ecosystem that operates on the same principles as nature when filtering out harmful micro-organisms. Natural pools keep the water sparkling clean, clear and healthy by circulating it through an indigenous aquatic garden.

The result is water that is soft on the skin and infused with healing energy. No salt, no harmful and expensive chemicals, no burning eyes, dry hair or itchy skin and much healthier for your pocket in the long run.

## Four good reasons to swim with nature

- Poisonous and expensive chemicals like chlorine and pool acid have been linked to cancer, allergies, asthma and immune stress.
- The energy consumption and maintenance costs of a natural pool are much lower than a traditional chemical pool.
- An existing chemical pool can be refitted into a natural swimming pool as long as the area surrounding the current pool is equal in size to accommodate the beautifying regeneration zone.
- An added bonus for homeowners is the pool's regeneration zone doubles as a beautiful indigenous water-garden.

For more information, go to:

[https://en.wikipedia.org/wiki/Natural\\_pool](https://en.wikipedia.org/wiki/Natural_pool)







### Wildlife dating sites – reconnecting nature

Our towns, cities, suburbs and homes are an intricate patchwork of enclosed green spaces, microcosms of the greater ecology of the region. But there's no need for our properties to be islands or ecological deserts. By making small holes at the base of our perimeter walls, smaller animals have access to the food and shelter each garden provides.

Such urban wildlife corridors or 'green stepping stones' increase the size of natural habitats in our suburbs and reconnect animals that have been cut off from one another. In this way, we can provide the service that an internet dating site might give to lonely people. Consider chatting to your neighbour and who knows, that small hole in the wall might facilitate the return of a Threatened or Protected Species.



### Some useful landscape design tips:

- Greet guests with flowers – floral displays of indigenous perennials and ground covers near entrances and along driveways make a home welcoming.
- Bear in mind the full-grown height and size of plants and trees before buying. Faster growing, tall trees are good near boundary walls to create privacy.
- Add height with planters and hanging baskets – see ‘Vertical landscaping’ below.
- Very leafy deciduous trees such as *Celtis africana* are best planted away from pools and drains, thus preventing blockages and saving on maintenance.
- Indigenous vines and creepers next to walls and fences turn ugly bricks and wire into beautiful green, flowering walls.

## Vertical landscaping – give your space a lift

All gardens benefit from an appreciation of the different storeys or layers that occur in many of our natural ecosystems while smaller property owners will be surprised at how much native greenery they can accommodate if they consider the full grown height and sun/shade preferences of plants. Each layer provides a different habitat for wildlife and will also give your garden a beautiful sense of elevated space, privacy and vertical continuity.





“To see the world in a grain of sand  
and heaven in a wild flower,  
hold infinity in the palm of your hand  
and eternity in an hour.”

WILLIAM BLAKE

# Landscaping for beauty

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To tap into the beauty of biodiversity and optimise your garden's eco-efficiency, your garden will need careful thought and planning before you head out to buy plants or invest in any outdoor structures. By making a list, drawing a map and knowing your area's climatic and topographical conditions, you'll be armed with the right questions for nurseries and garden centres to ensure you plant the right plants in the right places for the best results.

Everyone has a different sense of the basics of landscaping – beauty and style, flow and unity, proportion, scale, balance, colour, contrast and harmony, but the wellbeing of plants is dictated by climate, soil and aspect. When designing and landscaping your garden, take all of these elements into consideration:

**1. Personal preference.** The first step is to list your priorities and preferences. Do you plan to use your space for braaing and entertaining, as a quiet retreat and sanctuary to restore the mind and soul, as a kids' recreation area or for purely aesthetic gardening? Will you be starting a vegetable patch or building a lapa or a pool? Be clear about your primary objectives and jot these down.

**2. Draw a map** of the available ground space with all of its existing features including trees,

shrubs and flower beds, walls, paved areas, steps, patios, focal points, the main house and other structures.

**3. Identify limitations.** Assess your property's limitations and problem areas – size, lack of privacy, unsightly walls that need covering, sloping and flat areas, places where existing plants aren't thriving or where water accumulates are some important landscaping considerations.

**4. Danger areas.** Mark any aerial or underground cables and know exactly where your water pipes are to prevent disaster when digging beds and holes for trees. Remember not to plant trees with invasive root systems too close to pipes, cables, pools and walls.

**5. Alien Invasive Species.** If you can positively identify illegal alien plants, mark these areas as sites for new, indigenous vegetation. See our section on AIS and the National Biodiversity Act on page 28.

**6. Hydrozoning.** Grouping plants according to their water needs is water- and money-wise. Indigenous, drought resistant plants require little or no water so irrigation systems need not

be planned for these areas of your garden. This 'hydrozoning' is crucial in determining where your irrigation system will be most effectively placed.

**7. Mulching** is soil- and water-wise but also aesthetically attractive. For a soothing, natural looking garden, use dark-coloured organic mulches made of bark or compost. For a brilliant looking garden, consider a mulch of bright gravel or pebbles. Avoid coloured mulches or so-called 'beauty bark'.

Some people enjoy a symmetrical and very structured landscape while others are attracted to a more organic and flowing aesthetic or a combination of the two. Indigenous gardens can be formal or informal, structured or left to nature's own creativity. They have become the theme of choice for many South African homeowners. Indigenous plants can be used to create themed gardens such as Zen or Mediterranean. Many of our local trees make superb bonsais for patio or indoor areas.





## Choosing life with a poison-free diet

Few personal choices bring us closer to the core of a sustainable world than growing at least some of our own nutritious food. With each rand we spend on mass-produced food and drink, we vote for the devastating impacts of large scale agriculture on our eco-systems and nature's biodiversity and endorse pollution, transportation costs, energy consumption, deforestation, extortionist price hikes and feeding our bodies potentially disease-causing chemicals.



# We are what we eat – organic vegetable gardening

“To plant a seed, watch it grow,  
to tend it and then harvest it,  
offered a simple but enduring  
satisfaction. The sense of being the  
custodian of this small patch of earth  
offered a taste of freedom.”

NELSON MANDELA

The deep satisfaction in knowing the food you are about to serve is truly organic and healthy, much cheaper and that it has reduced your carbon footprint is a joyful moment for any gardening cook. Best of all is to know your poison-free and tastier food has been grown with care, patience and love.

The tips and solutions in this section apply to your whole garden but if you are growing your own eco-friendly organic fruit and veggie patch, here are some basic essentials. Remember that mulching and composting alone will not provide all of the nutrients hungry plants need and supplementing with organic products from your nursery is advisable, especially in the early stages of plant growth.

## Five good reasons to grow your own

1. Half of the nutritional value of plants is lost within thirty minutes of harvesting so shop-bought food is compromised food.
2. The reason why the world's top chefs cook with organic food is because it simply tastes better.
3. Cut your grocery bill. Instead of spending thousands of rands buying food that doesn't adequately nourish us and being at the mercy of soaring prices, spend time in the garden exercising and learning to grow your own healthier food.
4. More petrol is spent on large scale farming and the transportation of goods than in any other industry. Growing your own reduces CO<sup>2</sup> emissions which are causing climate change.
5. More energy is used to produce synthetic fertilisers than is used in the entire process of tilling, cultivating and harvesting crops. Growing your own means not contributing to the global energy crisis.





# The epiphany of composting

The delight of the 'magical' composting experience really hits home when you serve up that first small harvest of pure organic food on a dinner plate, knowing you have reduced your role in the world's woes and diminished your contribution to the local municipal landfill by as much as 80%. You've turned 'rubbish' into delicious, wholesome food for your family.

Home-made compost is free fertilizer for your garden and provides an energy boost for any fruit and veggie patch. By enriching the soil, composting encourages healthy plant growth and unlike many chemical fertilisers, it is mild and won't burn plants. It improves the overall texture of your soil enabling it to retain and drain water better. A simple 5% increase of compost quadruples your soil's ability to store water. Composting enables valuable organisms like microbes and earthworms to thrive. Known as 'good tilth', such soils are more pest- and disease-resistant.







## Ground rules for composting

There are two main types of organic compost: greens and browns. 'Greens' are high in nitrogen and include vegetable and fruit scraps, freshly cut grass and plant trimmings, coffee grounds and filters, tea bags and tea leaves and tired vase flowers. Carbon-rich 'browns' are dry materials like leaf litter, woodchips and sawdust from untreated wood, dried grass clippings, shredded paper, paper towels and cut up cardboard, egg and nut shells and, believe it or not, hair and animal fur.

When composting, always cover your layer of green material with a layer of brown material to cut down on flies and mask unpleasant smells. The ideal mixture is a 50:50 green to brown mix. Because greens are heavier than browns, the general rule is two to three buckets of browns for one bucket of greens.

***Do not compost meat, fish or dairy products, oily foods or grease, bones, cat and dog waste, diseased plants, weeds with seeds, or anything treated with chemicals.***

**“My whole life has been spent waiting for an epiphany, a manifestation of God’s presence, the kind of transcendent, magical experience that lets you see your place in the big picture. And that is what I had with my first compost heap.”**

BETTE MIDLER






# Composting tips

- Store compost in heavy-duty builder's sacks, old tins, dustbins or buckets.
- Compost should be covered at all times, turned over regularly and kept damp but not soaked. Just as too dry is bad, too wet is also something you should avoid.
- Chop your materials into small pieces. This speeds up decomposition.
- If you're composting with a compost pile as opposed to a bin, bigger is often better as heat builds up faster in a big pile which helps decomposition.
- Bokashi is an innovative and effective composting technique worth investing in.

Your compost is ready to spread in the garden and dig into your vegetable patch, or elsewhere, when all of the items have biodegraded and the compost smells and looks like soil. Apply your compost 2 - 3 weeks before planting seeds.







### Types of mulch:

Straw, bark and wood chips, sawdust, nut shells, organic waste, grass cuttings, straw and leaf litter, shredded newspaper, twice-shredded bark, compost and cocoa hulls are some materials which can be used for mulching.

Renew organic mulches every few years as they break down and dissipate over time.

## Nature's moisturiser – mulch

Organic mulch is a natural, protective covering on the ground that reduces water evaporation significantly, prevents soil erosion, keeps soil cooler, helps control weeds and enriches the soil. Mulching is one of the easiest and most effective ways to ensure a bumper harvest. Placed neatly around the base of plants and later worked into the soil, it has a multitude of benefits:

- Mulch keeps water where it belongs – in the soil, not on the plants or evaporating into nothing. A thick layer of mulch can reduce water usage by as much as 50%. By absorbing heat and keeping the soil cool, temperature fluctuation is reduced and water retention is improved.
- Mulch saves water by reducing run-off from heavy rain.
- It keeps the roots of your plants cool by providing shade which can make the difference between a healthy plant and one that is covered by insects.
- In winter it helps prevent your soil from freezing hard.
- It also provides a slow release of nutrients which means veggie-munching insects aren't as easily alerted to the bonanza in your backyard.



# Earth wizard – the humble earthworm

Almost a century and a half after Darwin called worms ‘wizards’, gardeners the world over are reaping the amazing genius of the humble earthworm by starting their own worm farms.

A small worm farm for composting your kitchen scraps will produce an odourless, black liquid gold in the form of ‘worm tea’ and a rich super-soil that has five times more nitrogen and 11 times more phosphorous than ordinary soil.

Worm farming will energise your plants and reduce your contribution to toxic landfill by as much as 40%. It is undoubtedly one of the greatest gifts you can give to your garden.

## Earthworm farming tips

- Earthworms can be fed paper and soaked, chopped-up cardboard including egg cartons, coffee grounds and tea bags, vegetables and some fruit (they love banana) peelings, eggshells, and human and pet hair.
- Don’t over-feed the worms in the early stages while they are establishing the population. Never feed them any meat or dairy products, pasta, bread, spicy vegetarian leftovers or acidic foods like citrus, tomatoes, kiwifruit or onions.
- Keep the farm in a shady place and use composting worms like Tigers or Red Wigglers rather than ordinary garden worms.
- If buying a ready-made worm farm unit is not an option, use your favourite internet search engine to find out how to build one cheaply and easily.



## Super-healthy, super-easy to grow

Aspiring veggie gardeners might want to start their patch with two of the most rewarding and easiest super-foods to grow. Rocket (*Eruca sativa*) and spinach provide an ongoing harvest with tremendous health benefits.

Once rocket gets going, it grows like a weed, providing regular salad with very little need for maintenance. It is low in calories but high in anti-oxidants and vitamins A, C, K, beta-carotene and in minerals like copper and iron. It grows prolifically in well-drained, fertile soil and is ready for the first picking after just 40 days of planting from seed.

Spinach is another low calorie vegetable rich in anti-oxidants like beta-carotene and lutein, vitamins A, C, K and B6. It has a very high iron content. Snails love it though, so protect it using a few of our suggested deterrents for ‘menacing molluscs’ on page 25.

As an all-purpose insecticide, **Garlic fire spray** is the stuff of legend. Crush 2 – 3 bulbs (about 8 cloves per bulb) with 8 medium-sized chillies. Add a tablespoon of vegetable oil and a tablespoon of eco-friendly liquid detergent. Add 7 cups of water and mix everything in a blender. Now strain it through a coffee filter or some muslin and pour into a spray bottle. If this recipe isn’t as effective as you’d hoped, use less water.



## Pesticides

### – deadly company...

Many pesticides used in large-scale farming and private home use were approved and registered long before research established their links to cancer and other diseases and have not since been taken off the market. Now, some 60% of herbicides, 90% of fungicides and 30% of all insecticides are considered to be potentially carcinogenic.

They've also been linked to birth defects, Alzheimer's disease, nerve damage and genetic mutations. Many insects have developed a genetic resistance to certain pesticides which means large scale farms are using more and more poisons on our food to less and less effect. It is therefore much safer and healthier to grow your own food without using chemical pesticides.



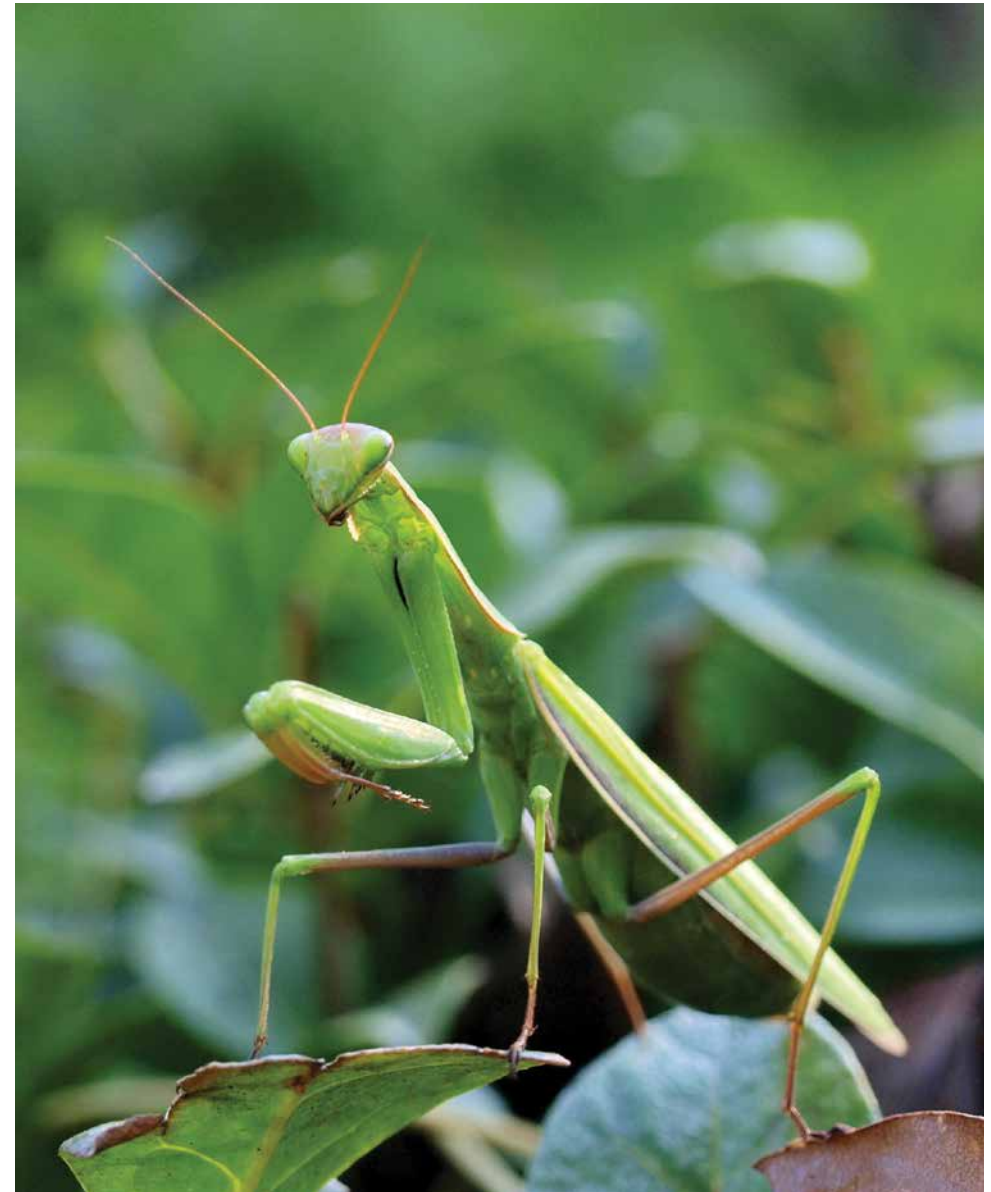
### ... or safe and friendly?

Comprehensively combatting fruit- and veggie-loving insects and maverick molluscs the natural way is easy, although vigilance and dedication is required. Here are a few good tips:

- Companion planting – aphids hate garlic chives and nasturtiums; basil helps protect tomatoes; plant carrots with leeks; and lettuces help radishes or kohlrabi. Broccoli and members of the cabbage family are well partnered with celery, dill, peppermint, sage and rosemary. As many insect-repelling herbs as possible interspersed in your garden will also make you a better cook.
- With healthy soil and adequate watering you can plant everything close together to create a more permaculture-like habitat, as opposed to a monoculture. This helps deter insects.
- Neem oil works like magic for a wide array of destructive insects, snails, fungi and mildew. Ask for it at your local nursery. Neem juice is the most powerful natural pesticide on the planet containing over 50 natural insecticides.
- Beneficial insects – lady birds, mantises, nematodes, wasps and some spiders are your friends. Encourage them in the garden (and they won't come into the house) by planting dill, fennel, cilantro, cosmos and geraniums in amongst your fruit and vegetables.
- Remove unwanted invaders manually.
- CedarCide, Diatomaceous Earth, sticky traps (for slugs) or a copper cure are also great natural pest controllers.
- Silver reflective mulch such as tinfoil also helps keep birds and bugs at bay. Placed at the base of a plant, the reflected light on the underside of leaves helps keep shade-seeking insects away and if enough is strategically placed around the patch, pesky birds will be deterred.
- Failing the above tips, only use Green Label or approved eco-friendly insecticides.

“To forget how to dig the earth and to tend the soil is to forget ourselves.”

MAHATMA GANDHI







## Menacing Molluscs — slugs and snails

Snails and slugs need not be the bane of your life and nor do they need poison to be kept at bay. Forcible eviction over the garden wall is not an option as these tireless pests seem to have a homing instinct for nearly-ready vegetables. Rather try placing gritty or sharp-edged materials like eggshells around the base of the plants. A round-lipped pan or throwaway polystyrene or plastic tub (with no sharp edges) filled with beer creates an effective trap for slugs and snails. Copper wire or diatomaceous earth placed around the base of vulnerable plants is also recommended. Nematode worms are your friends and the deadly enemies of snails and slugs.



# Nature's perfect pest patrol – batty bats and ratting owls

Tired of mozzies eating you alive? Try encouraging nature's solution: the bats' mosquito patrol.

Bats are known as a 'keystone species' and are so effective at dispersing seeds and pollinating flowers that many agricultural and natural ecosystems could collapse without them. Our magnificent Baobabs, for instance, are pollinated almost exclusively by bats. Without bats' seed dispersing and pollinating services the entire ecosystem surrounding Baobabs could die out. Bats also play an important role in controlling damaging insect populations thereby saving the agricultural sector billions of rands each year.

Myths, superstitions and unfounded fears have contributed to the gradual decrease in population numbers of this valuable, yet misunderstood creature. Contrary to popular belief, South African bats do not suck human blood or fly into your hair; they aren't aggressive, and are not major transmitters of diseases like rabies.

Of South Africa's 58 known species of bat, 20 species of insectivorous bats and two species of fruit-eating bats are listed as Threatened in the IUCN Red List for Mammals. Nine southern African species are either Critically Endangered, Endangered or Vulnerable. Globally, many species of bats – the world's only flying mammals – face a high risk of extinction in the wild.



Allowing bats to roost on your property makes a positive contribution to your entire area's biodiversity as they fly far afield every night, silently keeping our natural world alive through swift and widespread pollination. Find out how to build a bat box for your garden and personal fascination at:

<http://www.nzg.ac.za/newsletter/issues/22/03.php>

## Batty facts

- A single bat can eat more than 600 insects in an hour – like one person eating 20 pizzas in a night.
- A bat's echolocation is so finely tuned that it can detect objects as thin as a human hair.
- Bat pups are nursed on their mother's milk.
- In China and Japan, bats are symbols of happiness.
- The anticoagulation agent in Vampire bat spit has been used to treat human heart and stroke victims. Although this species is not found in Africa, who knows what miracle cures our own species of bats might hold in future?



# Owls

In some cultures, owls have long been seen as evil omens, symbols of death and bad fortune or as the servants of witches bringing bad luck and ill health. The owl's totally silent flight, enormous eyes (if we had the same eye to head proportion, our eyes would be as big as grapefruits) and its ability to suddenly appear from nowhere in the dark, might go some way towards explaining these negative superstitions. In other cultures however, the owl is a symbol of knowledge and wisdom.

But, when it comes to rodent control, it is an established fact that owls are hugely beneficial to humanity. A pair of barn owls with five chicks will eat at least 3,000 rodents in one breeding season. Encourage owls into your garden by buying an owl nesting box and fixing it securely in a reasonably high tree or on a long post. Or build one yourself with help from BirdLife South Africa:

[http://www.birdlife.org.za/conservation/  
environmental-education/2013-12-02-01-38-28/  
build-your-own-owl-house](http://www.birdlife.org.za/conservation/environmental-education/2013-12-02-01-38-28/build-your-own-owl-house)





# Binned at last – invasive plant species

Invasive species are controlled by the National Environmental Management Biodiversity Act (NEMBA) (Act 10 of 2004). Here are the basics you need to know on Alien and Invasive Species (AIS) regulations which were gazetted on 1 August 2014 and became law on 1 October 2014.

## NEMBA regulations and how they affect you

- A property that contains invasive species is a liability to the buyer. The NEMBA regulations state that the seller of any immovable property must, prior to the relevant sale agreement, notify the purchaser of the property in writing of the presence of listed invasive species on that property. Before any sale, a copy of the Declaration of Invasive Species forms needs to be lodged with The Compliance Officer, Biosecurity Services, Department of Environmental Affairs (see details below on page 30).
- These regulations affect gardeners, pet enthusiasts and property owners across the country. If any of the declared invasive species which require a range of control measures including removal, permits and management plans are found on your property, offenders may face prosecution under the Act.

- In all cases, the law requires property owners to check if any of these species are on your property. If they are present, you need to control them from jumping the garden fence (Category 1a) or submit an invasive species management control programme explaining why you should be granted a permit to keep them on your property (Category 1b). If there is no reason why they should be on your property, a permit can be denied and the law requires you to remove and destroy the species on your property.

The AIS Regulations list four different categories of invasive plant species that must be managed, controlled or eradicated from areas where they may cause harm to the environment, or that are prohibited from being brought into South Africa:

**Category 1a:** Invasive species which must be combatted and eradicated. Any form of trade or planting is strictly prohibited.

**Category 1b:** Invasive species which must be controlled and wherever possible, removed and destroyed. Any form or trade or planting is strictly prohibited.

**Category 2:** Invasive species, or species deemed to be potentially invasive, in

which a permit is required to carry out a restricted activity. Category 2 species include commercially important species such as pine, wattle and gum trees.

**Category 3:** Invasive species which may remain in prescribed areas or provinces. Further planting, propagation or trade is however prohibited.





## Forbidden Pets

For homeowners that keep ducks and terrapins as pets, Mallard ducks (*Anas platyrhynchos*), and Red-eared slider terrapins (*Trachemys* species) require compulsory control, as well as management plans and permits to keep. All exotic pets need to be vetted and checked. Among the declared invader mammals are the Himalayan tahr, feral pigs and the Black-faced Impala. Rainbow trout is probably the best known of the invasive alien fish listed in the new legislation and trout farmers now require a management plan and permits. Small and Large-mouth bass as well as Nile tilapia are also listed. If you are an aquarium fish hobbyist, the blue gill sunfish is a now a Category 1b invasive alien species, to name but one.

For more information, go to: [www.ewt.org.za/scientific](http://www.ewt.org.za/scientific)





## Some common invasive plant species



Periwinkle (*Vinca major*, *V. minor*)



Wild strawberry (*Duchesnea indica*)



Snake grass (*Equisetum hyemale*)



Coral Creeper (*Antigonon leptopus*)



Yellow flag iris (*Iris pseudacorus*)



Dutchman's pipe (*Aristolochia elegans*)

## What to do if your property has **invasive** plant species

If you're not sure if your new or old property contains any invasive species, consult accredited invasive species practitioners, landscapers or garden centres.

For contact lists, go to: [www.invasives.org.za](http://www.invasives.org.za)  
or [www.sagic.co.za](http://www.sagic.co.za)  
or: [www.sali.co.za](http://www.sali.co.za) or [www.sana.co.za](http://www.sana.co.za)  
or: [www.wessa.org.za](http://www.wessa.org.za)

You can download a Declaration of Invasive Species from [www.environment.gov.za](http://www.environment.gov.za) or from [www.invasives.org.za](http://www.invasives.org.za).

Deliver permit applications using any of the following channels:

1. By Hand Delivery: The Issuing Authority, Biosecurity Services, Environmental Programmes, Department of Environmental Affairs, 1st Floor, 14 Loop Street, Cape Town, 8000.
2. By Post: The Issuing Authority, Biosecurity Services, Environmental Programmes, Department of Environmental Affairs, Private Bag X4390, Cape Town, 8000.
3. By Fax: 086 604 4080
4. By Email: [AISpermits@environment.gov.za](mailto:AISpermits@environment.gov.za)



# Threatened or Protected Species (TOPS)

“Let us be good stewards of the Earth we inherited. All of us have to share the Earth’s fragile ecosystems and precious resources and each of us has a role in preserving them. If we are to go on living on this Earth, we must all be responsible for it.”

WANGARI MAATHAI

Threatened or protected plant or animal species are often also referred to as endangered species. These are species that have been classified as ‘at high risk of extinction in the wild’. If nothing is done to conserve them and their habitats, the chances are increasingly high that some of these species might go extinct in the near future.

## What is a protected species?

These are species protected by international, national and provincial legislation. Hunting, picking, owning, importing, exporting, harming, transporting, growing, breeding and trading of such species of fauna and flora is illegal without valid permits or licences.


## How do I know which species are TOPS?

The names of protected plant and animal species are listed in international conventions, national acts and provincial ordinances and are available at: <http://biodiversityadvisor.sanbi.org/wp-content/uploads/2012/09/BPF-2012-23-NEMB.pdf>



Short leaved Aloe (*Aloe brevifolia*)





While government, NGOs and a growing sense of corporate responsibility in the business sector are making positive strides, individual citizens are also waking to the spirit of biodiversity and becoming aware of our laws aimed at conserving and protecting our TOPS animals and plants.

## Plant TOPS – another first for SA

In one of Africa's largest collaborative conservation projects to date, South Africa has become the first megadiverse country to fully assess the status of its entire flora. The South African National Biodiversity Institute (SANBI) Red List of South African Plants Online assessed, for the first time, the conservation status of all 20 456 of South Africa's described indigenous plant taxa. It provides up to date information on the national conservation status of South Africa's indigenous plants.

The Red List highlighted a 254% increase in the number of threatened plant taxa listed between 1997 and 2009. Overall, 2,577 (13%) of South Africa's plant taxa are threatened with extinction. A further 2,232 (11%) are listed under other categories of conservation concern. Combining the number of threatened taxa with those listed under other categories of conservation concern brings the proportion of the South African flora that we urgently need to conserve to 24%, or one in every four species.

Bush Lily (*Clivia miniata*)



## South African legislation

The National Environmental Management Biodiversity Act (NEMBA) contains a list of threatened or protected species that are protected by national legislation. Species on this list are placed in one of four categories:

- **Critically endangered species** – any indigenous species facing an extremely high risk of extinction in the wild in the immediate future.
- **Endangered species** – any indigenous species facing a high risk of extinction in the wild in the near future, although it is not a Critically Endangered species.
- **Vulnerable species** – any indigenous species facing an extremely high risk of extinction in the wild in the medium-term future, although it is not a Critically Endangered species or an Endangered species.
- **Protected species** – any species which is of such high conservation value or national importance that it requires national protection.

Although these category names are similar to those in the IUCN Red List system, and their category definitions are broadly similar to those of the IUCN categories, NEMBA and the IUCN use two different species classification systems. The IUCN Red List system uses a set of five objective criteria based on biological factors, while species contained in NEMBA are categorised and listed based on expert opinion.

NEMBA also includes species that aren't necessarily endangered but are threatened by manmade influences like unsustainable harvesting and development.

### Pickersgill's Reedfrog (*Hyperolius pickersgilli*)

- This 3cm long endemic frog is Critically Endangered and now only found in a few patches along the KZ-N coast. Coastal development, habitat fragmentation, draining of water used for agricultural and urban development, DDT and the spread of eucalyptus trees have contributed to its near-extinction status. It is believed that less than 1% of the Pickersgill's Reedfrogs live within protected areas.
- In a last ditch attempt to save the Pickersgill's, the African Association of Zoos and Aquaria launched the very first captive


breeding project for the conservation of a threatened amphibian species in South Africa in 2012.

- The Endangered Wildlife Trust has named the Pickersgill's as its flagship species for its amphibian conservation programme.

If you find one in or around your property, call Jeanne Tarrant, Endangered Wildlife Trust: 011 372 3600. Find out more at <http://www.ewt.org.za/TAP/tap.html> or contact Joburg Zoo: 011 - 646-2000 (<http://www.jhbzoo.org.za/amphibians.asp>)





A photograph of two Grey Crowned Cranes in a grassy field. The crane in the foreground is bent over, pecking at the ground. It has a large, golden-yellow crest of feathers on its head, a black face with a white patch around the eye, and a long, dark beak. Its body is covered in grey and white feathers. The crane in the background is standing upright, also showing its distinctive crest. The background is a soft-focus landscape with green grass and some trees.

“The Earth does not belong to Man.  
Man belongs to the Earth.  
Man does not weave the web of life.  
He is merely a strand in it.  
Whatever he does to the web, he  
does to himself.”

CHIEF SEATTLE

## Bird and Animal - TOPS

South Africa is one of the world's natural gems but our threatened animal species list is growing at an alarming rate.

Some of Africa's 115 Endangered and Critically Endangered bird species include the Blue Crane, Cape Vulture, Yellow-breasted Bunting, White-winged Flufftail, Taita Falcon, Plain-backed Sunbird, African Black Oystercatcher, African Penguin and the Black Harrier.

Our Critically Endangered mammal species include Juliana's Golden Mole, Ongoye Red Squirrel, Rendall's Serotine Bat, Short-eared Trident Bat, Riverine Rabbit and the Black Rhino.

The Geometric Tortoise, Namaqua Dwarf Adder, Plain Mountain Adder, Setaro's dwarf Chameleon and Smith's Dwarf Chameleon are a few of our most endangered reptiles occurring on the outskirts of some urban areas.

Amphibians are the most vulnerable family of vertebrates on Earth. South Africa's Critically Endangered frogs are the Table Mountain Ghost frog, Knysna leaf-folding frog and Pickersgill's Reedfrog.

- For comprehensive information and Red Data listings, go to [www.iucnredlist.org](http://www.iucnredlist.org)
- Find out more about our rare and endangered birds from Birdlife South Africa: <http://www.birdlife.org.za>

15,589 animal species  
are currently facing  
extinction on Earth  
– one in four animals  
and one in eight birds.

Grey Crowned Crane (*Balearica regulorum*)





The contents of this booklet have been compiled by  
The Enviropaedia Team and the Endangered Wildlife Trust  
with research and text by Ian Hugh Fleming.



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from sustainable and controlled sources.*



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## The Endangered Wildlife Trust

The Endangered Wildlife Trust (EWT) is a non-governmental, non-profit, conservation organisation, founded in 1973 and operating throughout southern Africa. The EWT's work supports the conservation of threatened species and ecosystems. Priority interventions focus on identifying the key factors threatening biodiversity and developing measures to reduce risk and reverse the drivers of species extinction and ecosystem degradation. A healthy planet and an equitable world that values and sustains diversity of all life – visit [www.ewt.org.za](http://www.ewt.org.za)



“ It seems to me that the natural world is the greatest source of excitement; the greatest source of visual beauty; the greatest source of intellectual interest. It is the greatest source of so much in life that makes life worth living. ”

DAVID ATTENBOROUGH



In association with





