SJIRK GEERTS (2)

# patch works

## Connecting plants, birds and people

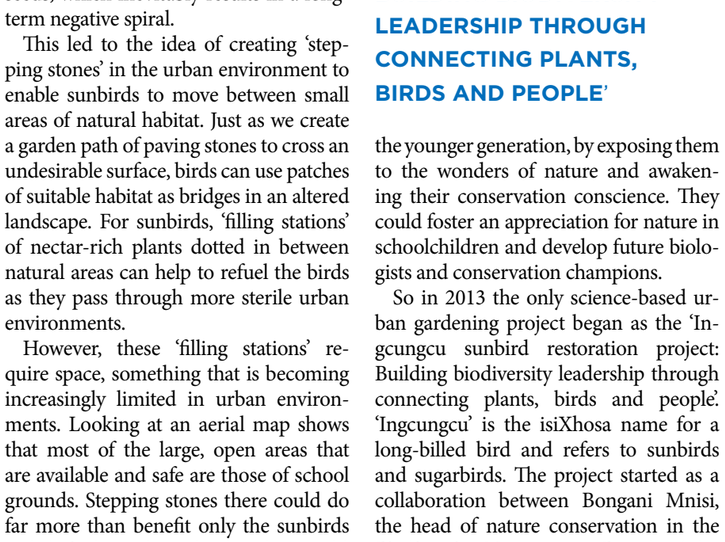
TEXT & PHOTOGRAPHS **ANINA COETZEE & SJIRK GEERTS**

Urban areas are usually not at the top of our lists of 'must-see' birding spots, and with good reason. With development burgeoning in a bid to accommodate the growing human population in cities, large areas of natural habitat have been transformed. The remaining fragments of habitat act as refugia for wildlife, but they are often isolated from other natural areas, limiting the movement of many animals, plant seeds and bird species between these spots. The greater Cape Town area is a typical example of a human-dominated landscape, with small patches of natural habitat dotted among the suburbs, agricultural land and industrial areas.

In 2004, Professor Anton Pauw, then a PhD student, watched sunbirds visiting red candelabra flowers *Brunsvigia orientalis* in different nature reserves in the south-western Cape. He discovered that the candelabra flowers in small natural areas received fewer sunbird visits than those in large nature reserves. Then, in 2012, he looked at the abundance of sunbirds in gardens in Cape Town and found that none of the species – bar the Southern Double-collared Sunbird – roams deep into suburban areas and that they are most abundant close to larger nature reserves. Thus, despite these birds potentially being able to fly long distances, they avoid venturing too far into developed areas.

When it comes to survival, this sensitivity of sunbirds to urbanised areas is concerning not only from a bird's point of view, but also for the plants, as about four per cent of the Cape flora rely on birds for pollination. Small patches of natural habitat in an urban matrix make it difficult for sunbirds to locate and reach nectar-rich plants. In turn, the plants receive fewer bird visits and produce fewer seeds, which inevitably results in a long-term negative spiral.

above *Malachite Sunbirds were only seen at schools with Ingcungcu gardens.*



This led to the idea of creating 'stepping stones' in the urban environment to enable sunbirds to move between small areas of natural habitat. Just as we create a garden path of paving stones to cross an undesirable surface, birds can use patches of suitable habitat as bridges in an altered landscape. For sunbirds, 'filling stations' of nectar-rich plants dotted in between natural areas can help to refuel the birds as they pass through more sterile urban environments.

However, these 'filling stations' require space, something that is becoming increasingly limited in urban environments. Looking at an aerial map shows that most of the large, open areas that are available and safe are those of school grounds. Stepping stones there could do far more than benefit only the sunbirds and their dependent plants – they could benefit the local community, particularly the younger generation, by exposing them to the wonders of nature and awakening their conservation conscience. They could foster an appreciation for nature in schoolchildren and develop future biologists and conservation champions.

IN 2013 THE ONLY SCIENCE-BASED URBAN GARDENING PROJECT BEGAN AS THE 'INGCUNGCU SUNBIRD RESTORATION PROJECT: **BUILDING BIODIVERSITY LEADERSHIP THROUGH CONNECTING PLANTS, BIRDS AND PEOPLE**'

So in 2013 the only science-based urban gardening project began as the 'Ingcungcu sunbird restoration project: Building biodiversity leadership through connecting plants, birds and people'. 'Ingcungcu' is the isiXhosa name for a long-billed bird and refers to sunbirds and sugarbirds. The project started as a collaboration between Bongani Mnisi, the head of nature conservation in the Biodiversity Management Branch of the City of Cape Town, Professor Anton Pauw at Stellenbosch University and Professor Sjirk Geerts at the Cape Peninsula University of Technology. As a trial, they created botanical stepping stones across a suburban area between the Muizenberg–Silvermine mountain range (part of the Table Mountain National Park) and the Rondevlei section of False Bay Nature Reserve. Schools situated between these two natural areas were selected and sunbird gardens were established in their grounds.

ANINA COETZEE

above *Ceinwen Smith assisted the school gardeners in maintaining and expanding the Ingcungcu gardens.*

left *Learners helped to plant the Ingcungcu gardens at their schools.*

The plant species that were to be cultivated in the school gardens were carefully chosen. Each garden measured 200 square metres and apart from a few filler shrubs that were added to provide shelter, habitat and potentially nest sites, only bird-pollinated plants were considered for inclusion. These are species that bear flowers that produce sufficient quantities of nectar for birds and whose corollas are designed to allow birds to access the nectar, while restricting insects from entering. Although more difficult to obtain, only locally indigenous species were used as they require less maintenance than plants from further afield. More importantly, using them prevents unnatural hybridisation with plants that are not local to the area. Lastly, since the plants are >

JAN GEERTS

above *Cape White-eyes, here visiting* Melianthus major *flowers, were more abundant at school grounds after the gardens were established.*

above, right *This* Cotyledon orbiculata *at a school in Lavender Hill on the Cape Flats is a particularly important source of food for birds during the dry months.*

on school grounds, thorny or poisonous species were excluded. Although the focus is on nectarivorous birds, the gardens also benefit a variety of other species, such as Karoo Prinia and Red-faced Mousebird; these species have been seen frequenting the Ingcungcu gardens, but not other parts of the school grounds.

To determine the impact of the gardens on birds, and on sunbirds specifically, bird counts were conducted at the school grounds before and after the planting took place. Initially the influence of the gardens was small, but it was exciting to see the abundance of Southern Double-collared Sunbirds and Cape White-eyes increase. Malachite Sunbirds were also observed only at those schools that had gardens. At the time the drought in Cape Town was not conducive for the gardens to flourish; more plants needed to be added and most of the plants are still small, but we expect the gardens to have a far greater effect as they mature.

The second leg of the Ingcungcu sunbird restoration project is the environmental education aspect. To align closely with the school curriculum, grade 10 and 11 learners were involved in the planting process and now use the school gardens for ecology classes. The Ingcungcu project was fortunate to have some wonderfully accommodating principals and teachers who facilitated the planting and learning at their schools. The children were taught how to prepare the soil for indigenous plants,

ANINA COETZEE

became more familiar with plant names and learnt some physics and chemistry by collecting nectar and measuring its volumes and concentrations in flowers. Questionnaires subsequently completed by these learners revealed a clear increase in their knowledge of birds and plants.

More recently, Ceinwen Smith joined the Ingcungcu project to enhance the environmental education activities. She expanded it to include four more schools and plans to add more in the near future. In addition, many more schools are requesting plant lists (see *www.biointeractionslab.com/prof.-anton-c.-pauw.html#u121991-4*) and are incorporating these plants into their school gardens and curricula.

The project is growing strongly and with more funding it could make a considerable impact in current and future conservation efforts in the City of Cape Town. The dream is to create stepping stones across the Cape Flats as well as in the greater Boland area. Imagine a network of refuelling stations for sunbirds at schools, parks, on road verges and in gardens at homes and even business and industrial properties. Every little stepping stone counts. ◆

*Follow the project on Facebook at* www.facebook.com/Ingcungcu-sunbird-restoration-project-285157724989224/