

Global Pollination Project and Honeybee Forage Project South Africa

Implemented by the South African National Biodiversity Institute (SANBI) as part of the GEF/UNEP/FAO Global Pollination Project (GPP), also entitled “Conservation and Management of Pollinators for Sustainable Agriculture through an Ecosystem Approach”

Profile: Mike Mac Intyre – Beekeeper



Mike wearing his “Mac’s Honey” shirt

Introduction

The purpose of the case studies/profiles of the GPP is to showcase practices that have a different approach and are therefore of interest and possible value. In the South African project, individual farmers and beekeepers are reliant on and work with honeybees. Farmers utilise honeybees for pollination of their crops and commercial beekeepers use honeybees to provide pollination services and/or to make honey. The way farmers or beekeepers utilise honeybees has often been developed individually through years of learning and experience. While the different practices discussed in the profiles are not scientifically proven to have benefits (such as increasing agricultural yield or promoting pollinator conservation), they mean something to the individuals in the profile and may inspire people in the sector to explore alternative practices and possibly result in scientific research being undertaken. It is through the exploration of a range of different practices that lessons may be learned and applied at wider scales to benefit both agricultural and environmental conservation considerations.

Many farmers and beekeepers in South Africa undertake innovative practices relating to pollination issues, and it is unfortunate that we cannot profile more. We hope that the profiles/case studies that we have chosen to present here are understood as being just some of the many interesting practices that could inspire discussion and consideration, and not as the championing of any particular practice or person.

Mike Mac Intyre, who leads a consortium of beekeepers based in the Western Cape province of South Africa, is one of the biggest honey producers in the country. He and some of his consortium members choose to focus on honey production rather than offering pollination services. This is in contrast to most beekeepers in South Africa, especially in the southern parts of the country, where approximately 60% of a beekeeper's income is derived from providing pollination services to farmers. Mike has a long family history of beekeeping and a lifetime of experience with honeybees and utilising honeybee forage sites. For these reasons, it was felt Mike would be a good person to profile, as other beekeepers or land owners who have honeybee forage on their land might learn from his experiences and his decisions regarding his practices over the years.

The Project Management Unit in South Africa interviewed Mike Mac Intyre on 16 March 2012 at the Kirstenbosch Research Centre, and also accompanied him on a visit to one of his honeybee sites on 11 May 2012.

This document is structured in such a way as to tell Mike's story in his own words. A short “lessons learned” section at the end discusses some of the possible implications of Mike's practices.

Disclaimer: the practices discussed in this document have not been scientifically proven. This profile is therefore intended as an anecdotal account from which readers may draw their own conclusions.

Mike's story

Mike's interest in beekeeping started when he was ten years old (in 1962) when he first learned the skill from his grandfather. His grandfather started farming with honeybees in 1932, and was one of only three beekeepers in the Western Cape at the time – solely for honey production purposes, because nothing was known about pollination services at that time. Mike recalls that he would transport his hives on his bicycle, and sell honey to the community while doing his newspaper round. As a result of these activities, he was able to buy himself a car at the age of eighteen with the money generated from his sales.

Mike states he has always wanted to concentrate on honey production rather than doing both honey and pollination services, as he firmly believes in healthy colonies and that the honey humans take off should only be the excess after what the colony needs. At the age of 21, with approximately 35 hives, Mike separated his beekeeping business from his uncle's business and then grew his business to bigger than that of his uncle's within four years. Mike eventually (around 2000) purchased his uncle's hives. He formed his consortium of beekeepers in 2005.



Mike showing students how to open hives

Mike's farming system: colony and forage management practices

Mike personally owns 1,500 hives kept on 200 apiary sites. These hives are permanent, as he prefers to move them only when there is a potential fire outbreak or under other special circumstances, such as threats from vandalism. He feels that moving colonies causes stress for the honeybees, and therefore he always aims to minimise any movement. Mike notes that well-managed honey production hives are often three times the size of the colonies used for pollination services and can contain approximately 80,000 honeybees.



One of Mike's apiary sites

Mike says that his apiary sites are scattered across the Western Cape Province, the furthest being 200km from Cape Town. 90% of the sites have forage primarily consisting of eucalypts, and most sites are on fruit or tourist farms (1 site on forestry land). Mike keeps 600 hives in the Groenberg area near Wellington, and a substantial number in the West Coast area.

When the movement about removing alien invasive species (with *Eucalyptus spp* being prominent examples) was at its highest (ca. 2001),



Eucalyptus and Fynbos forage on one farm – prime forage sites

Mike went directly to all the farmers where he keeps hives and asked them to officially demarcate the eucalypts on their farms. This entailed having inspectors come out to the farm to ensure that the eucalypts are in non-sensitive ecosystems and then officially provide a permit to declare the stands as being demarcated to not be removed. This effort, Mike states, has resulted in Mike having some of the most sought-after honeybee sites in the province. Mike reckons that farmers may eventually be substantially paid for the use of their eucalypts, as eucalypts are needed as a "power" food for honeybees.

Mike believes that engaging with the land owner is a vital part of a beekeeper's job and regularly speaks to his farmers regarding their fire regime and leaving natural vegetation as part of honeybee forage management.

Mike started moving up the West Coast area in 1978, and found he doubled his production. Mike believes that the *Rhus pyroides* (taaibos) is a good forage source for honeybees in this area, in addition to the West Coast fynbos vegetation. Mike notes that usually beekeepers trap swarms during spring and summer, but on the West Coast swarms are trapped all-year round. However, Mike admits that too much swarm-trapping and then removal of hives in the area may denude the natural honeybee populations, and since 2004 he has left hives on the West Coast to ensure that the wild honeybee population is replenished. Mike believes that the feral population of honeybees in certain areas has gone down by 80% compared to 1975.

Although Mike has trapped swarms on canola, he does not believe the honeybees are healthy. He says the canola in the Western Cape could possibly be causing problems in colonies, as in his experience the colonies never re-queen again. Mike also traps swarms in fynbos, and in his backyard in the suburbs of Cape Town.

Mike's honey harvests and primary forage targets can be summarised as follows:

August → Dec: West Coast fynbos

Dec → Jan: river red gum

Dec → March: sugar gum and flowering gum

March → April: gums: tuart, black iron bark and *E. saligna*

June → July: some gums and fynbos, but Mike prefers to leave the honeybees alone for these months and spends his time cleaning and maintaining hives, and selling honey.



Black Iron Bark – one of Mike's favourite Eucalyptus species

Cost and benefits of practices

Mike produces 500-700kg of wax per year, but uses most of it to make wax sheets for his hives and also sells some to close friends.



Mike demonstrating the use of smoke when opening a hive

Mike is the largest producer in a consortium made up of five people. The consortium sells about 85 tonnes of honey per year (Mike personally is supplying 35 tonnes of that total). Although Mike only has 25% of the honeybees in the consortium, he is producing 40% of the honey (due to focussing on honey production not pollination services). According to Mike, raw honey (cold settled, not pressure-filtered) is a big part of his production and sells exceptionally well. The honey is mostly separated into specific floral types, as he has found that customers prefer this separation. Mike maintains that the first honey people taste in their lifetime is most likely the honey they will prefer thereafter. Gum honey is in demand and often a favourite with customers. Mike bottles his own honey and also does his own distribution (unlike many other beekeepers who sell to distribution companies). The honey is sold in kilograms – mostly to Cape Town's top hotels and restaurants – but Mike also sells at one local farmer's market as he enjoys interacting directly with his customers.

Mike has two permanent employees but can call on up to ten people when the need arises.

The reasons Mike firmly believes in focussing on honey production rather than trying to do both honey production and pollination services are both economic and based on his own philosophy. Mike did pollination from 1982 to 1986 on fruit farms where a particular farmer wanted full honey hives for pollination. He brought in 240 hives for a 280ha area, as the farmer was willing to pay more and provide the labour to move the heavy hives. But Mike gave up this practice because he felt that the honeybees were too stressed and he was obtaining less honey as providing the pollination service interfered with the honey production. Mike believes that 45% of honeybees used for pollination services die because of stress.



Mike lifting out a frame

However, Mike has developed a few close relationships with farmers where he will render pollination services for the farmer and in return he will put his hives on the gums at the farm. Effectively he saves the farmer approximately R70,000 per year in pollination services, and Mike can pocket all the honey profit.

Mike is a member of the Western Cape Beekeepers Association. Mike spends most of his time in the factory, office or doing deliveries, rather than on the farms with his hives (10% time).

Mike's Vision

Mike has a two-fold vision for the future of beekeeping in South Africa:

- That current beekeepers become more humane and that honeybees are managed better.
- That effective job-creation or empowerment initiatives of multi-purpose farms could be started.



With regards to the first point, Mike believes most beekeepers need to revise their thinking and be more considerate in their treatment of honeybees. He reckons South Africa needs legislation on how to manage honeybees. He reiterates that the honey crop is reduced the greater the distance from the forage resource. He notes that pollination and honey production are two separate businesses and should be managed as such – but that both have more humane ways. Mike says that when honeybees are used for pollination they never swarm (therefore one always has old queens in the colonies), but when doing honey production only,

they do swarm and one has a young queen every few years. Mike reiterates that managing colonies closer to how they would operate in nature is best. Mike reckons that the only way to move towards more ethical and profitable beekeeping in South Africa is to have minimum standards and prices for pollination services, and more humane and natural beekeeping. This will in turn reduce swarm trapping from the wild, as colonies will be healthier. In turn, managed honeybees absconding to the wild will return strong genetic material to the gene pool.

With regards to the second point, Mike is envisaging starting honeybee forage farms by planting gums and other forage species. Such farms would be multi-purpose, as a variety of economic practices could occur on the farms in addition to beekeeping (e.g. timber, crops, livestock). Mike estimates that South Africa only has good forage sites for approximately 20% of the honeybees we are currently supporting – but that forage farms could solve the good site shortage problem. He also sees this as a job creation venture and an opportunity to develop emerging beekeepers and farmers, as he believes South Africa is currently producing only 25% of the honey required in the country. Mike commented that any empowerment project should be very careful not to step on existing beekeepers' toes – particularly as currently the pollination service businesses are in over-supply, but there is a possibility for honey production as South Africa is currently an importer of honey.

Mike has identified the West Coast as the best place for such a farm due to the area supplying a mix of biomes. Mike shared the following thoughts about what he would plant on a forage farm if he were given the opportunity:

- Lucerne tree or Tagasaste (*Chamaecytisus palmensis*): grows to 7m in 7-8 years; it flowers for four months over spring time and is suitable for honeybees after two years. It could be browsing fodder for goats or sheep, as when it is browsed it supposedly does not become invasive.
- Sugar gum (*Eucalyptus cladocalyx*): a very adaptable tree that provides three months of honey flow.
- Black Iron Bark (*Eucalyptus sideroxylon*): great honey tree and does not seem to disturb Fynbos growing at its base. It might be more water-needy than *cladocalyx*.
- Echium (*Echium spp*): which is good forage for honeybees, it is an invasive in Australia and grows in undisturbed areas (and could impact on Fynbos).
- Fynbos: to see the honeybees through winter.
- Ramnas (*Raphanus spp*): another form of canola that many farmers see as a weed. Not good honey flow, but can support the honeybees through winter.



Lessons learned:

While Mike has many years of experience and a family history of beekeeping, other beekeepers may not consider his practices typical, for the following reasons:

- Mike has access to prime beekeeping sites (i.e. forage sites) in the Western Cape Province, and other beekeepers might feel that this allows him to operate at lower stocking densities and move hives less frequently.
- Other beekeepers trap swarms on canola and claim to not experience the same problems as Mike.
- Other beekeepers would consider Mike's vision to use larger hives for pollination and set minimum prices for pollination services as not always practical.

There may be policy implications that could challenge successful implementation of some of Mike's ideas, such as:

- Minimum standards for pollination hives do exist, but enforcement is lacking. Not all South African beekeepers are registered with a recognised entity, making hive inspections for standards difficult.
- Setting minimum prices for pollination hives might come under criticism from the South African Competition Commission (a statutory body empowered to investigate, control and evaluate restrictive business practices, abuse of dominant positions and mergers <http://www.compcom.co.za/>).
- Many of the species Mike suggests be planted in a forage farm are alien species, some of which are invasive and for others the invasive status is unknown. Permission would be needed to plant such species.

However, **lessons that could be learned** from Mike's practices include:

- There may be methods of operating a beekeeping business (whether for pollination or honey production) whereby stress on the honeybees could be reduced. Stress to colonies (which could be caused by pollution, pests and diseases, over-working honeybees, and insufficient forage resources) may have wider implications for beekeepers, farmers and consumers if not addressed.
- Beekeepers' good relationships with land owners who allow use of their forage resources are paramount. These "forage stewards" effectively control the forage resources in South Africa, and access to these resources and the protection of these resources is a vital part of the sustainability of the pollination service in South Africa.
- Some consideration needs to be given to the planting of forage resources, as access to and protection of existing resources is probably unlikely to allow for sufficient forage resources into the future for the demand for pollination services and honey production.

This profile will be linked to the management document of the "capsensis pollination region". The management documents for the two pollination regions of South Africa will be available towards the end of the project.