



Hawaan forest

A biodiversity hotspot worthy of continued preservation

by **Jocelyn Sutherland**, custodian of the Hawaan forest

ABOVE: A carpet of Natal Hickory (*Cavacoa aurea*) flowers on the Hawaan forest floor. These are all from the male trees. Photo: Eugene Moll.

Hawaan forest is one of very few remaining climax coastal forests in southern Africa, and it is imperative that it be conserved. Situated in the rapidly developing town of Umhlanga on the north coast of KwaZulu-Natal, a mere hip and a hop from King Shaka International Airport, it is bordered by the coastal M4 freeway, the Onhlanga River and rapidly developing residential areas. The forest, which is approximately 80 ha in extent, is privately owned and, some years ago 31 ha was sold to Hawaan Investments amid great controversy. Due largely to protests from members of WESSA and other environmentalists, Hawaan Investments agreed to preserve the forest and a portion of the adjacent coastal grassland as a nature reserve. The remaining forested area belongs to Tongaat Hulett Limited and is maintained as a private conservation area.

Hawaan forest has been maintained by a succession of dedicated volunteers. Bill Duthie, the Conservation Officer for the then Umhlanga Town Board, together with Dr Vincent Wager, a retired plant pathologist and frog and spider expert, originally got

permission to maintain the forest on behalf of WESSA. They mapped out the paths, started to label some of the trees and, together with two rangers, patrolled the forest on a weekly basis. Over the years Bill and a tireless band of volunteers kept alien plants from taking hold in the forest. When Bill retired, Phoebe Carnegie took over the reins of forest management and did a sterling job for many years with little assistance until Umhlanga UIP (Urban Improvement Precinct) provided a worker to help with clearing. I joined Phoebe's Thursday work party two years ago on my retirement. And so began my initiation into Hawaan forest maintenance. From November last year, when Phoebe stood down, I have been responsible for maintenance of the forest. Every Thursday, ably assisted by Ann Lawson, Rob Little, Musa or Bongani from UIP and various other helpers who come now and again, we walk the paths keeping them clear, label trees and remove any alien plants which may be coming up, especially in the clearings. Tongaat Hulett has recently come on board with alien eradication, supplying and funding a team of workers to do alien plant removal. This amazing team of 15 women, who were originally trained by

WESSA in alien removal, are self-employed. They have just spent 15 days working in the forest removing aliens. I am happy to report that, save for an approximate 50 m wide strip alongside the M4 which has been left to form a barrier against intruders and vagrants, the forest is now almost entirely alien free.

Alien plants of concern were *Lantana camara* and *Chromolaena odorata*, which were removed prior to flowering and were chopped into pieces and left to rot in situ. The creeper *Solanum seafortianum* and the understory *Rivina humilis* and *Achyranthes aspera* were pulled out and placed in bags and removed from the forest. Burrweed (*Achyranthes aspera*) was of particular concern as it is browsed by the duikers that are unable to digest the burrs, which become imbedded in their gut, ultimately forming a hard mass which may cause an obstruction and possible death.

This is a climax forest – in fact a dry climax forest situated on an 18 000-year-old sand dune without a natural water course. The dense canopy prevents all but the heaviest downpours from penetrating the soil. A climax forest is one that has reached its peak



TOP: Natal Hickory (*Cavacoa aurea*) male flowers are produced on small spikes and not singly like the female flowers. There are also many more flowers on male trees than on female trees. Photo: Eugene Moll.

LEFT: Natal Hickory (*Cavacoa aurea*) female flowers showing the slightly undulating leaf margin of the leathery leaf. Photo: Eugene Moll.

RIGHT: White Stinkwood (*Celtis africana*) trees with their well-buttressed root system are generally very upright by comparison with shallow-rooted Natal Hickory (*Cavacoa aurea*) trees which are often leaning at an angle in the sandy soils. Photo: Eugene Moll.

of growth, so you have trees and creepers which are hundreds of years old. But it is a forest that is regenerating all the time – as trees fall, often pulled down by the weight of creepers, they regenerate by means of coppicing or growth of new saplings that come up in the clearings to rapidly fill the gaps.

This species-rich forest is home to over 176 species of trees, shrubs and climbers – which is remarkable when you consider that in the whole of Europe there are only about 60 species of trees. Two species of tree, Natal Hickory (*Cavacoa aurea*) and Southern Cola (*Cola natalensis*), of which there are many in Hawaan, are found in very few other forests in South Africa so it is vital that they are protected. Strangely enough these two species are invariably found growing side by side. Natal Hickory (*Cavacoa aurea*) is dioecious, i.e. male and female flowers are born on separate trees, and they have distinctive fluted trunks which resemble a bunch of sticks. In September, when in flower, their creamy yellow, fragrant flowers lighten up the forest. The male trees invariably flower slightly before the females. Southern Cola (*Cola natalensis*) is also easily identified by its bark, which is flaky and splotched with green-grey splotches, and its leaf stalk has a distinct elbow-like bump at the base of the blade. Both species show continued regeneration as there are many saplings throughout the forest.

The largest trees in Hawaan are all Buffalo Thorns (*Ziziphus mucronata*) which are found throughout the forest, many of them must be hundreds of years old. They flower and fruit in profusion, coppice well if they fall, and saplings are plentiful. Another forest giant is the White Stinkwood (*Celtis africana*) of

which there are numerous very old trees. Whilst germinating seedlings are observed from time to time, it is of concern that few seem to survive. Several of the mature trees recently lost limbs in strong winds that must have hit the forest with tornado-like effect because many were twisted right off. Another member of the Celtidaceae to be found is Thorny Elm (*Chaetacme aristata*) with its coppiced, thorny branches and rough bark. It is a favourite tree for nesting birds and also snakes that prey on the nestlings and use the rough bark to slough off their old skin.

Other canopy trees are Coast Red Milkwood (*Mimusops caffra*) and Forest Red Milkwood (*Mimusops obovata*). *M. caffra* is found on the east-facing, seaward side of the forest and *M. obovata* is deeper into the forest. Coast Monkey Orange (*Strychnos gerrardii*) trees are plentiful with their distinctive orangey grey, flaky bark. They bear fruit for the monkeys – which sadly prefer pickings from the neighbouring houses and are seldom found in the forest other than along the fringe adjacent to the houses. *Strychnos henningsii*, *Strychnos usambarensis* and *Strychnos decussata* are also found in the forest.

Onionwood (*Cassipourea malosana*), a tree that is declining in numbers countrywide, is producing many young saplings which are thriving in the forest. Along the western boundary is a strip of much younger forest, some 60–80 years old, on land that proved unsuitable for cane growing. Here you find different species; Coastal Silver Leaf (*Brachylaena discolor*), Flatcrown (*Albizia adianthifolia*) – a characteristic tree of coastal KwaZulu-Natal, Bone-apple (*Catunaregam obovata*), *Psydrax obovata* and



KZN BotSoc member Di Higginson Keath (left) and forest guide, Goodwill Mgala (right) pose next to the old Climbing Raisin (*Grewia caffra*). Photos: Eugene Moll.

even a few members of the Celastraceae – *Maytenus undata*, *Gymnosporia arenicola* and *Putterlickia verrucosa*.

Parts of the forest form a thicket-like habitat, largely due to the numerous creepers which abound, some such as the forest grapes, *Rhoicissus tomentosa* and *Rhoicissus rhomboidea* with their purple, edible, grape-like fruit are so old that they have woody trunk-like stems. The 'granddad' of all creepers to be found is an enormous Climbing Raisin (*Grewia caffra*) once thought to be in the region of 500 years old but according to Eugene Moll, on careful observation of the trees supporting this massive climber, a more likely age for the *Grewia* is approximately 100 years, which considering its huge stem, demonstrates that growth in such sub-tropical conditions can be remarkably fast. Moth Fruit (*Acridocarpus natalitius* var. *natalitius*), another common climber, its common name derived from its winged seeds, gives bold splashes of bright yellow when in flower. Green Mamba Vine (*Adenia gummifera*) with its thick, bright green stems with white gummy streaks is an important medicinal plant; declining in the wild due to these properties, but quite plentiful in Hawaan. It is used as an emetic for stomach complaints. This is another plant that deserves to be protected.

Many of the creepers have thorns. Hluhluwe Vine (*Dalbergia armata*) with its long woody spines which tend to re-grow if cut, is possibly the most common of the thorny climbers. Again some are very old with trunk-like stems. Flame Thorn (*Acacia ataxacantha*) and River Climbing Thorn (*A. schweinfurthii*) – OK, *Senegalia ataxacantha* and *S. schweinfurthii* – are also plentiful. *Capparis sepiaria* and *Capparis fascicularis*, both attractive when in flower, predominate in some areas. Orange Grape Creeper (*Tinospora caffra*) and *Secamone gerrardii* form hanging ropes throughout the forest, often twining around each other to form thick ropes.

Of the understory shrubs or small trees, one of the most notable is Natal Box (*Buxus natalensis*); a small understory tree which has plentiful thickets in Hawaan but is declining in numbers elsewhere. Its strong, flexible and termite-resistant stems are used in hut building. Poison Olive (*Peddiea africana*) with its distinctive clusters of green-yellow tube-like flowers and black olive-like fruit, and the Dwarf Loquat (*Mitrostigma axillare*), a member of the Rubiaceae family, with its lovely perfumed white, coffee-like flowers and orange fruit, are well represented.

I have only touched on a few of the more plentiful and special species of plants to be found. Being such a species-rich forest it is impossible to detail them all. Hawaan is also a haven for wildlife. Over a hundred species of birds have been noted. There are plenty of snakes (seldom

seen), leguaans, numerous frogs and toads, and recently spotted for the first time, a dwarf chameleon. There are Blue and Red Duiker, Bushbuck, Bushpig and Vervet Monkeys to list but a few of the larger mammals. Spiders and insects are numerous, wasps being plentiful in summer – a nuisance in the heat of the day when they forage – and butterflies are a joy in autumn. There are four varieties of millipede, the quaintest being the pill millipede which curls up like a pill.

I am very pleased to report that this unique ecosystem is now becoming the focus of scientific research. In the 1960s Eugene Moll worked in the forest when studying for his PhD. No further work was done until Eugene returned to the forest in 2012 to study the effects that climate change and urbanization had had on the forest. This year the University of KwaZulu-Natal has started what will be an ongoing, for at least 10–15 years, research project covering coastal forests that include Hawaan. Hawaan forest, together with Umdoni and Twin Streams (Mtunzini) is the subject of a PhD study by Oliver Kambaj, a student at the University of KwaZulu-Natal. Oliver is originally from the DRC and obtained his Masters degree from Stellenbosch University. For the next three years he will be studying the effects of climate change on climax coastal forests. More research projects are planned for the next few years. To this end, a committee of interested parties has been formed by Sershen Naidoo under the auspices of the Biological Science Department of the University of KwaZulu-Natal Westville campus, wherein various aspects of coastal forest management will be discussed and ideas and research shared.

VISITING HAWAAN

Visits to Hawaan forest may be arranged by contacting the author Jocelyn Sutherland at jocelyn26s@gmail.com, 083 275 2216 or 031 572 4116. You can also contact the KZN Coastal Branch of BotSoc to get permission and guidance. Once in the forest there are some well demarcated paths, especially on the flat land which comprises the major portion of the forest. One of these paths runs close to the gentle seaward-facing slopes where the tree composition is a little different and more Dune Forest like in species composition. The much steeper slopes down to the Umhlanga River in the north also have a different tree composition and structure being much drier. The Hawaan's three basic areas – 'flat' land, sea-facing and river-facing slopes – all differ in species composition and structure.

Fifty years on

The Hawaan forest re-visited

by Eugene Moll, Department of Biodiversity and Conservation, University of the Western Cape

The Hawaan forest is one of a very few, tiny relic patches of Coastal Forest that remain intact in KwaZulu-Natal. Coastal Forest occurs on sandy substrates of marine origin. Hawaan is the jewel in the crown for many BotSoc members who reside in KwaZulu-Natal, and it is certainly a local biodiversity hotspot worthy of continued preservation.

I first visited the Hawaan forest more than 50 years ago. The name 'Hawaan' is derived from the Tamil word meaning light breezes, and it is situated just south of the Onhlanga River, about 12 km north of Durban. Back then the 'new' N2 highway (now the M4) had recently been completed. A swathe had been hacked through the seaward-facing slope of the forest leaving a very ugly scar, which today is totally healed. Back then the 'new' road cut the Hawaan off from the Onhlanga estuary and the strip of Dune Forest – with still unknown consequences for the flora and fauna. We all know that the fragmentation of natural ecosystems is one of the major threats to biodiversity conservation, particularly when facing rapid climate change.

Back in the 1960s little was known about the Hawaan other than a brief note by Vincent Wager in *Natal Wildlife* in the 1950s. So Keith Cooper (birds) and I (woody plants) did one of our many 'Natal Fieldwork Reports' for the area, which formed the basis of a long-term public action campaign to lobby for the Hawaan to be conserved in perpetuity. What we discovered back then was that the botanical composition here was unique because there are no Coastal Forests in South Africa where the two co-dominant species, Natal Hickory (*Cavacoa aurea*) and the Southern Cola (*Cola natalensis*), co-occur. It is, however, difficult to be absolutely certain if this was always so as many areas of Coastal Forest in KwaZulu-Natal were cleared in the late 1800s and early 1900s for sugarcane; before they were surveyed floristically. Thus it is feasible that this co-dominance may have occurred elsewhere, but I doubt that. In fact our current understanding of Coastal Forest tree species composition in South Africa demonstrates that many of the patches, from Kosi Bay in the north to Platbos near Stanford in the Western Cape, have a different species composition – with different species being



dominant in almost every remaining patch (*Celtis africana* and *Sideroxylon inerme* at Platbos, *Afrocarpus falcatus* and *Erythrina caffra* at Alexandria, and *Trichilia dregeana*, *Podocarpus latifolius* and *Celtis gomphophylla* at Dwessa, to name but three). Why this should be so has not yet been determined. Interestingly this is not the case for the adjacent Dune Forest where there is a gradual attenuation of species diversity as one travels southwards. A possible explanation for this is because Dune Forests are more continuous, at least they were in the past, therefore there is a better chance for species to mix (today because of ribbon development along the coast this is no longer the case – another problem with fragmentation and future conservation). Today it seems that the Hawaan is fairly secure despite the land being in private ownership; split between the Tongaat-Hulett's group in the north (who seem to be doing a good job) and Hawaan Investments Pty Ltd to the south. The latter have an up-market housing development along the inland boundary of the forest and they are proud owners and managers of their portion of the Hawaan. To this end the company formed a Conservation Trust in 2004 who assist with management input for Hawaan Investments and are in the process of joining the KwaZulu-Natal Stewardship programme to elevate the status of their wild areas as a nature reserve.

TOP: Oblique aerial photo of the northern portion of the Hawaan – showing the forest (mostly on the seaward-facing slope) with the Onhlanga River lagoon (bottom right) and river meandering inland with rolling sugarcane-covered hills beyond. Photo: Bart Foggens.

ABOVE LEFT: Google Earth image of the Hawaan and Umhlanga Rocks area of KwaZulu-Natal in 2005 showing the context and how the main Hawaan Forest is separated from the big forested area to the north (Peace Cottage bush). It also shows the Onhlanga River and Lagoon with Dune Forest fringing the beach.

ABOVE RIGHT: The Red Duiker is listed as Rare in the SA Red Data Book, occurring in small isolated populations along the coast of KwaZulu-Natal, confined to coastal forest and dense bush. Photo: Eugene Moll.

What makes the Hawaan forest so extra special is not just the flora but the history of conservation action that has taken place to secure the area. For some reason long forgotten, the area was not cleared for sugarcane fields (pre-1940). Maybe because the soils are so very sandy and nutrient-poor, unlike the inland soils where there is at least some clay content and hence more nutrients. Thus when forest lands were being cleared inland perhaps the Hawaan was left because it was so marginal for cane. Later when Umhlanga became an up-market residential area the Hawaan was once more threatened, this time for housing development – and there was many a 'fight' between developers and conservationists (it is only some 80 ha in total but has huge biodiversity significance). Today it is even fenced along the northern, urban border and patrolled.