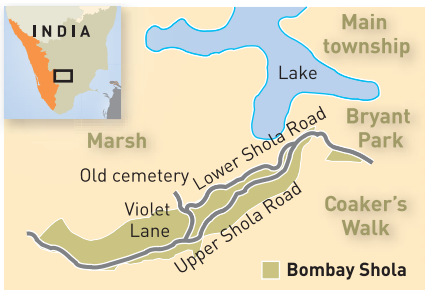
Fragile heritage

Kodaikanal's Bombay Shola, a small patch of woods which harbours a unique biodiversity, is under stress. TEXT & PHOTOGRAPHS BY IAN LOCKWOOD

The fence that is supposed to protect the forest from encroachment, woodcutting and cattle-grazing is **dilapidated. Pathways through it are** worn. The shola has become a dump, and one of the two streams in it is choked with waste.

KODAIKANAL is notable for a variety of reasons that have made it one of southern India's most popular hill stations. Historically, the Palani Hills, which host Kodaikanal, have been less populated and developed than their northern neighbours, the Nilgiri Hills. Their position in the rain shadow of the south-west monsoon means that Kodaikanal is drier than other large hill stations at this time of the year.

Kodaikanal had a unique beginning as a hill station – American missionary families (as opposed to the British colonial powers) established it, in 1845. For much of the 20th century it was a sleepy town catering to honeymoon couples, missionaries, retired civil servants, and school students. The area around Kodai (as the hill station is popularly known) offers a variety of nature-based activities (walking, cycling, horse riding, boating, and so on) for visitors. They come for the cool weather, the local produce (cheeses, eucalyptus oil, chocolate, honey and fine pastries, to mention a few) and a unique blend of pan-Indian culture with that of a smattering of expatriates domiciled in the hills. One of Kodai's least-appreciated attractions is a small patch of woods known as Bombay Shola, lying within the municipal limits and adjacent to the lake in the town.



A rough map of Bombay Shola's contextual relationship to the hill station of Kodaikanal.

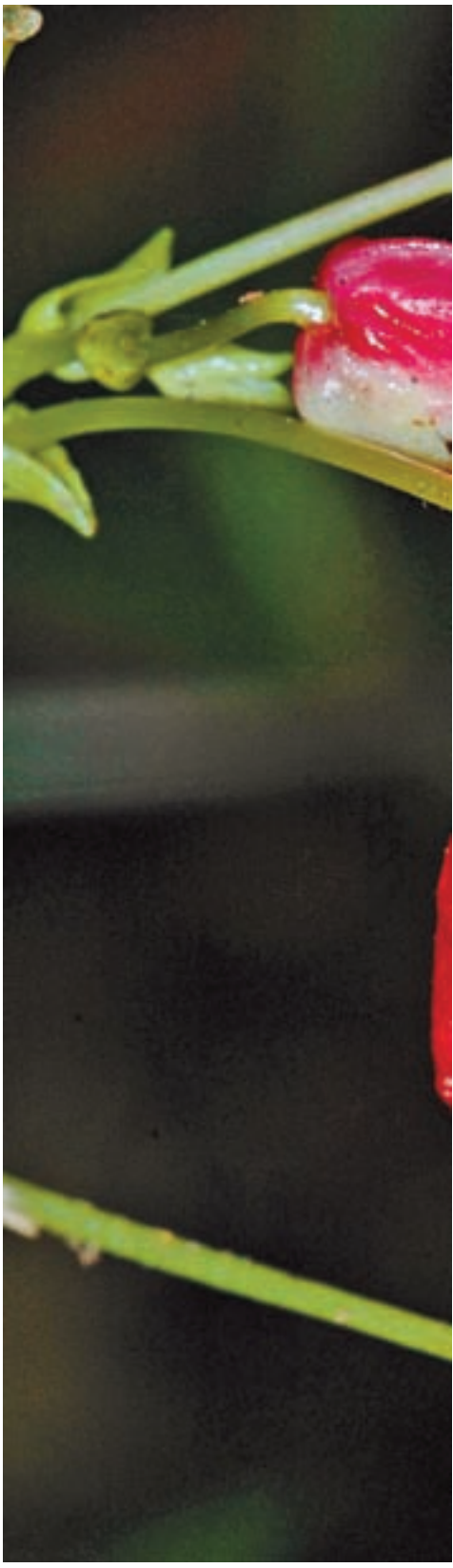
Kodai has seen unprecedented change in the past two decades. The number of visitors has risen exponentially and it is now a year-round tourist site rather than being a seasonal one. The peak "season" is in May when on a busy day this year nearly 3,000 vehicles (including cars, vans and buses) entered the municipal-run gate in a single day. The pressure on resources, namely water and land, has been significant. A construction boom has physically altered the appearance and ambience of the town as well its peripheral neighbourhoods and outlying villages. The explosion of non-degradable packaged consumer items and the resulting waste is a significant challenge to a town that is defined by its beauty. On occasion, the problem of solid waste has attracted media attention. Mercury pollution from the Ponds factory was a lightning-rod environmental issue eight years ago.

Though unrecognised, Bombay Shola is a 25-hectare living heritage set amidst the growing chaos and haphazard development of the surrounding municipality. It was named in 1852 by a Major Partridge of the Bombay Army, who camped on its eastern edge near what is now Bryant Park. In a curious twist, he was the first to introduce the non-native eucalyptus trees into the hills! This deed changed the ecological face and hydrology of the hills but provided firewood alternatives to the native shola species.

A shola (Tamil for "dense thicket" or "evergreen forest") is a montane evergreen forest that is unique to the upper altitudes (1,500-2,695 metres)[1] of the Western Ghats. In undisturbed habitats these South

THE LOWER SHOLA Road winds its way under the canopy near the Bryant Park side of Bombay Shola. This quiet lane provides ample opportunities to observe many endemic bird species of the Western Ghats without disturbing the forest. It has also become a major thoroughfare for the gaur.

1. There is variation on when the grasslands/shola habitat starts depending on local climatic conditions. Some ecologists place the shola/grasslands system as starting at anywhere between 1,200 and 1,800 m. Key plants indicative of a shola/grasslands system are recorded at 1,500 m in the Palani Hills.



CICADA IN THE shola. The forest erupts with the calls of this insect during certain periods of the year. (Right) A grasshopper.

Indian cloud forests are associated with grasslands to create a complex ecosystem. The grasslands that once surrounded Bombay Shola have long been replaced by non-native species of trees and property development.

The fact that the original shola still survives in the 21st century is remarkable. It was designated a reserve forest before Independence, but that is not to say that there has not been pressure on its resources and space. In an exhaustive 2004 publication from the Bombay Natural History Society and Birdlife International, Bombay Shola is listed as an Important Bird Area that is worthy of protection for its avifauna and habitat (Islam and Rahmani). Efforts are now under way to protect Bombay Shola with collaboration from the communities that live in its shadow.

A reading of the early history of settlement in Kodai makes the unique role of Bombay Shola succinctly clear. Over the last two millennia, there has been a long pattern of human penetration into the lower Palani Hills, as is attested by the remains of dolmens and a string of villages such as Poombarai and Manavanur. The upper plateau, at 2,000 m, was not permanently settled until the early 19th century. The first two bungalows (Sunnyside and Shelton) that were built on the Shola's western edge in 1845 marked the beginning of permanent settlement in the upper basin. We can only imagine the sense of untarnished wilderness that the scene must have evoked. Early records note the presence of the Nilgiri langur in Bombay Shola and the Nilgiri tahr on the cliffs above the shola. Nearby shola patches were named for the bears and tigers that once inhabited them.

Bombay Shola looks over the large basin that was dammed in 1863 to make the star-shaped lake that every

CALANTHES TRIPLICATA, A ground orchid, which was once abundant in Bombay Shola. Nearby sholas in the Palani Hills still have healthy populations of these orchids. The proposals to restore Bombay Shola have identified these plants as ideal for the recovery of the ground-level tier of shola vegetation.

IMPATIENS PHOENICEA, ONE of the several small yet significant endemic species of balsams that can still be found in the interiors of the shola. The populations of balsams have been negatively affected by the disturbances that the shola has experienced in recent years.

INDIAN GIANT SQUIRREL (Ratufa indica) on a eucalyptus tree. Populations of these animals in the shola have rebounded in recent years, which is a positive sign amongst the generally gloomy turn of events that have resulted from the unhindered growth of the Kodaikanal township.

A BULL GAUR (Bos gaurus) in a tea plantation on the south-western side of the shola near Pambar House. Seeing a gaur was a rare delight a few decades ago, but herds of up to 12 to 20 gaur have been entering the heart of the Kodaikanal municipal limits in recent months.

SALEA SP. LIZARD in a garden adjacent to the shola. These spiny agamid lizards are restricted to the montane forests of the southern-most Western Ghats (Anamalai and Palani Hills). Surprisingly this species is common in the gardens of Kodaikanal.

visitor to Kodai knows well. Around the same time, a church and a cemetery were built on the shola edge. A cyclone blew down the original building and a new location was chosen near what is now Coaker's Walk to rebuild it. The gravestones from this neglected site bear testimony to the disease and other occupational hazards that shortened lifespans in the 19th century. Beyond the anonymous headstones entitled "baby" is one of a missionary from the Scudder clan who was born in Boston, served in Madurai, and was tragically drowned in the Vaigai river in 1862. Another headstone marks the final resting place of Dudley Linnell Sedowick, who was "killed by a bison while hunting in the Pulney Hills. Age 31".

Bombay Shola has a structure similar to other montane forests in the southern Western Ghats. Shola species are characterised by their slow growth, which inhibits rapid recovery after disturbances. At the canopy level, a variety of trees such as *Syzigium densiflorums*, *Memecylon randerianum*, *Litsea wightiana* and *Elaeocarpus recurvatus* compete for sunlight. One enormous and resplendent *S. densiflorums* on the Upper Shola Road is known as the oldest tree (estimated to be 500 plus years old) in Kodaikanal. Many of these large trees have striking, gnarled crowns that have been sculpted by winds. The rare *S. caryophyllum* on Violet Lane is an excellent example.

GRAVESTONE AT THE Old Cemetery. The 19th century stones here mark the final resting places of some of the first American and European inhabitants of Kodaikanal.

Vines and lianas, a feature that gave Kodaikanal its name, are now rare in the forest. There are several impressive examples of *Derris brevipes*, a liana so large that it has been categorised as a tree. Other lianas, such as *Ficus laevis* and the lemon-scented *Toddalia asiatica,* have been cut for fuel wood, and are lucky finds for roving naturalists. Other mid-storey trees in short supply are *Memecylon* and *Prunus ceylanica* and *Celtis timorensis*.

The streams in Bombay Shola were once densely populated with large tree ferns (*Cyathea sp.*). At the shrub level, Bombay Shola has *Strobilanthes sp.*, though most of these have been re-

AN OLD KODAI bungalow stands next to the enveloping thicket of Bombay Shola. The shola has withstood the gradual but now rapid growth of the Kodaikanal municipality in the last 165 years. Changing land use and a building boom coupled with an invasion of non-native species threaten this unique forest.

duced by grazing and cutting. Botanical records in days past describe the carpet of *Calanthes triplicata* (a leafy ground orchid) that was once abundant in Bombay Shola. Other sholas in the Palanis still have such undisturbed ground cover and provide encouraging models for restoration.

One of the most important, yet least appreciated, roles that Bombay Shola plays is in ensuring water security for the town and downstream communities such as those of the temple town of Palani. The shola combined with the large marsh continues to play a critical role in filtering the water seeping into the lake, which is a main source for the stream that feeds Palani's reservoirs. Plantation trees (*Eucalyptus*, *Pinus* and *Acacia* species) have been found to do just the opposite and deplete water tables because of their relatively high transpiration rates. Ecologists have described natural forests, like Bombay Shola, as serving as natural sponges soaking up seasonal rains and releasing them slowly in leaner periods. In a land where droughts are a life-and-death issue, the connection to water security has become a significant rallying call for protection in the entire Western Ghats.

In recent years, as the demand for water has surged, the township has had to depend on several wells in the marsh to supplement its reservoir near Observatory Hill. The marsh, of course, is fed by Bombay Shola and the larger catchment area of the lake. Trucks carrying water from these wells to hotels and homes are a ubiquitous part of Kodai's traffic. Scant thought is paid to the role of the shola and the marsh in this vital service to the township.

Reflecting the larger Western Ghats range, Bombay Shola harbours a unique biodiversity that is an important justification for its preservation. Endemic bird life is rich in the interiors of Bombay Shola with the white-bellied shortwing (*Brachypteryx major*), the grey-breasted laughing thrush (*Garrulax jerdoni*), the black-and-orange flycatcher (*Ficedula nigrorufa*) and the Nilgiri woodpigeon (*Columba elphinstonii*) being resident year round. Birds of prey such as the crested goshawk (*Accipiter trivirgatus*), the rufous-bellied eagle (*Hieraaetus kienerii*), the Oriental honey buzzard (*Pernis ptilorhyncus*), and the brown wood owl (*Strix leptogrammica*) have all been recorded to be found in the shola.

Mammals include the shy and little-seen Indian giant flying squirrel (*Petaurista philippensis*). Indian giant squirrels (*Ratufa indica*) have been making a comeback after decades of vigorous poaching. There are also

A MALE BLACK-and-orange flycatcher (Ficedula nigrorufa), an endemic species that is restricted to the montane forests in the southern Western Ghats. It is common in Bombay Shola. (Below) The Malabar whistling thrush (Myophonus horsfieldii) photographed at a bungalow near the shola. Its enigmatic and magical call (something that has been evoked in several stories and myths) is a treat during the monsoon seasons.

numerous amphibians and reptiles, which include endemic shieldtails (*Uropeltis sp.*), bush frogs and spiny lizards (*Salea sp.*), many of which are encountered in gardens adjoining the forest.

Perhaps most astounding is the presence of herds of gaur (*Bos gaurus*), which pass through Bombay Shola on their way to Bryant Park and the lawns of lakeside bungalows. My father's own recollections of seeing the gaur in the 1950s were that they were extremely rare in the near and outer Palani Hills (there had apparently been an outbreak of rinderpest that decimated populations across the Palanis). When I was a student in Kodai in the 1980s, seeing the gaur on a school hike was a rare delight. In the 1990s, I remember being surprised about reports of the gaur being seen on the golf course (seven kilometres from the town) regularly. Their movement into the very edge of the Kodaikanal township through Bombay Shola is a phenomenon that only started about two years ago. Earlier this year, in a compound next to Bombay Shola, a resident walked by a gaur thinking it was a cow. He was lucky and escaped with his life and 17 stitches in his derriere.

In the past there have been several human fatalities from human-gaur interactions in the Palani Hills. The possibility of unintentional conflict between the gaur and residents and tourists is a significant problem that will have to be dealt with sooner rather than later.

Bombay Shola has enjoyed protection as a reserve forest and was first notified in the early 20th century. Like other state-managed forest areas, it has been protected by the Tamil Nadu Forest Department. Their resources, however, are stretched thinly as the District Forest Office has the entire 2,064-sq km block of Palani Hills to look after. In 1987, the shola was fenced to reduce firewood collection and cattle-grazing, and to demarcate the boundary clearly. A polished granite stone, now neglected and cracked, marks the date of fencing on the Upper Shola Road. However, fencing can only go so far, and the forest's preservation is dependent on human communities on its boundaries, not to mention maintenance and vigilance on the part of the Forest Department.

Low-income families living on Bombay Shola's edge in informal settlements have used the shola as a source of fuel wood. Others in the township have used it as a place to dump undesirable waste. There are also concerned citizens living near and around its borders. There is the Palani Hills Conservation Council (PHCC), which is situated adjacent to the cemetery. The Vattakanal Conservation Trust (VCT) has been doing restoration work with the Forest Department in the neighbouring Pambar Shola.

Bombay Shola is now under stress as I learnt while spending several weeks in Kodai this summer. I have a long and intimate association with the shola, having been privileged to spend many happy childhood and adult years in its shadow. Before there were fences and before garbage fouled the shola's streams, I explored and played among the large moss-covered trees and sheltered thickets. Over the years I have returned regularly to spend time in its presence. My interests have strayed from those childhood pursuits to photographing and documenting endemic birds, reptiles and plants as I learn more about the composition and complexity of the shola. Over the last few years my association with the VCT has helped deepen my knowledge of the shola's ecology. My usual tools to document what I have seen have been my cameras, binoculars and field guides, but I have been increasingly using a Global Positioning System (GPS) and GIS software to map its different attributes better.

One of the blessings of being in the hills is the opportunity to forsake motorised vehicles and walk. Walking through and around Bombay Shola gave me an opportunity to assess its

status better. Some of the developments are disheartening while others, like the spike in resident guar populations, are downright surprising.

Ecologically, the forest has been invaded by fast-growing non-native species, a fact that is rarely noticed by visitors unfamiliar with the shola ecology. Blackwood (*Acacia melanoxylon*), Himalayan cherry (*Prunus cersoides*) and others have colonised the openings and the edges. They tend to grow far higher than the shola canopy and so are vulnerable to seasonal winds during the north-east (winter) monsoon. When they fall they take down a large number of healthy trees. The resulting gaps on the forest floor would normally offer young shola species an opportunity to compete for the available space and light. Instead, invasive shrubs such as *Eupatorium* (*Ageratina adenophora*) and *Lantana camara* step in before the area is overtaken by more non-native trees, which can germinate and sprout earlier than the shola species. The native *rubus* (raspberry) also proliferates over these unnatural gaps and makes a challenging environment for natural recovery. The result is that Bombay Shola is riddled with gaps and areas where non-native vegetation is replacing the shola.

GARBAGE AND WASTE foul a stream running from the heart of Bombay Shola to the marsh, to Kodai's popular lake and eventually to the temple town of Palani.

The fence that is supposed to protect the forest from encroachment, woodcutting and cattle-grazing is dilapidated and broken in numerous places. Pathways through the forest are worn in a number of locations. Illegal timber collection and cutting, mainly of small to medium-size trees that would grow into large shola trees, is common. Thus, in some area the forest floor is devoid of this critical next generation. Two years ago, the Forest Department and the VCT worked together to survey wood foraging in Bombay Shola. They found that 80 low-income families collected wood on a weekly basis and that this was used for cooking and (mainly) heating water. Subsequently, there was a proposal to provide solar water heaters to the community as a way to reduce illegal cutting. The proposal awaits implementation.

In recent years the shola has become a dump; an unfortunate reality that is glaringly obvious if you walk through the Lower or Upper Shola roads. Some of this is from careless tourists who picnic alongside the two

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A SNAKE BELONGING to the Uropeltis ellioti species.

SMALL, UNIDENTIFIED BUSH or tree frog found in the leaf litter of the shola. In recent years there have been bursts of new amphibian discoveries up and down the Western Ghats. Scientists are realising how little we know about the ecosystems and landscapes that have been studied for the last 100 years.

roads running through the forest. For a few people the forest is a place for nefarious activities, and it is not uncommon to find vehicles with darkened windows parked along the roads that cut through Bombay Shola. Empty bottles and food packaging make up a significant amount of waste. Municipal workers diligently sweep up rubbish and then toss it into unnoticed corners of the forest! Meanwhile, larger local businesses use the shola to dump truckloads of construction debris and garbage in the night. One of the two large streams in the shola is choked with foul-smelling waste and has become a breeding zone for mosquitoes, once a rarity in Kodai.

The plight of Bombay Shola offers an opportunity for the Forest Department to work with active citizens' groups and local communities on a small scale. While issues such as the proposal for a Palani Hills protected area (see *Frontline,* August 15, 2003) are still awaiting official sanction, Bombay Shola provides a project on a small, more manageable scale.

The VCT has an admirable record of ecological restoration and has the experience of successfully working with the Forest Department on Pambar Shola as well as the Mukkurthy National Park in the Nilgiris. Other organisations such as the Indian National Trust for Art and Cultural Heritage (INTACH) and the PHCC can help facilitate the bridging of citizens, non-governmental organisations (NGOs) and government offices to protect Kodaikanal's fragile heritage.

IMPORTANT STEPS

There are several important steps to be taken with the goal of restoring and protecting Bombay Shola for its role in water security and biodiversity. The boundary needs to be fixed and maintained and most of the illegal paths should be discouraged.

At the same time, one or two paths that have been worn through key points should be formalised with stonework. These can facilitate the movement of local communities without causing further damage to the ground cover. Further, they can also serve as pathways for students and others interested in learning about the ecology of the shola.

There is an urgent need to weed out non-native species of trees and shrubs from Bombay Shola. This is an income-generating activity that would pay for itself. Finally, there is the need to reintroduce native plants in areas that have been maligned by invasive species. This is just the sort of thing that organisations such as the VCT have successfully worked with the Forest Department to do in the neighbouring Pambar Shola.

It would also be useful to encourage long-term ecological studies of Bombay Shola's hydrology and biodiversity. The spike in gaur populations amid such dense human settlement is certainly an issue that needs urgent attention and study.

Like most ecological battles, there is a crying need for better information. Kodai residents have a decent awareness of the hill station's unique ecology, but a greater challenge is informing the sheer number of visitors who come up for short visits about it. A modest interpretation centre or panels of information would be the first steps to address this.

Bombay Shola has survived the last 160-plus years since humans settled on its borders. Its future is now in question, while the promise of its restoration and protection offers a rare opportunity for cooperation among citizens, NGOs and the Forest Department. □

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