

# Crouching Tiger Hidden Scientist

*A proposed underground lab in a Nilgiris tiger reserve is attracting controversy, reports*

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IT'S A Rs 900 crore project, and an ambitious one — it aims to establish one of the largest neutrino observatories in the world. Former president Dr APJ Abdul Kalam's dream project, this could put India at the forefront of neutrino physics, or the study of the smallest particles of matter. Tata Institute of Fundamental Research, Bhabha Atomic Research Centre, IITMumbai, Institute of Mathematical Sciences — the country's leading scientific institutions — all have a stake in the project. But there's reason to ask if it will achieve critical mass.

The main problem is with its slated location, Singara in the Nilgiri hills of Tamil Nadu, within the Mudumalai Tiger Reserve. Building a large observatory in the middle of a dense forest, home to the Asian elephant, the tiger and the leopard, will hurt their habitat. More to the point, since the observatory must be at least 1000 metres underground, the tunnelling alone will cause immeasurable damage to the flora and fauna of this already fragile ecosystem.

Wildlife conservation or a place at the high table of science? The question seems almost rhetorical, so obvious is the answer affirming the right of science over animal rights.

Of course, to a lay person, the study of neutrinos is not obviously important. Neutrinos are tiny, almost massless particles, whose main source is the sun as well as the stars, where they are produced by nuclear reaction. Scientists argue that studying them could have huge applications in astrophysics and other areas. But beyond that, studying neutrinos will also expand human understanding of the universe.

However, the almost insignificant size of neutrinos allow them to pass through matter almost undisturbed, making them extremely difficult to detect. In an underground observatory, the earth and rock all around act as filters, allowing only neutrinos to reach the detector.

And that's why Singara has been chosen: the rock there is very dense granite. Another site in Ramman, Darjeeling, was considered, but the stand up time (the time the tunnel could be left before supporting arches needed to be put up) was barely 24 hours, compared to the 90 days to infinity in Singara.

Access was also a problem in Rammam, with the nearest railhead or airport 150 km away. Singara is only 90 km from Mysore and 100 km from Coimbatore. And the Tamilnadu Electricity Board already has a hydro-electric power plant inside the Singara Hill — the Pykara Ultimate Stage Hydro Electric Project (PUSHEP). Tunnelling has already been done on this hill and the weak lines marked, so a second tunnelling will be comparatively easy.

Those may be sound geographic reasons, but the road to Singara cuts right through the Kallamalai — Singara — Avarahalla corridor, used by animals to move between the Mudumalai Reserve and the Segur plateau and the Eastern Ghats. Part of the Nilgiris-Eastern Ghats landscape, the Segur plateau harbours nearly 25 percent of the Asian elephant population. And Mudumalai is proud of the fact that its tiger population is stable: it won recognition internationally for this and has recently been declared a tiger reserve. The road here is hardly used by vehicles right now — elephants, leopards and tigers dominate. But that will change with the construction of a big observatory. The project site is next to this corridor.

The construction of the observatory will have tremendous impact on the landscape: the project will require over 100,000 tonnes of iron for the detector alone. Another 35,000 tons of cement, steel, PVC, copper, aluminium, sand and other materials will be used in the construction. Even if 8-tonne trucks are used to haul this weight, that's over 17,000 truck loads. And that does not include tonnage required to move out the debris from the tunnelling. According to a presentation made in Ooty by Care Earth (the NGO appointed to do the Environmental Impact Assessment), this will be an estimated 6,30,000 tonnes. Assuming the project is completed during the slated four years, this would mean over 50 round trips in the area daily. Care Earth also insisted that the project will be completely on patta land, and not forest land. Not a very convincing argument in a place where leopards and elephants routinely stray into plantations and resorts.

THE PUSHEP project is an example of how easily good intentions go astray: when construction started, a local body of environmentalists had set guidelines to minimise damage to the forest. These were followed till the person in charge of construction was transferred. After that, it was open season.

There is talk of reducing the number of trucks going through by storing debris and moving it out over a longer period, but this could have other consequences. In the PUSHEP case, quarry muck was dumped into the Karimar water hole, which flows into the Moyar river. The entire river was contaminated, making the water unpotable downstream for animals and people alike. The river was choked and finally, on the insistence of the wildlife warden, the sluice gate at Glenmorgan was opened to flush the river. Despite this, there has been a slow leaching into the river.

No one ever quantified the huge loss of indigenous fish and other aquatic species on this stretch of the river. Or the numerous animals that suffered when the only perennial water source in the Mudumalai Reserve was clogged up. In terms of man-animal conflict, 38 people have been killed (and more injured) in recent years by elephants, due to increased pressure from tourism and the number of vehicles entering the area.

But these 5000 odd square kilometres of forest, spread over three states, form the Nilgiri biosphere. It is the biggest contiguous forest in Asia, and contains the largest gene pool for tiger and a host of other critically endangered species. While conservationists acknowledge the neutrino observatory is a huge step forward in science, they only question why the location selected is in the heart of one of the country's most valuable forests. Is it that as a nation, India takes several irreversible steps backward for every step forward? •

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