

Changes in Dhanushkodi region in the Gulf of Mannar over decades

Dhanushkodi is a small town in Rameswaram of Tamil Nadu. It is about 24 km away from Thalaimannar of Sri Lanka. In 1964, it was wiped out by a cyclone. Google Earth imagery 1985 shows Arichal Munai, an end point at Dhanushkodi still submerged under water. After 2017, artificial sandbars and roads were created starting the development in this area. These developmental activities were done purely from the tourism point of view. The unique position of Dhanushkodi lying in between the Palk Bay and Gulf of Mannar, its nearness to Sri Lanka, and the developmental activities being planned over there, especially a railway line, makes this place an important place to study the effects of changes to the sea on biodiversity.

The place that was submerged until 2017, saw a drastic change in the land. In 2017, the artificial sand banks and roads that were constructed

purely from tourism point of view, would come in the form of consequences which were unnoticed.

From geological perspective

The naturally occurring structures like the beach rock and rocky coasts at Dhanushkodi have played an ecologically significant role. A study by Ravindran & Selvam (2014) revealed that the increase in percentage of beach rock decreases the percentage of influence of seawater intrusion. The beach rock and rocky coast acts as dyke rock and disallows the infiltration of the seawater into the coastal aquifer. So, any developmental activity that happens at Dhanushkodi can threaten these natural barriers and upset the ecosystem they were previously protecting. A study by Natesan et al. (2015) found that along the Palk Bay Coast, the eroding shorelines at Dhanushkodi are prominent, except at Arichal Munai where it is reversing along GoM.

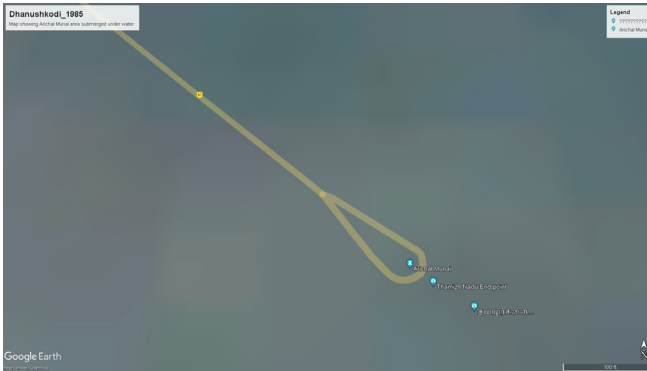
From the perspective of biodiversity

Since there are very few studies available that were done on the biodiversity of this area during 1985, it is difficult to assess the extent of biodiversity loss in this area. But there is certainly, a negative phenomenon that is

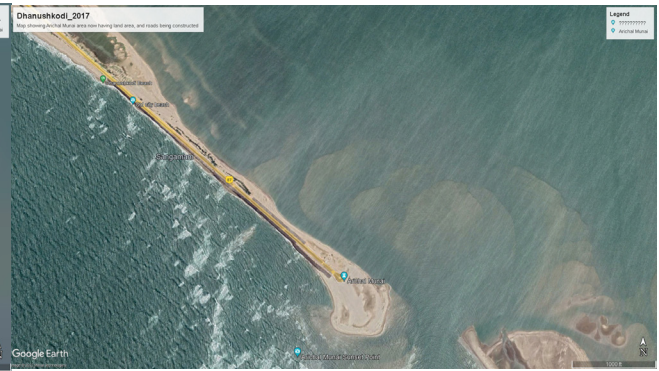


Dhanushkodi map. © India water portal.

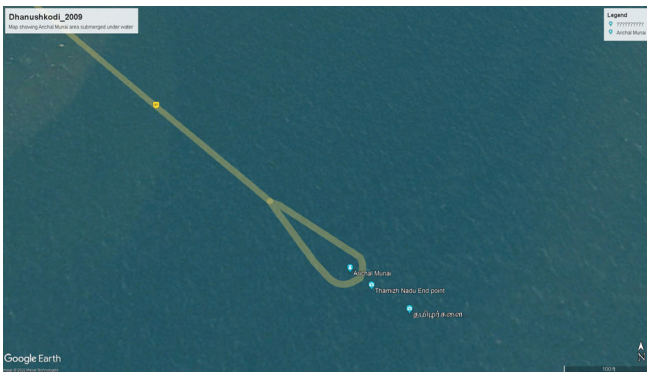




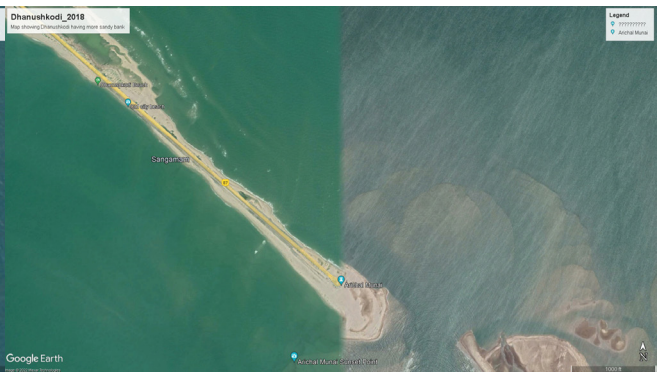
Dhanushkodi showing Arichal Munai submerged in 1985.



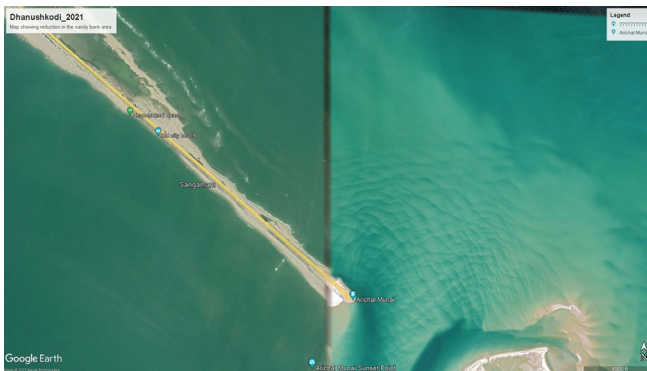
Roads and artificial sandbanks created at Arichal Munai in 2017.



Arichal Munai still submerged underwater in 2009.



Extension of sand banks in 2018.



Sand banks eroded along the Palk Bay in 2021.



Arichal munai now. © Melito Pinto.

happening which is observed through the following:

The imagery from 2021 shows that there has been a decline in the width of the sandbank. This sandbank is not a natural one. First, by creating artificial sand bars, the natural formation of sand bars by tide action is prevented. As a consequence, the foraging area for the wading birds and migratory birds was lost.

Turtles were one among those suffered the most. Olive Ridley *Lepidochelys olivacea* and

Leatherback Turtle *Dermochelys coriacea* were reported to be breeding in these shores. But the developmental changes such as the creation of road has made it difficult for them to cross from one end to the other. Adding to this, the everyday flux of tourists and pilgrims leading to littering everywhere has led to an increase in the number of domestic dogs. This has become a huge threat to the nesting of these turtles, leading to decline in their numbers.

From the perspective tourism

A paper by Rao (2014) recommends the

restoration of Dhanushkodi and mentions that railway lines must be restored for pilgrimage access. This paper speaks on the developmental perspective at Dhanushkodi, saying that although the one existed before cannot be revived, it can at least be restored, and calls for infrastructure development instead of homage. With roads constructed, and railway line at plan, there is a huge influx of pilgrims to this place. This consequently has led to a number of shops being opened in this place, and the careless behavior of the people has led to plastic pollution here. Although sustainable tourism strategies were discussed by Saville (2002), there seems no signs of sustainable tourism in this place.

Conclusion

Over a course of 30 years, the land of Dhanushkodi has seen drastic changes. The creation of artificial sandbanks has made many wader and migrant birds, and turtles lose their

breeding sites. Permanent structures such as roads have made it difficult for the sea turtles to move safely.

With the experts working in the Dhanushkodi area, we have also come to know that railway line that is being planned in the area, which would come as a larger ecological disaster. The impacts of the development we have observed could be far less than what has actually happened, because there is no extensive study done on the biodiversity loss in this particular area. The productivity of the land has also decreased leading to fishers going off to Sri Lankan coasts for fishing and this causing numerous conflicts. The rate at which the *Prosopis juliflora* has spread in these landscapes, and no one bothers about, is also a matter of concern. With the railway line being planned in this area and more and development coming in to promote tourism, the future of Dhanushkodi looks totally compromised.

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Artificial sandbanks at Arichal Munai. © Pooja Patil.