HOLIDAY GEOLOGY

The Petrified Forest of Lesbos

Also known as Lesvos, Lesbos is the second largest Greek island after Crete. It is in the northern Aegean, just off the Turkish coast. Unlike on some Greek islands, the locals out-number the visitors, and there is agricultural and commercial activity outside tourism. Skala Eresou is a resort noted for its nightlife scene, whereas Skala Kallonis attracts the bird-watchers for the spring and autumn bird migrations. These resorts are far apart, and the geologist will not wish to be based at either, as there is much to see across the whole island.

In the 4th century BC, Lesbos was home to Aristotle when his biological investigations, involving the dissection of sea creatures, and his writings mark a shift in science from philosophising to towards experiment and investigation. Another resident was Theophrastus the Eresos who recognised the difference between rocks and minerals, and that the former were made of the latter, and also recognised the nature of fossils. A third luminary of Lesbos was the poet Sappio who wrote on feminist themes and is the reason for the well-known adoption of the island's name.

The eastern part of Lesbos has Carboniferous to Triassic metamorphic rocks that have been thrust over the younger Mesozoic metamorphic rocks of the central and western parts of the island. All are largely overlain by Tertiary volcanics, which also buried the island's main geological attraction, the petrified forests.

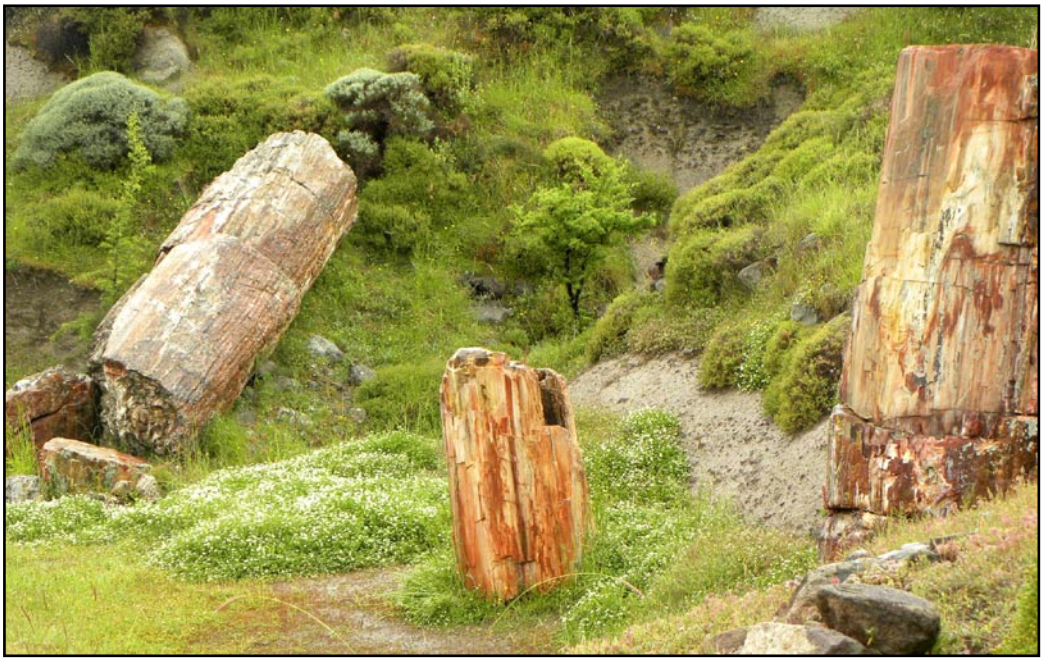
During the closure of the Tethys ocean by the northward drift of Africa, at 65-20 Ma, Lesbos and the other islands were part of an Aegean landmass attached to Laurasia and uplifted by under plating. Andesitic volcanic eruptions on what is now Lesbos date from 21-16 Ma. The main centre was the Vatousa volcano, whose caldera, 6 km across, now the eponymous village and is crossed by a good road with some roadside interpretation boards. After 16 Ma the subduction zone was further south, causing volcanism on Santorini, and subsidence of the Aegean has left Lesbos as an island

Road cuts expose lavas, lapili tuffs and ignimbrites, but mostly debris flows. It is these that buried the forests on the lower slopes of the volcano. There are five sites where the silicified trees can be seen, with the Petrified Forest Park 14 km from the small town of Sigri with its museum and nearby coastal sites. The Museum of Natural History is excellent, with its guides and presentations as well as petrified trees immediately outside.

The debris flows that buried the trees were cold, and consisted of ash mud supporting unsorted boulders that are both angular and rounded. The buried trees, which were pines, laurels and sequoias, were replaced by a cryptocrystalline form of quartz that shows clear preservation of the wood structure. Erosion of the debris flows has revealed the tops of many tree stumps. Where excavated down to the roots, it can be seen that these were growing on an earlier flow, indicating that there were many burial events and re-growths. Many trees are still standing to heights of more than two metres, buried in the fine-grained material with small matrix-supported boulders. Some stumps are broken off at the base of a coarser debris flow, with the fallen upper parts of the trees buried down-slope close to the stumps. The site guide claims that the visible trees are more numerous than those in its namesake in Arizona, and also has many more upright trees.

The petrified forest of Lesbos is well worth a visit, and there is much to see. If time is short, visit the Museum and its trees first, miss the coastal sites, and hurry 14 km inland to the Pertified Forest Park, which closes at 4pm. Numerous orchids in spring, and little owls perching on some trees, are added attractions. Lesbos has direct flights from England in the summer and there are plenty of places to stay.

Alan Filmer



Multiple silicified tree stumps in positions of growth in the Petrified Forest of Lesbos.