In 2013 A.D., the remains of an ancient wooden ship were found in a shrimp farm in Samut Sakhon Province. The remains, referred to as the Phanom Surin Shipwreck, are thought to be from the 9th century A.D. Two types of rope were found on the ship composed of bundles of fibers. The objective of this project was a comparative SEM study of plant fibers from various plant families in an attempt to identify the sources of the rope fibers. The ancient ropes were shown to be made from bundles of fibers surrounded by files of special cells, stegmata, containing silica bodies. Stegmata are found in many species of Arecaceae, as well as in several other monocot families. Rope fibers that had been wrapped around an earthenware jar had hat-shaped silica bodies with a flat base and spines on the outer surface, similar to those occurring in the palm tribe Caryoteae. This tribe comprises 3 genera, Caryota, Arenga, and Wallichia, and is restricted to Asia from India eastward, Australia, and the Pacific Islands. The fibers on a second type of rope had spherical silica bodies with spines, found in many genera of the subfamilies Calamoideae, Arecoideae, and Coryphoideae, including Cocos and Borassus, occurring worldwide in warmer climates. This study demonstrates the usefulness of SEM analysis of rope fibers in determining their taxonomic and biogeographic origins.

Keywords: Arecaceae, fibers, Samut Sakhon, shipwreck, silica bodies