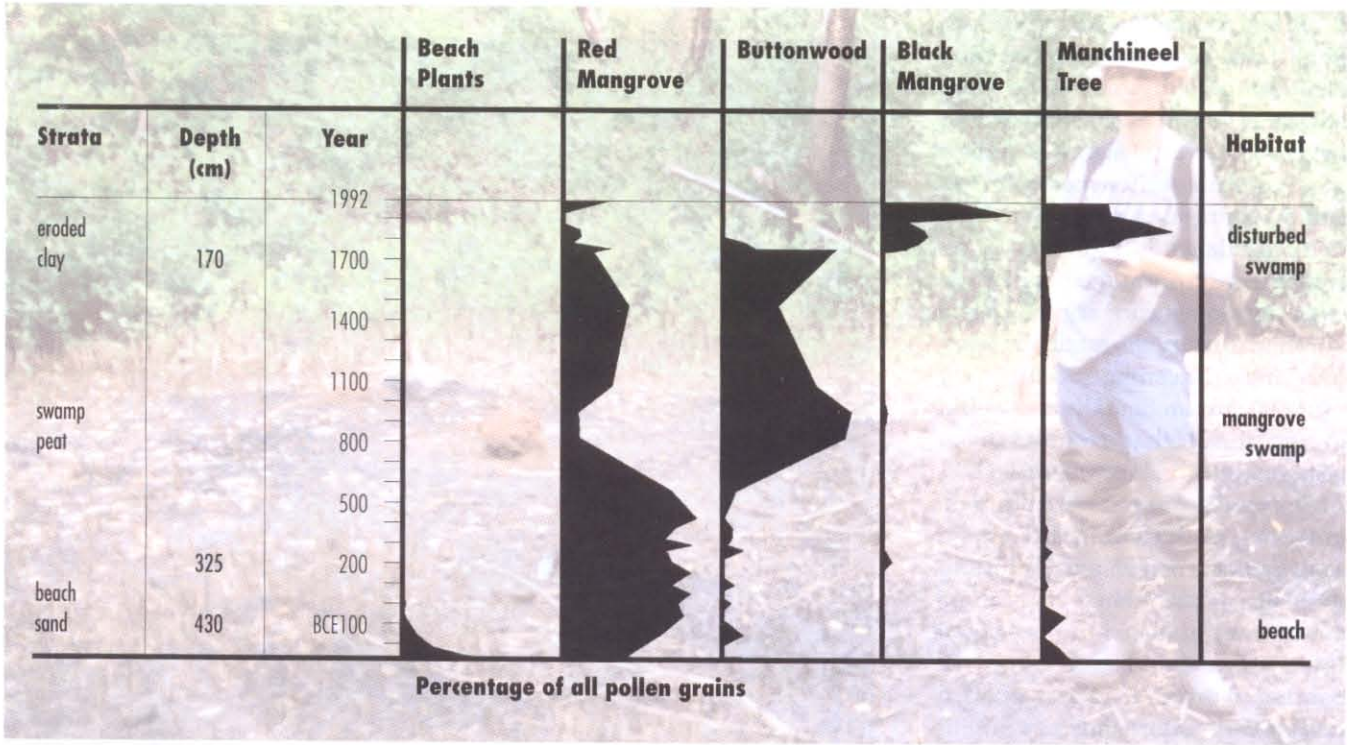

A fossil pollen diagram from sediment that accumulated beneath the mangrove forest in Levera Park. A charcoal-maker's ash pit forms the background.

Habitat History at Levera National Park, Grenada

THE TROPICAL ISLAND NATION OF Grenada in the Caribbean has been developing its natural parks over the past decade. ROM botanists recently conducted a research project in Levera Park along the dry north coast of Grenada, which features a brackish-water pond cut off from the sea by a sand beach. The pond is surrounded by lush mangrove swamp forest, which has been frequently logged for firewood and to make charcoal. Birds, fish, and crabs thrive in this habitat, which is continually enriched by plant debris deposited during high-tide flooding. A special group of tropical trees, the mangroves, are adapted to the wet, salty soil in Levera: both red and black mangrove have roots that reach up out of the soil in search of oxygen, which is scarce in the peaty soil. In this way submerged roots are able to get the oxygen they need for metabolism. Red mangrove grows best on the pond margin; buttonwood, black mangrove, and manchineel trees, in turn, thrive on progressively drier soils, moving away from the pond. Beneath the mangroves the wet, oxygen-poor soil discourages the decay of dead leaves, so peat accumulates. Sea level has risen in the past several thousand years, and peat accumulation has kept pace; indeed, peat thickness is a useful measure of this sea-level rise.

In 1992 we lifted a sediment core from beneath the mangrove forest. This soil was the subject of a Master's thesis in botany by Melanie Sharman at the University of Toronto. Sharman worked out prehistoric sea-level rise and the history of mangrove logging and agriculture on the surrounding upland.

Our coring devices were essentially pipes, two or five cm in diameter and up to a metre long, with a handle on the end. We selected a dryish coring site surrounded by manchineel trees. To take a core sample, we simply pushed the pipe into the sediment and pulled it back out. The pipe was thus filled with sediment, which was forced out and wrapped, later to be taken to the Museum for fossil-pollen analysis. The pipe was then reinserted into the hole to take the next core segment; we continued to extract successively deeper core segments in the same manner until we were stopped by dense sand. The core eventually penetrated through organic clay and peat to the beach sand at a depth of 430 cm.

Back in the laboratory, pea-sized samples were taken at 10-cm intervals

McAndrews, J.H. 1996. Habitat history at Levera National Park, Grenada. Rotunda 28(4):41-42.

along the core, and fossil pollen grains in them were concentrated for identification and counting under the microscope. Identifications were made by comparing the samples with pollen grains taken from flowers of the trees now growing in Levera Park. At least 100 pollen grains were counted per interval, and percentages of each flower type were calculated and graphed in ascending order from the deepest level to the upper core segment. The graphed results dramatically illustrate how percentage trends over the 2000 years reflect the succession in the forest that resulted from changes in the environment.

Since our core was rich in organic carbon, sections from three levels were radiocarbon dated. Adjusting the dates to calendar years by comparing our data with data from radiocarbon-dated tree rings we concluded that the brackish pond at Levera Park was a sandy bay until it was cut off from the sea 2000 years ago. From that time peat accumulated beneath red mangrove and buttonwood, keeping pace with the sea level, which rose about two metres.

About 300 years ago the site underwent a sudden change: red mangrove and buttonwood became much less plentiful, and black mangrove and manchineel trees, which had previously been rare, now flourished. This succession was accompanied by—perhaps caused by—the deposition of almost two metres of clay that eroded from the surrounding upland during the bygone days of sugar-cane plantations. This clay nearly fills the pond, which today is only three metres deep. Scrubby pasture has since replaced the sugar-cane fields, reducing the erosion of the clay, and as climate warms in the next century, we anticipate that sea level will rise accordingly and quickly flood the black mangrove forest, returning the habitat to the red mangrove.

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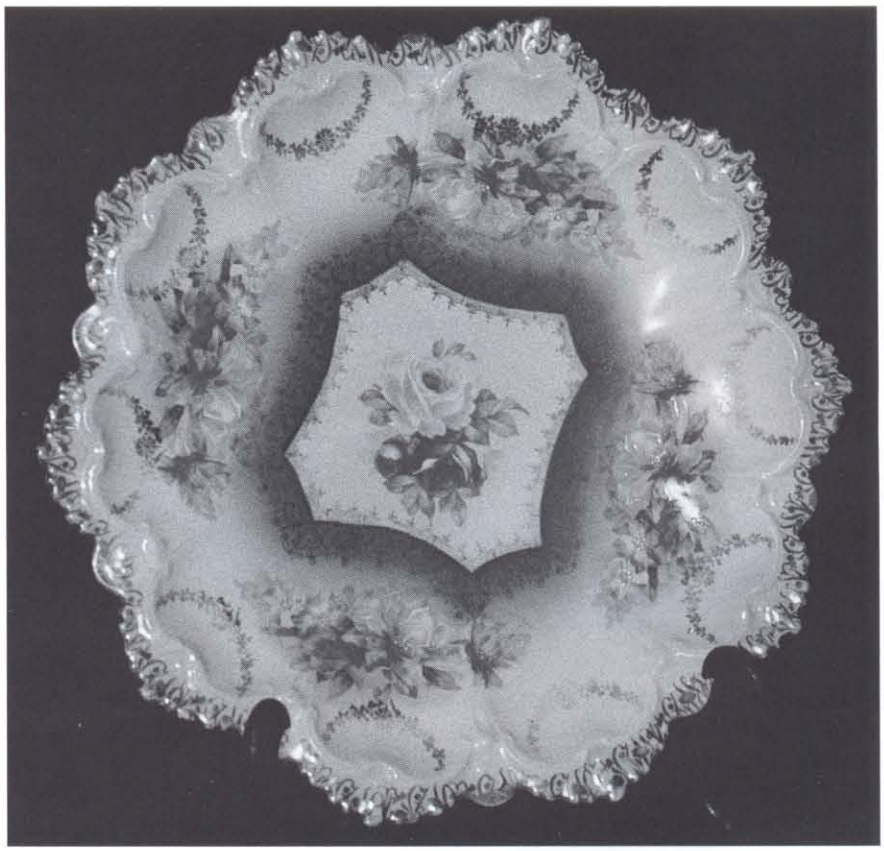
ROM ANSWERS



Dear ROM Answers,
Enclosed are some photos of an old china plate that belonged to my aunt, who died in 1982 at 85 years of age. I have no idea how or where she got this plate. It is 25.4 cm (10 inches) in diameter and appears to be handpainted, including the brushed gold border.

The sculpted three-dimensional edges are scalloped and fluted. The back of the plate bears a symmetrical marking or insignia that appears to be either a two-headed winged creature or two such creatures side by side. Above this graphic are the letters "M.Z." and below it the word "Austria." Circled in the centre back of the plate are the numbers "24," printed vertically, and "933," printed horizontally beneath.

If you possess furniture, silver, glass, metalwork, ceramics, textiles, or small decorative objects that may have an interesting past and have aroused your curiosity, this column is for you. Send a clear black-and-white photograph (or 35-mm colour slide) of the object against a simple background, providing dimensions, a description, any markings, or any known details of its history to: ROM Answers, c/o Rotunda Magazine, *Royal Ontario Museum, 100 Queen's Park, Toronto, Ontario, M5S 2C6. Be sure to enclose a stamped, self-addressed envelope large enough to include any photos that we must return to you with the reply.*

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