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For Immediate Release

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California Water Science Center (<http://ca.water.usgs.gov/>)

## USGS scientists measure loss and age of California Delta peat *Coring shows roughly two-thirds of peat has been lost on Delta islands*

Approximately two-thirds of the original peat soil in the central and western Sacramento-San Joaquin Delta, some of the world's richest farmland, has been lost in less than 150 years through a process known as land-surface subsidence, researchers with the U.S. Geological Survey have found.

That means today's crops are being grown on the remaining one-third of the peat, the bulk of which formed more than 4,000 years ago. The peat was created over millennia from decaying plants and washed-in mineral sediments and comprises the soil of one of California's most productive farming regions.

Land-surface subsidence, largely caused by a process called microbial oxidation, has resulted in the loss of peat soils throughout the Delta. As a result, most of the farmed Delta islands are more than 20 feet below the surrounding waterways and are permanently protected by levees.

"In less than 150 years, we have used up that much peat," said Judith Drexler, a USGS research hydrologist and co-author of the report, "Age Determination of the Remaining Peat in the Sacramento-San Joaquin Delta, California, USA."

Land-surface subsidence threatens the stability of the region's levees, which in turn protect much of California's water supplies. Water flowing through the Delta's levee-protected channels goes to more than 23 million Californians and millions of acres of farmland in the Central Valley. Researchers for USGS and other agencies are looking at ways to reverse subsidence (<http://ca.water.usgs.gov/news/release070809.html>).

Drexler and her co-authors, Christian S. de Fontaine and Donna L. Knifong, found that most of the peat on the four Delta islands they studied is more than 4,000 years old, while the oldest peats date to nearly 7,000 years old. Because the islands studied are very similar to other islands in the central and western Delta, the results can be applied to this whole region of the Delta.

"It took nearly 7,000 years to form, and about two-thirds of the peat has disappeared in less than 150 years," she said.

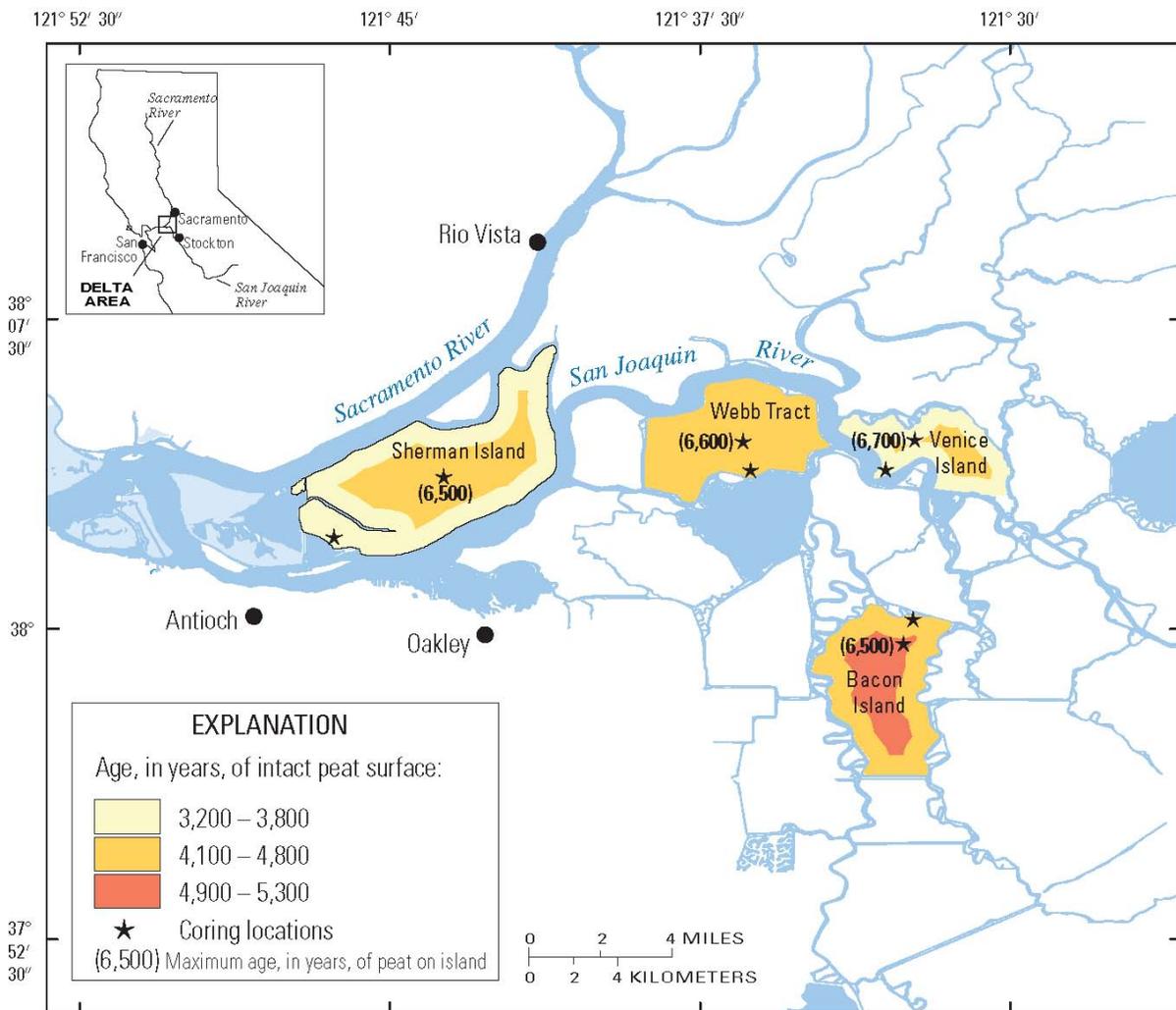
Their project, nicknamed "REPEAT," (**R**ates and **E**volution of **P**eat **A**ccretion through **T**ime) is a multi-collaborator effort between the USGS, UC Davis, and Hydrofocus, Inc. of Davis, CA. In addition to studying and modeling the build-up or accretion of peat in the Delta, they are using the peat as an archive to determine how sea level rose, plant communities changed, sources and flows of sediments varied, and metal concentrations fluctuated (including heavy metals) throughout the history of the Delta.

“The REPEAT project is an excellent example of why we need to conduct basic research to better address applied science questions,” she said. “We are applying interdisciplinary approaches to get better answers for questions regarding how the Delta formed, at what rates peat accreted through time, and what environmental factors affected peat accretion processes.”

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The U.S. Geological Survey's California Water Science Center (<http://ca.water.usgs.gov/>) operates project offices in Sacramento and San Diego where more than 130 scientists bring a broad range of disciplines to modern water-management issues. The center also has nine field offices where scientists and technicians gather hydrologic data on California's surface-water and ground-water resources.

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Modified from U.S. Geological Survey National Hydrography Data Set (NHD), 1:100,000 scale, 2001, Albers Equal-Area Conic Projection

Estimated age of the intact unplowed peat that is found directly below the currently farmed soils in the Delta.