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Reconstruction of a Prehistoric Environment

and its Useful Plants:

Warm Mineral Springs (8So-19), Florida

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The archaeological site (8S0-19) at Warm Mineral Springs is a collapsed cave fed by hot mineral water. Remains of several human burials have been recovered by underwater archaeologists, under the direction of Wilburn Cockrell, from a ledge 45 feet below the surface of the spring which have been radio-carbon dated at 8,200 B.C. Presence of stalactites and stalagmites inside the cave indicate that the water in the sinkhole was 60-90 feet below its present level at that time. Analysis of the artifacts has aroused great interest among archaeologists (Clausen et al. 1975, Royal and Clark 1960) primarily because these are the earliest undisturbed burials in the southeastern United States.

The following work is part of an on-going project to characterize the past and present environments in south Sarasota County and has been generously supported by the Florida Division of Archives, History, and Records.

Besides its archaeological importance, Warm Mineral Springs (8S0-19) is also of considerable botanical importance. Instead of the charred fragments usually associated with archaeological sites, sediments on the 45 foot ledge contain whole leaves, twigs, large pieces of wood, and seeds; this unusual state of preservation has resulted from infusion of the sediments by mineral water containing only tiny amounts of oxygen. Identification of these remains in conjunction with fieldwork will result in a floral reconstruction for the Pleistocene-Holocene interface and may further elucidate effects of glaciation on southeastern United States vegetation.

South Sarasota County bedrock consists of deposits of Key Largo limestone, Caloosahatchee marl, and terrace sands. The prevailing soil is fine, sand loam usually containing sufficient organic matter to give it a dark color. Analysis of soil from Punta Gorda (14 miles southeast of Warm Mineral Springs)

indicated major mineral nutrients are present in the following amounts: nitrogen 0.02%; potassium 0.01%; and phosphorous 0.005% (Sellards 1920). Elevations range between 6-15 feet above sea level. The modern climate may be classed as "tropical savannah" (Craighead 1971). Rainfall averages 50+ inches per year, half of which falls between June and September. Temperatures average between a maximum of 90°F and a minimum of 75° during the summer; in winter these averages are 77° and 55° respectively. Today's vegetation has been characterized as palmetto flatlands (Harper 1921). The dominant tree is Pinus elliottii (slash pine) with a thick undergrowth of Serenoa repens (sawpalmetto) and Aristida spp. (wire grass). Where moisture is sufficient year round and drainage adequate in summer, the understory vegetation consists of Sabal palmetto (cabbage palm), hardwood trees including Quercus laurifolia, (laurel oak), Q. marilandica (bluejack oak), Q. myrtifolia (myrtle oak), Q. virginiana (live oak) and shrub species of Ilex (holly) and Myrica (wax myrtle). At the edges of the Juncus roemarianus (sea rush) marshes bordering the Myakka River north of U.S. Route 41 there are thick stands of Achrosticum aureum (leather fern). Species native to Australia, Casuarina equisetifolia and Melaleuca quinquenervia; and South America, Schinus terebinthifolius (Brazilian pepper tree) are dominants of the flora which borders watercourses and beaches in frost-free areas.

Along the Gulf of Mexico vegetation differs greatly from that described in sixteenth and seventeenth century journals and in 19th century surveyor notes. Spanish explorers (Hallenbeck 1940, MacNutt 1912, Priestly 1928, Ribaut 1927, Robertson 1933, Romans 1961, Shipp 1881, Smith, Varner and Varner 1951) recorded thick forests of tall hardwood trees including liveoak, hickories, magnolias,

mulberries, cherries, and cabbage palms; with large grape vines entwined in the treetops, and with a thick undergrowth of saw palmetto. The area was composed equally of forest and fields; marshes were encountered more frequently close to the Gulf, while further inland the flatland, dotted with clumps of hammock, was tufted with tall pines.

These descriptions are in close agreement with comprehensive studies (Küchler 1964) which have characterized the potential vegetation of south-central Florida as a "Southern mixed-hardwood forest" with the following dominant species: Liquidambar styraciflua (sweet gum), Magnolia grandiflora (bull bay), Pinus elliotii (slashpine), P. taeda (Loblolly pine), Quercus marilandica (bluejack oak), Q. laurifolia (laurel oak), and Q. virginiana (liveoak). Other elements within this forest type include Carya spp., Morus rubra (mulberry), Persea borbonia (red bay), Sabal palmetto (cabbage palm), and Serenoa repens (sawpalmetto). In Sarasota County today only small, isolated stands of this forest remain, where settlement is sparse, in isolated inland areas and along water courses where there is enough moisture to protect the trees from frequent fires.

The date at which this site was utilized by Indians, i.e., the end of the Wisconsin glacial advance, makes environmental reconstruction difficult for several reasons. First, controversy remains over changes in sea level caused by glaciation; specifically, the extent of its retreat and the rate at which it reached present day level. Secondly, published data on forest evolution in south-central Florida and on botanical remains from southeastern U.S. archaeological sites is scant.

Literature search combined with fieldwork conducted during 1975 by

Marguerita L. Cameron and the author indicate that at 8,000 B.C. the vegetation at Warm Mineral Springs was a mixed hardwood forest similar to that described earlier. Palynological profiles from the burial sediments prepared by James E. King support this conclusion. Major components of the vegetation were Quercus spp. (oaks), Myrica (myrtle), Corylus (hazelnut), and Betula (birch). The presence of Fraxinus (ash), Salix (willow), Taxodium (cypress), Typha (cattail), and Ulmus (elm), all rich woods or riverbank genera, are also indicated in the profile. Archaeological remains, identified by Clausen (1975) et al., and by this author (while at the University of Alabama), slash pine, cabbage palm, live oak, laurel oak, hickory, peppervine, and shield fern; all mesic species which are adapted to moderately wet habitats strengthen the conclusion as do the identifications of animal remains by Gregory McDonald (1976), which include forest species such as toad, red-tail hawk, turkey, crow, opossum, rabbit, pine vole, grey squirrel, flying squirrel, raccoon and deer.

Within this forest, a high percentage of plants probably were utilized by the aboriginal inhabitants for food, medicine, and utilitarian items. The following list was compiled from ethnohistoric and modern sources; the classification scheme is that of Long and Lakela (1971).

Pteridophyta

Pteridaceae

Acrostichum aureum L. (leather fern)

habitat: coastal hammocks, shores of brackish water.

use: fiddleheads eaten raw or cooked (Morton 1974b).

Pteridium aquilinum (L.) Kuhn. (bracken fern)

habitat: palm hammocks, pinelands, white sand scrub.

use: fronds used as a cooked vegetable (Morton 1974b, Hedrick, Medsger, Fernald et al.); ground rhizomes made into bread (Hedrick, Medsger); medicinally for intestinal disorders (Krochmal).

AngiospermaeLiliatae

Agavaceae

Yucca aloifolia L. (Spanish bayonet)

habitat: coastal strand and sand dunes.

use: flowers eaten in salads (Fernald et al., Morton 1974b);
buds eaten as a vegetable; stalk boiled and eaten (Morton 1974b);
powdered leaves as a cure for skin disorders (Krochmal).

Alismataceae

Sagittaria graminea Michx. (arrowhead)Sagittaria latifolia Willd. (wapato)

habitat: marshes, shores, sinkholes.

use: rhizomes boiled or roasted and eaten (Morton 1974b, Hedrick,
Medsger, Densmore, Fernald et al.); medicinally utilized as
a diuretic (Harris).

Arecaceae

Sabal palmetto (Walt) Lodd ex Schultes (cabbage palm)

habitat: hammocks, prairie.

use: fruits eaten raw or made into syrup; dried fruit ground for
meal; terminal bud eaten, raw and cooked; pith chewed for
sweetness (Morton 1974b, Hedrick, Medsger).

Serenoa repens (Bartr.) Small (saw palmetto)

habitat: coastal dunes, interior sand hills, pinelands, prairie.

use: terminal bud and fruits edible (Morton 1974b).

Cyperaceae

Cyperus ligularis L. (nut grass)

habitat: mangrove shores, hammocks.

use: tubers eaten raw or roasted (Morton 1974b, Hedrick, Medsger,
Fernald et al.).

Scirpus californicus (C.A. Meyer) Britt. (bulrush)

habitat: swamps, sandy shores.

use: roots eaten (Hedrick, Medsger, Densmore, Fernald et al.);
rootstock ground into flour (Fernald et al.); rushes made
into mats and toys (Densmore).

Marantaceae

Thalia geniculata L. (arrowroot)

habitat: marshy borders of swamps, lakes, and ditches; pine
flatwoods.

use: inner portion of rhizome cooked and eaten (Morton 1974b).

Pontederiaceae

Pontederia lanceolata Nutt. (pickerelweed)

habitat: freshwater marsh and swampy ditches, moist soil.

use: seeds may be eaten fresh, boiled as a cereal, or dried and ground into flour (Morton 1974b).

Smilacaceae

Smilax bona-nox L. (greenbrier)

habitat: coastal plains

use: fruits chewed like gum (Morton 1974b); tuberous roots called contichatee cooked and eaten when young, when mature ground and mixed with cornmeal to make bread (Morton 1974b, Medsger, Fernald et al.); roots used to make tea (Morton 1974b, Fernald et al.); young green shoots used as a potherb (Morton 1974b).

Typhaceae

Typha domingensis Pers. (southern cattail)

habitat: brackish coastal marshes, ponds.

use: rootstock boiled and eaten as potatoes or macerated and boiled to yield a syrup; when ground it yields a flour; shoots are peeled and eaten raw; flower spikes may be eaten raw or cooked; pollen may be added to bread dough; seeds are roasted and eaten (Morton 1974b, Hedrick, Medsger, Fernald et al.); culms made into mats and baskets (Densmore); roots used to treat skin wounds, diarrhea, and gonorrhea (Krochmal).

AngiospermaeMagnoliatae

Aquifoliaceae

Ilex cassine Walt. (dahoon)

habitat: bayheads, low ground.

use: dried roasted leaves made into tea, drunk only by men (Morton 1974b, Hedrick, Medsger); leaves act as an emetic and diuretic to treat diabetes, gout, smallpox, kidney stones (Morton 1974a).

Asteraceae

Bidens pilosa L. (beggar ticks)

habitat: disturbed sites, sandy soil.

use: young leaves cooked as spinach (Morton 1974b).

Gnaphalium purpureum L. (cudweed)

habitat: disturbed sites, especially on sandy soil.

use: cough syrup for pulmonary and intestinal catarrh (Harris, Morton 1974a); leaves smoked (Morton 1974a).

Pterocaulon pycnostachyum (Michx) Ell. (rabbit tobacco)

habitat: pinelands, disturbed sites, sandy soil.

use: root taken for colds and menstrual cramps, for backache (Morton 1974a).

Campanulaceae

Lobelia feayana A. Gray (bay lobelia)

habitat: pinelands, endemic to Florida.

use: as a hot application for swellings sprains, bruises (Harris).

Cucurbitaceae

Momordica charantia L. (wild balsam apple)

habitat: hammocks, disturbed sites on the coastal plain.

use: seeds and body of the fruit emetic and purgative, may be eaten after washing and cooking in salty water (Morton 1974b, Hedrick); leaves used as flavoring (Morton 1974b).

Ebenaceae

Diospyros virginiana L. (persimmon)

habitat: widely distributed.

use: fruit eaten raw or cooked (Morton 1974b, Medsger); dried and ground for use in bread (Morton 1974b, Hedrick, Fernald et al.); called mespilorum by LeMoyné in Florida (Hedrick); medicinally roots, bark used to treat diarrhea, dysentery, hemorrhage (Harris, Krochmal).

Euphorbiaceae

Cnidioscolus stimulosus (Michx.) Engelm. and Gray (tread-softly)

habitat: pinelands and beaches.

use: root cooked and eaten; root taken to increase potency (Morton 1974b).

Fagaceae

Quercus incana Bartram (blue-jack oak)

habitat: dry, sandy soil

Q. laurifolia Michx. (laurel or willow oak)Q. myrtifolia Willd. (myrtle oak)

habitat: dry sandy ridges, scrub vegetation, and coastal dunes.

Q. virginiana Mill. (live oak)

habitat: sandy soil, coastal dunes, oak scrub.

use: acorns eaten and utilized as an oil source (Morton 1974b, Hedrick, Fernald et al.); wood used for awls (Densmore); bark to heal skin irritations, sore eyes, dysentery (Harris, Krochmal).

Lamiaceae

Satureja rigida Bartr ex Benth (pennyroyal)

habitat: pinelands, endemic to Florida.

use: for beverage and for flavoring (Medsger).

Lauraceae

Persea borbonia (L.) Spreng (red bay)

habitat: all soils at margins of swamps and hammocks.

use: leaves for flavoring (Morton 1974b, Medsger, Fernald et al.); leaves for tea (Morton 1974b).

Moraceae

Morus rubra L. (red mulberry)

habitat: hammocks, woods, pinelands.

use: seen by DeSoto in Florida (Hedrick); fruits eaten raw or preserved (Morton 1974b, Hedrick, Medsger, Fernald et al.); fruit drunk for fever, bark used for worms and as a laxative (Krochmal).

Myricaceae

Myrica cerifera L. (wax-myrtle)

habitat: hammocks, wet sandy soil. borders of sinkholes, swamps.

use: leaves and fruits for flavoring (Morton 1974b, Hedrick, Fernald et al.); leaves smoked (Morton 1974b); leaves used as a beverage to cure aching back and diarrhea; combined with pine tops and cudweed to cure colds (Morton 1974a).

Polygonaceae

Polygonum hydropiperoides Michx. (knotweed)

habitat: inland swamps, moist soils, low woods.

use: roots eaten (Hedrick); leaves used in salads (Medsger); flowers and leaves to relieve pains in the stomach (Densmore); leaves and stems to relieve skin conditions, joint swellings, and gout (Harris); used as an antiseptic and astringent (Morton 1974a); used to relieve internal bleeding and uterine disorders (Krochmal); used to disperse fleas (Fernald et al.).

Portulacaceae

Portulaca pilosa L. (pink purslane)P. oleracea L. (purslane)

habitat: disturbed sites, sandy pinelands

use: shoots and leaves eaten raw or cooked as greens (Morton 1974b, Hedrick, Medsger, Fernald et al.); seeds used in mush and bread (Morton 1974b, Fernald et al.); used medicinally for urinary infections (Harris).

Rhizophoraceae

Rhizophora mangle L. (red mangrove)

habitat: coastal areas and embayments.

use: hypocotyl may be eaten, leaves used for tea (Morton 1974b).

Salicaceae

Salix caroliniana Michx. (coastal plain willow)Salix nigra Marshall (coastal plain willow)

habitat: near ponds, swamps, sloughs, and in low ground.

use: bast ground into flour (Fernald et al.); leaves smoked (Densmore); bark to treat severe colds and fever, chronic diarrhea, lumbago, asthma (Densmore, Morton 1974a, Krochmal).