Observations
on the Vegetative Community of the Beach Dune Ridge
North of Wiggins Pass, Northern Collier County
by John G. Beriault

On August 27, 1990, members of the Naples Chapter of the Florida Native Plant Society took a field trip to the County/State Preserve at Lely-Barefoot Beach north of Wiggins Pass. The weather was typical for a hot, humid, late-summer day; complete with a steady rain shower and lowering gray skies filled with masses of thunderclouds moving out of the north and west over the Gulf of Mexico. The time of day was late afternoon/early evening, and the field trip ended when it became too dark to identify the plants.

The following characterizations and comments on the beach dune plant community was engendered in part by my own observations and in part by those of the other members of the group.

The beach dune ridge and its attendant plant community found a quarter-mile north of Wiggins Pass is typical for most of what existed historically in northern Collier County and southern Lee County. The dune ridge itself is a gently sloping rise of fine quartz beach sand and ground-up marine shell (sometimes referred to as "shell hash") created by wind and wave activity over several centuries. This dune ridge is by no means massive—the east-west axis from water's edge to where it abruptly drops into mangrove swamp is usually 25 to 35 meters (80 to 120 feet). The height at dune crest seldom exceeds two meters (6 feet) and is usually 1½ meters (4½ to 5 feet) above mean high tide. This sand/shell dune mantle often overlies a "shell", or layer, of relict mangrove peat that has been radiocarbon-dated in some locations at around 2,500 to 3,000 years Before Present (B.P.). This peat feature, complete with old mangrove stumps and prop-root impressions, is evidence of advancing and retreating shorelines, sea-level fluctuations, and wind/wave energetics over the last several thousand years.

Other indirect evidences of change are artifacts of stone, shell, and pottery intermixed with the sand and shell of the dune ridge. The age of this material can range from 8,000 years B.P. to present, and much of it appears to be re-deposited randomly by natural activity. Some of the material such as archaic stemmed projectile points and lithic debitage (by-product of stone tool manufacture) apparently is washing in from "drowned" sites offshore. Other material such as Spanish Olive Jar pottery from the Colonial period may be nearly in situ.

Compared to the Atlantic coast of Florida, the southwest Florida coast is one of relative calm and stability with few dynamic changes—the major exception being periodic storms and hurricanes which can cause dramatic shifts in coastal configuration and plant community composition.

The area of beach dune we explored has changed markedly in the last thirty-plus years. A small pass or outlet to the Hellsgate/South Hickory Bay area was closed, partially by storm blockage and partially by deliberate filling in the early 1950s. Certain exotic vegetation such as Australian pine (Casuarina equisetifolia L.) and Brazilian pepper (Schinus terebinthifolius Raddi) have made considerable inroads and displace a significant portion of the native plant community. Other impact has occurred from vehicular traffic on the dune ridge and beach, and the creation of a paved road ½ mile farther than needed south of the main parking lot of the preserve.

The beach dune area can be divided into five “zones” which run in bands parallel to the shoreline of the Gulf of Mexico. From west to east they are: the beach; the fore dune; the dune crest; the back dune; and the mangrove swamp behind the dune proper. The beach is the sloping zone of (nearly daily) wave-washed sand from water's edge east to the small 20 to 30 cm. (8 to 12 inch) high truncation or escarpment marking the furthest extent of (routine) high tide. The fore dune is the area from the truncation east to the crest of the dune. The dune crest zone can be arbitrarily defined as the area 10 meters (33 feet) wide—5 meters both east and west of the highest point of the dune. The back dune is the sometimes abruptly dropping remainder of the dune ridge as it falls off east into the mangrove swamp lying behind the beach.

The dune crest is the highest point in elevation, and frequently sustains the tallest vegetation.

Storm surge and other forces have occasionally created “fans” or terraces of sand and shell which intrude a considerable distance away from the beach into the mangroves. These areas can contain surprisingly stable and diverse hammock plant communities, protected from beach energetics by the fronting dune crest vegetation. The mangrove zone, although not strictly part of the beach dune community, adjoins and intergrades with it. This zone can be defined as the low-lying mangrove swamp/back bay area lying east of the coastal dune ridge.

The beach zone has little or no permanent vegetation. Various “sea beans” or wave-borne seeds will frequently sprout...
and flourish for a brief while before being washed away or trampled. These seeds sometimes sprout in windrows of seaweed, turtlegrass, and flotsam. White mangrove seedlings (Laguncularia racemosa (L.) Gaertn. f.) are frequently observed at certain times of the year. However, the beach is a dynamic zone and nearly all of these attempts fail. In the extreme eastern portion of the beach zone are semi-permanent attempts by plants to establish a foothold. Beach bean (Canavalia rosea (Sw.) DC.) and railroad vine (Ipomoea pes-caprae (L.) R. Brown) will send runners onto the beach. Small seedlings of Spanish cork or seaside mahoe (Thespesia populnea (L.) Sol. ex Correa) can establish themselves for a time.

To the east, beyond and above the high tide truncation into the fore-dune zone, low bushy clusters of beach elder (Sorbus marginata (L.) Heron W.) are semi-permanent Attempts by the extreme eastern portion of the beach and nearly all of these attempts fail. In observed at certain times of the year. Beach elder (Sorbus marginata (L.) Heron W.) is distinctive seed clusters and growth habit of sea oats make them appear the dominant plant in the zone.

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(Casasia clusitifolia (Jacq.) Urban); myrsine (Myrsine guianensis (Aubl.) Kuntze); necklace pod (Sophora tomentosa (L.)); and white indigo berry (Randia aculeata (L.).)

On the exposed beachward edge of the coppice are frequently found clusters of Spanish bayonet, or yucca, (Yucca aloifolia (L.).) In the clearing of sand and weathered crushed shell amidst the coppice are white-flowered periwinkle (Catharanthus roseus (L. G. Don), an introduced escape from west Africa; prickly pear cactus (Opuntia stricta var. dillenii (Ker.) L. Benson); two or more species of adropogon grass (Andropogon spp.); “Wheel" grass (sp. unknown); ground cherry; a possible piperwort (Eriocaulaceae family); galingale grass (Cyperus sp.); natal grass (Cyperus haspan (L.)); panic grasses (Panicum, six or more species); seaside evening primrose (Oenothera venosa (L.)); and in occasional patches, common ragweed (Ambrosia artemisifolia (L.).)

In the barest, most barren sandy areas are low spreading formations of a reddish spurge (Euphorbia sp.) Wherever there has been recent disturbance (usually man-made) there is usually found an abundance of shepherd's needle, or Spanish needle (Bidens pilosa (L.)) almost as annoying as the sandspur due to the similar nature of its clinging seed, but certainly less painful.

From the dune crest east to the back dune, the vegetative character shifts from coppice to maritime cabbage palm hammock. The increased shelter, shade, and humidity foster an increasingly varied collection of plant species which now augment rather than replace most of the above-mentioned dune crest vegetation. Among these are: Spanish stopper (Eugenia foetida Pers.) which often grows in stands; gumbo limbo (Bursera simaruba (L.) Sarg.), which in this setting is usually stunted, slender, and solitary-trunked; hog plum or tallowwood (Ximenia americana L.) wild olive, or Florida privet (Forestiera segregata (Jacc.) Krug & Urban); coral bean (Erythrina herbacea L.); shiny-leaved wild coffee (Psychotria nervosa Sw.); snowberry (Chioscoca alba (L.) Hitchc.) saltbush (Baccharis halimifolia var. angustior DC.); an occasional clump of saw palmetto (Serenoa repens (Bartr.) Small); and even southern sumac (Rhus copallina L. var. leucantha (Jacc.) DC.).

Intemixed with and climbing upon the above vegetation are numerous vines (many of them thorny) such as: catbrier (Smilax bona-nox L. and S. auriculata Walt.); nickerbean (Calapinia bonduc (L.) Roxb.); a milk pea (Cynanchum sp.); and the parasitic love vine, Cassytha filiformis L.

Several epiphytes were also observed in this zone, with the majority found to be growing in the bootjacks of cabbage palms, such as serpent fern (Phlebodium aureum (L.) Smith); and the shoestring fern (Vittaria lineata (L.) Smith). Also observed, fallen on the ground, was a detached cluster of butterfly orchids (Encyclia tampensis Lindl.).

Along the edges of clearings in the back dune hammock are found: white-flowered lantana (Lantana involucrata L.); saffron plum (Bumelia celestrina Kunth); the low-growing, creeping pineland snowberry (Chioscoca pinetorum Britt); and, farther east into the back dune, cat's claw (Pithecocymbium unguis-cati (L.) Benth.)

Melinthera (Melinthera parvifolia Small) can be found in dense bushy formations along shaded clearing margins. Stands of white stopper (Eugenia axillaris (Sw. Wildl.) can be very occasionally noted in the most sheltered portions of the maritime cabbage palm hammock.
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The increased shelter, shade, and humidity of the maritime cabbage palm hammock on the back dune fosters an increasingly varied collection of plant species.

Sandhill prickly pear cactus (Opuntia compressa var. austrina (Small) Benson) along the edges of the back dune clearings, under the fringes of seagrasses or saw palmettos, can be seen a large number of gopher tortoise holes, indicating a sizable colony.

To the east, the back dune drops sharply into the mangrove swamp. The sand and shell of the coastal dune ridge abruptly intergrades with low-lying mangrove peat. On this interface is buttonwood (Conocarpus erectus L.); Christmas berry (Crossopetalum ilicifolium (Poir) Kuntze); and directly off the dune, often in standing brackish water, leather fern (Acrostichum aureum L.). In this same location grow a series of low plants such as: salt wort (Batis maritima L.); glasswort (Salicornia sp.); sea purslane (Sesuvium portulacastrum (L.) L.); and sea lavender (Limonium carolinianum (Walt.) Britt.).

The mangrove forest lying east of the beach dune ridge is dominated by the three mangroves: white mangrove (Laguncularia racemosa (L.) Gaertn. L.); black mangrove (Avicennia germinans (L.) L.); and red mangrove (Rhizophora mangle L.).

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