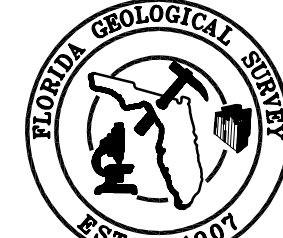


GEOLOGIC MAP OF THE EASTERN PORTION OF THE U.S.G.S.
1:100,000 SCALE ARCADIA QUADRANGLE,
SOUTH-CENTRAL FLORIDA

BY
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1999



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The eastern portion of the U.S.G.S. 1:100,000 scale Arcadia Quadrangle lies at the junction of four geomorphic districts - the Sarasota River District, the Central Lakes District, the Barrier Island Sequence District and the Everglades District (Scott, in prep.). With the exception of the Central Lakes District, the map area is drained by surface streams and rivers. The Central Lakes District is karstic and internally drained. Geomorphic features recognized include the Palmdesoto Plain (Sarasota River District), the Lakeland-Lake Wales Ridge Complex (Central Lakes District), the Osceola Plain (Barrier Island Sequence District) and the Okeechobee Plain (Everglades District) (Scott, in prep.). Elevations in the map area range from less than 30 feet (9.1 meters) above mean sea level (MSL) near Lake Okeechobee, to more than 200 feet MSL (61 meters) on the Lakeland-Lake Wales Ridge Complex in the central portion of the map. Naturally occurring maps in the map area fall into two categories. First, the lakes associated with the Lakeland-Lake Wales Ridge Complex, which formed as the result of karst processes, and second, the lakes occurring east of the ridge, which are remnants of coastal lagoons.

Very few natural exposures of sediments, other than undifferentiated Quaternary siliciclastics (Qu), occur within the study area. Natural exposures of older sediments are sometimes present where stream cuts and excavations for retention ponds. Additional information was gathered through the inspection of cores, drill cuttings, driller's logs, and water-well permits.

Mapping of undifferentiated surficial siliciclastics provides little information regarding geology of the region. As a result of this factor, the practice of mapping the first identifiable lithostratigraphic unit within 20 feet (6.1 meters) of the surface is adopted. If the undifferentiated Tertiary and/or Quaternary sediments exceeds 20 feet (6.1 meters) in thickness, they are mapped as Qu, TQuc, or TQd. In cases where undifferentiated Tertiary and/or Quaternary sediments were less than 20 feet (6.1 meters) thick, the underlying lithostratigraphic unit is mapped. Cross sections A-A' through F-F' reflect the presence of these sediments throughout the mapped area.

The Miocene-Pliocene Peace River Formation, Hawthorn Group (Thp) disconformably overlies the Arcadia Formation in the study area (Scott, 1988). It is the oldest unit shown on the cross sections, but does not occur on the geologic map. This unit consists of variably phosphatic siliciclastics and carbonates. The carbonate matrix and beds are usually dolomite/dolostone. These sediments are generally unconsolidated to poorly indurated, with some beds containing fossils. In this area, dolosites and dolostones assigned to the Peace River Formation may belong to the Tamiami Formation, but further research and age-dating of these units is necessary to determine the unit into which these sediments should be placed.

The Tertiary Cypresshead Formation (Tc) disconformably overlies the Peace River Formation in the map area. It consists of fine to very coarse siliciclastics with a variable clay component and is unfossiliferous. The Cypresshead Formation comprises much of the Lakeland-Lake Wales Ridge Complex in the map area.

The undifferentiated Tertiary-Quaternary reworked Cypresshead (TQuc) sediments disconformably overlie, at least in part, the Peace River Formation. In part, these sediments may be laterally equivalent with the upper Peace River Formation. The TQuc sediments consist of fine to very coarse siliciclastics with a variable clay matrix. In some areas, (such as in W-17820 and W-17821 on cross section D-D'), carbonate mud and phosphate are present in the TQuc. These sediments occur

at elevations in excess of 75 feet (22.9 meters) and are often more coarse than the undifferentiated Quaternary sediments.

An unnamed siliciclastic unit occurs in the subsurface of the southern portion of the map area. This unit is an uplap occurrence of sediments described in Collier County by Edwards et al. (1998). The sediments consist of fine to coarse siliciclastics with variable amounts of shell, clay and phosphate. This unit does not occur at the surface in the map area. This unit may be a lateral equivalent of portions of the Peace River Formation, Cypresshead Formation, and the undifferentiated Tertiary-Quaternary fossiliferous sediments.

The undifferentiated Tertiary/Quaternary fossiliferous sediments (TQsu) disconformably overlie the Peace River Formation in the southern portion of the map area. There are problems in mapping these sediments as separate units because their historical definitions are biostratigraphic, not lithostratigraphic (Scott and Allmon, 1990; Scott and Wingard, 1995). Scott (1993) informally applied the name Okeechobee formation to these sediments in an effort to provide a lithostratigraphic framework for these sediments. Since the Okeechobee formation has not been formally proposed, however, we have combined these undifferentiated Tertiary/Quaternary fossiliferous sediments for the purposes of this map.

The undifferentiated Tertiary/Quaternary fossiliferous sediments may include Pinecrest, Caloosahatchee, Berrinton, and Fort Thompson faunas. Lithologies of the TQsu consist of clay, silt, sand, phosphate, and carbonate in varying admixtures. Virtually all of the individual lithologies are fossiliferous, containing some of the most macrofossiliferous sediments in the Atlantic Coastal Plain.

The top of the TQsu sediments exhibits a fair degree of relief. Within some areas mapped as TQsu, more than 20 feet (6.1 meters) of undifferentiated sediments (Qu) occasionally occur. Conversely, in areas mapped as Qu, for example along the Kissimmee River, TQsu sediments occasionally occur within 20 feet (6.1 meters) of the surface. For discussions of these sediments, and the contained fossils refer to Petuch (1994), Scott and Allmon (1990) and Scott and Wingard (1995).

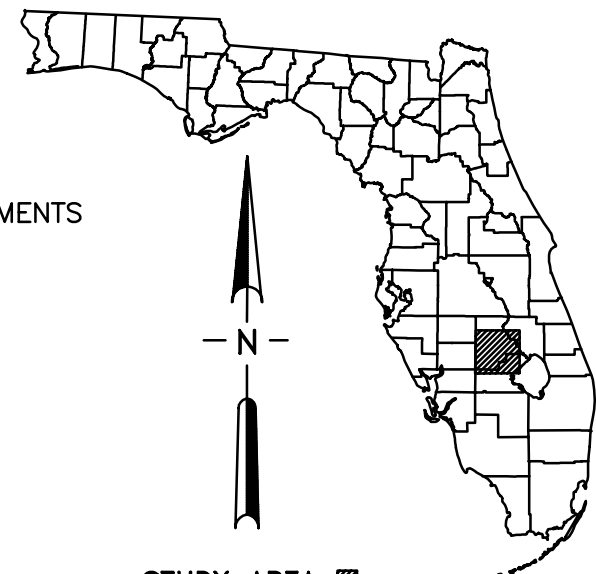
Undifferentiated dunal sands of presumed Tertiary-Quaternary age (TQd) were subdivided from the TQuc based on geomorphic expression. These are fine to medium grained, well-sorted sands.

The undifferentiated Quaternary sediments (Qu) overlie the Peace River Formation disconformably, and the TQsu conformably to disconformably. Lithologically, the Qu consists of siliciclastics ranging from clays to coarse sands. Occasionally, shell fragments may occur near the base of the unit. Qu covers virtually the entire area, but is mapped only in those areas where it is more than 20 feet (6.5 meters) thick (see cross sections A-A' to F-F').

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- EXPLANATION
- Qu UNDIFFERENTIATED QUATERNARY SEDIMENTS
 - TQuc UNDIFFERENTIATED TERTIARY/QUATERNARY SEDIMENTS (REWORKED FROM CYPRESSHEAD FM.)
 - TQsu UNDIFFERENTIATED TERTIARY/QUATERNARY FOSSILIFEROUS SEDIMENTS
 - TQd TERTIARY/QUATERNARY DUNE SEDIMENTS
 - Tc TERTIARY CYPRESSHEAD FORMATION
 - STATE/COUNTY HIGHWAY
 - COUNTY LINE
 - INDIAN RESERVATION BOUNDARY
 - STATE PARK BOUNDARY
 - CROSS SECTION LINE
 - F.G.S. WELL NUMBERS
 - SELECTED WELLS (CORES AND CUTTINGS)



STUDY AREA ■
0 0.5 1 2 3 4 MILES
0 1 2 3 4 5 6 KILOMETERS

SCALE
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