Abstract Title: Charcoal Records of Long-Term Fire History in the National Key Deer Refuge, Florida Keys, U.S.A.

is part of the Paper Session: Fire, Humans, and Climate - Untangling Relationships, Causes and Consequences II

scheduled on Saturday, 2/25/2012 at 10:00 AM.

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Abstract: Established in 1957 to protect the endangered Key deer (Odocoileus virginianus clavium) and other wildlife, the National Key Deer Refuge (NKDR) in the lower Florida Keys manages important areas of pine rockland, a globally endangered ecosystem unique to south Florida and the Bahamas. Pine rockland is a fire-maintained community that requires periodic fire to eliminate invading hardwoods. In south Florida, pine rockland dominated by Florida slash pine (Pinus elliottii var. densa) once covered 75,000 ha, but 20th-century fire suppression and agricultural and residential development reduced its range by 90%. We are developing charcoal records from five ponds on Big Pine and No Name Keys in the NKDR to explore links between late Holocene fire, climate, and human activity, and to assist the NKDR in developing management plans and gaining homeowner support for prescribed fires. The ponds are small (<10 m diameter) solution holes with sediments reaching back 1700-4500 years. All were historically (1959 land classification) surrounded by pine rockland. Dendrochronological reconstructions from fire-scarred slash pines reveal frequent fires near coring sites in the last two centuries. Microscopic and macroscopic charcoal profiles extend the evidence of past fire, and pollen assemblages and macrofossil identifications document the long-term importance of pines. Patterns of Late Holocene charcoal influx may be driven primarily by climate, given the sparse evidence of prehistoric human occupation. Comparing the NKDR charcoal records with those from Bahamian pine rockland sites helps tease apart the roles of climate and humans in driving fire occurrence in both areas.

Keywords:
Fire, Climate, Holocene, Florida Keys, Pine Rockland