Florida Keys Wildlife and Environmental Area (Monroe County) Photo by Amy Jenkins

Keys Tidal Rock Barren

Description: Keys tidal rock barren is a flat rockland in the supratidal zone with much exposed and eroded limestone and a sparse cover of stunted halophytic herbs and shrubs. The limestone has a white color, in contrast to the grey or black color of the limestone exposed in lower tidal zones (Stephenson and Stephenson 1950), and it is inundated by salt water only during the extreme equinoctial high tides (Ross et al. 1992). The amount of exposed rock varies from practically zero to over fifty percent of the area. Patches of low, salt-tolerant herbaceous species include seaside oxeye (*Borrichia frutescens* and *B. arborescens*), perennial glasswort (*Sarcocornia perennis*), saltwort (*Batis maritima*), shoregrass (*Monanthochloe littoralis*), saltgrass (*Distichlis spicata*), seashore dropseed (*Sporobolus virginicus*), and marsh fimbry (*Fimbristylis spadicea*). Buttonwood (*Conocarpus erectus*) is the dominant woody plant. It varies from stunted, sprawling, multi-stemmed shrubs to tree size. Other typical woody species are red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), white mangrove (*Laguncularia racemosa*), and christmasberry (*Lycium carolinianum*). At the transition to upland vegetation, buttonwood may be joined by a variety of shrubs and stunted trees of inland woody species, including saffron plum (*Sideroxylon celastrinum*), wild cotton (*Gossypium hirsutum*), Florida Keys blackbead (*Pithecellobium keyense*), bay cedar (*Suriana maritima*), white indigoberry (*Randia aculeata*), wild dilly (*Manilkara jaimiqui*), poisonwood (*Metopium toxiferum*), joewood (*Jacquinia keyensis*), Florida mayten (*Maytenus phyllanthoides*), and barbed-wire cactus (*Acanthocereus tetragonus*).

Characteristic Set of Species: buttonwood, christmasberry, perennial glasswort, saltwort, seashore dropseed, shoregrass

Rare Species: Rare plants on Keys tidal rock barren include joewood (*Jacquinia keyensis*) and Florida semaphore cactus (*Opuntia corallicola*).

Range: Keys tidal rock barren is confined to the Florida Keys on limestone bedrock along shores facing both Florida Bay and the Straits of Florida.

Natural Processes: Keys tidal rock barren occurs above the daily tidal range, but is subject to flooding by seawater during extreme tides and storm events. Salt spray from coastal winds, as well as shallow soils, may limit height growth of woody plants. Aside from bare rock substrate, discontinuous patches of thin marl soils may be present. Depressions with deeper peat and mud soils support tidal swamp and tidal marsh communities, dominated respectively by mangroves or Gulf cordgrass (*Spartina spartinae*; Ross et al. 1992). Fires are rare to non-existent in this community.

Community Variations: Salt-tolerant grasses (e.g., seashore dropseed, shoregrass, saltgrass) tend to form the dominant herbaceous component in the supratidal portions of this community in the Lower Keys, whereas succulent halophytes (e.g., saltwort, shoreline perennial glasswort, seaside oxeye) are more prevalent in the Upper Keys. Ross et al. (1992) attribute this difference to differences in salinity, with the less permeable Miami oolite keeping the Lower Keys rock barrens less saline than rock barrens on the more permeable Key Largo limestone of the Upper Keys.

Associated Communities: At its seaward edge, Keys tidal rock barren borders regularly inundated tidal swamp. Areas with greater than 50 percent cover of red and black mangroves, either normal height or dwarfed, are considered tidal swamp; areas with less than 50 percent cover of mangroves are Keys tidal rock barren. Keys tidal rock barren may also border tidal marsh dominated by Gulf cordgrass, usually found growing on mud in depressions in the upper tidal zone (Ross et al. 1992). At its upper inland limit, Keys tidal rock barren often borders the thorn scrub variant of rockland hammock, which, though it may have buttonwood, is mainly dominated by non-halophytic woody species such as blolly (*Guapira discolor*), Florida Keys blackbead (*Pithecellobium keyense*), bayleaf capertree (*Capparis flexuosa*), poisonwood (*Metopium toxiferum*), and brittle thatch palm (*Thrinax morrisii)*. In other situations Keys tidal rock barren may grade directly into rockland hammock communities with a well-developed forest structure, or into pine rockland.

Management Considerations: Ditches cut into the limestone rock for mosquito control are now prevalent in this community, as well as in the tidal marsh and tidal swamp communities. These may have had the effect of smoothing out the salinity variations in this supratidal zone by draining off salt water after storms and allowing salt water to penetrate further inland on normal tides; such ditching should be avoided, or at least kept to a minimum, in the future.

Reference Sites: Florida Keys Wildlife and Environmental Area, especially coastal areas of Sugarloaf Key south of US 1 (Monroe County), Dagny Johnson Key Largo Hammock Botanical State Park (Monroe County), Curry Hammock State Park (Monroe County), Lignumvitae Key Botanical State Park (Monroe County)

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Global and State Rank: G4/S3

Crosswalk and Synonyms: In the 2009 update the community formerly known as "coastal rock barren" has been split into an upland community called "Keys cactus barren" and a tidally influenced community called "Keys tidal rock barren."

Kuchler	105/mangrove
Davis	9/mangrove swamp forests and coastal marshes
SCS	14/ tropical hammocks
	19/mangrove
Myers and Ewel	south Florida rockland
SAF	106/mangrove
FLUCCS	642/saltwater marshes
	651/tidal flats
Whitney	beach dune systems-coastal rock barren

Other synonyms: exposed rocky platform-white zone (Stephenson and Stephenson 1950), succulent supratidal scrub and graminoid supratidal scrub (Ross et al. 1992), coastal rock barren (FNAI and FDNR 1990)

References:

Florida Natural Areas Inventory and Florida Department of Natural Resources FNAI and FDNR. 1990. Guide to the natural communities of Florida. Florida Natural Areas Inventory and Florida Department of Natural Resources, Tallahassee, Florida. Available at: http://www.fnai.org/PDF/Natural_Communities_Guide.pdf

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