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A DESCRIPTION OF THE COMMUNITIES OF NORTH ANDROS ISLAND, BAHAMAS

Kathryn H. Ford
Kamalame Cove
Andros Island
Bahamas

ABSTRACT

Andros Island is the largest and one of the least known of the Bahamian archipelago. North Andros, one of the three inhabited islands of Andros, can be split into six distinct ecological communities: deep water; reef and back reef; lagoons, creeks, and flats; coastal community; high coppice and pineyard; and lowlands (savanna, swash, and scrub). This brief discussion does not isolate unique communities such as blue holes and wet coppices. Yet in order to facilitate practical, successful, and sustainable use of the islands' natural resources, all of the communities must be fully understood.

INTRODUCTION

As a student-teacher for two years at Forfar Field Station on Andros Island, I struggled with the apparent lack of information about the vast island. Based on casual and scientific observation, as well as researching what information there is, I have put together a description of the ecological communities of the north island.

A primary division of the communities of Andros is along botanical lines devised by Corell and Corell (Corell, 1982), and further described by Hardy Eshbaugh and T.K. Wilson (Eshbaugh and Wilson, 1996). Their division typically coincides very well with other factors such as substrate and animal assemblages. Never-the-less, a broader look at the communities is required in order to understand the ecology of the island.

North Andros is the largest of the three inhabited islands that make up Andros. It is seventy miles long and forty miles wide at its widest point. Its size, proximity to a continental landmass, and relative isolation have made it an ideal home for a diverse assemblage of life and geologic features. The island can be split into six major communities:

- Deep water
- Reef & back reef
- Lagoons, creeks, & flats
- Coastal community

- High coppice & pineyard
- Lowlands (savanna, swash, scrub)

DISCUSSION

Deep water

The deep water lies just one and a half miles off the east coast of Andros. The Tongue of the Ocean, an oceanic trench which reaches six thousand feet in depth, is used as a submarine testing site. Studies have addressed the origin of this unusual feature: a deep trench with only one entrance/exit. The Bahamas are tectonically stable, so evidence has led to conclusions as varied as episodic erosion (Schlager et al., 1976) and large scale faulting (Bohl, pers comm.). The marine life is apparently rich in deep water species such as red snapper, as well as pelagics such as dolphin and marlin. Whales and sharks have been sighted as well.

Reef & Back Reef

The western side of the Tongue of the Ocean is walled in by the third longest barrier reef in the world. Running north to south along the eastern coast of Andros, this remarkably unbroken reef is a well-known navigation hazard. A sharp wall marks the edge of the reef as it drops from 150 feet to the bottom of the Tongue in a mere quarter of a mile. The fore reef slopes up for a half mile to the reef core, which is a half mile from shore in the north to no more than two miles offshore in the south. Large sand pits surrounded by coral and massive spur and groove structures make up a large part of the fore reef landscape. The sand here is primarily composed of coarse grains of *Halimeda* and foraminifera. This area makes Andros an ideal diving destination.

The reef core, which is exposed in many locations at low tide, is primarily elkhorn, with abundant staghorn, brain corals, and soft corals. It is composed of a wide variety of species, including many invertebrates (sponges, urchins, crabs, and worms) and

algae. The fish assemblage apparently is typical of reefs, including grouper, squirrelfish, jacks, parrotfish, snappers, and sharks. The bottom is typically sandy with scattered pieces of dead coral. The sand is less coarse than on the fore reef, but of similar composition.

The back reef area lies between the reef core and the cays. The 15 foot bottom is sandy with large tracks of turtle grass. The sand is finer than that found on the reef core, with fewer visible particles. There are scattered patch reefs and fringing reefs around the cays. Soft corals such as seafans are abundant, as well as a variety of fish species including triggerfish, squirrelfish, grunts, snappers, jacks, and sharks. Conchs and sea turtles are seen often, though local fishermen have indicated that populations are declining (P. Smith, pers comm.).

Lagoons, creeks, and flats

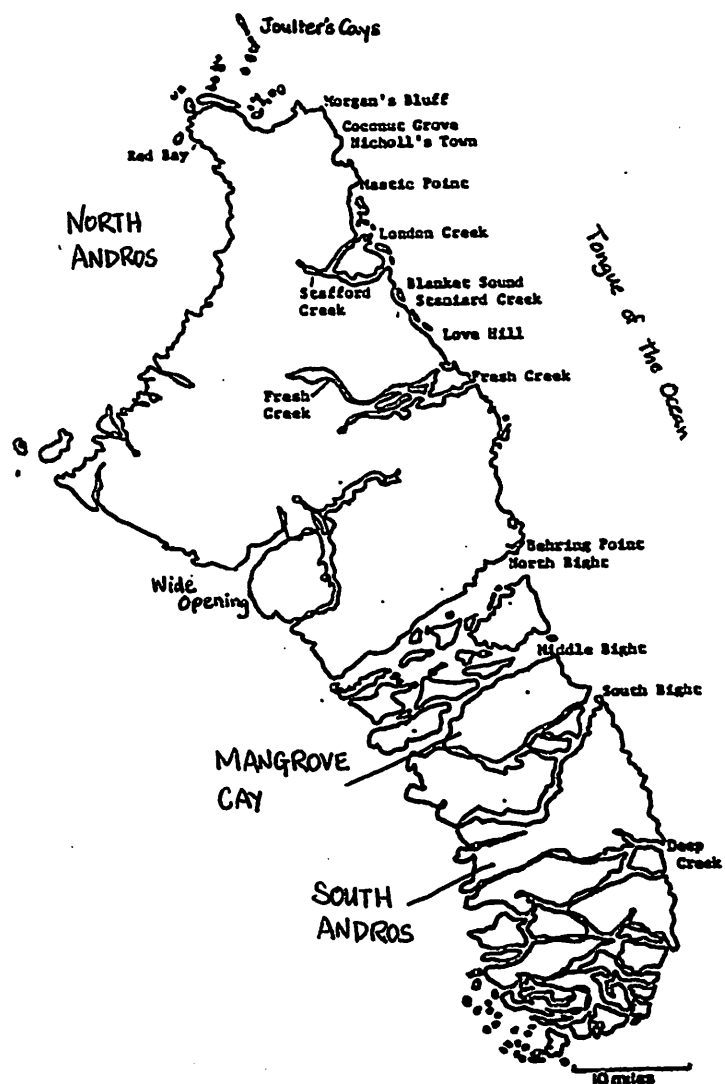
Behind the back reef lie the lagoons, creeks, and flats. The lagoonal areas are between the mainland and the cays. They are shallow stretches of very fine sand and mud, ranging in depth from 2 to 6 feet. At low tide, many areas of the lagoon are exposed. Southern stingrays, spotted eagle rays, Atlantic bottlenose dolphins, and abundant invertebrates are found such as the Cassiopea jellyfish. Behind the lagoons are creeks, flats, or beaches.

On the east side of the island, massive tidal creeks extend nearly to the west side of the island, and with depths of 3 to 10 feet, are navigable most of the way. They are brackish areas, with higher salinity closer to the mouth of the creek. The tidal influence appears to vary depending on the size and shape of the creek, creating rapid currents up or down the creek. The timing of the currents lags behind the tidal change. They are frequently lined by red mangroves, and serve as important breeding and feeding grounds for fish such as tarpon, bonefish, sharks, and reef fish. Also, Atlantic bottlenose dolphins have been observed mating in Stafford Creek (Nester, pers comm.). Some of the creeks have tributaries stretching inland to fresh water lakes, and others have blue holes noted for abundant fish resources. On the southwestern flats (North Bight up to Wide Opening), the creeks run up to 30 feet deep dividing the extensive flats and swash areas.

The flats of Andros are world-renowned for rewarding flyfishing. These shallow stretches of clean, aragonitic sand have depths of 2 to 15 feet. The entire west side of Andros is a flats area, and the bights through the central Andros area are famous not just for fishing, but sheer beauty. Bonefish, permit, tarpon, and sponges are fished for on the flats. Sharks and

turtles are said to be abundant (Marshall, pers comm.). A wide variety of coastal bird life can be found also, including flamingos (A. Smith, pers comm.). To the north lie Joulter's Cays, famous again for fishing, and also stunning oolitic banks.

Throughout the oceanic environments live a diverse array of plankton. These microscopic organisms are most notable at night, when their sparkly bioluminescence betrays any movement through the water.



Coastal Communities

On the east side, the first terrestrial communities from the water are the coastal communities, including beach strand, rocky shore, and coastal coppice. These terms apply well to each since they also coincide well with the substrate typical of each area. The extensive carbonate beaches of Andros have variable sand, from ooid to *Halimeda* dominated. They tend to be rather narrow, with a small beach ridge settled by the strand plants such as railroad vine (*Ipomea pes-capre*), sea grape (*Cocoloba uvifera*), and sea oats (*Uniola paniculata*). Also, two invasive exotic species are becoming very dominant: Australian pine (*Casuarina littorea*) and *Scaevola taccada*. The wildlife consists of crabs, lizards, insects, least terns, and laughing gulls.

The rocky shore has a dwarfed strand community including wild thyme (*Rachicallis americana*), white mangrove (*Leguncularia racemosa*), and sea ox-eye (*Borrchia aborescens*), with abundant periwinkles, neritid snails, and bridled terns. Fissures are abundant in the rocky shore, and indicate stress. Vase structures representing paleosols are frequent, as are areas of lithified red clay, shown to be from the Sahara (Sealey, 1994).

The broadly defined coastal coppice community is behind the beach ridge and rocky shore. It is a sandy soil community with well-developed strand plants as well as some more universal species such as cocoplum (*Chrysobalanus icaco*), poisonwood (*Metopium toxiferum*), and love vine (*Cassytha filiformis*). A more developed animal community is found as well, including large termite mounds and notable bird species such as the white-crowned pigeon, the shiny cow-bird, and the black-cowled oriole.

Pineyard and High Coppice

The pineyard (or dry evergreen forest) and high coppice represent the inland area. The pineyards are uniform tracks of Caribbean pine (*Pinus caribea* var. *Bahamensis*). The open canopy lets in plenty of light for the three to four foot high understory thicket of bracken fern (*Pteridium aquilinum*), poisonwood, thatch palm (*Thrinax morrisii*), orchids (*Orchidaceae* spp.) and others. Blue holes are generally surrounded by pineyards, as are the wells which pump fresh water for Nassau or local communities. The soil is thin and rocky. Animal life includes the threatened Bahamian boa, Andros rock iguana, and Atala hairstreak butterfly, as well as rodents, frogs, insects, birds, wild boars, and wild cows. The bird population on

Andros doubles in the winter due to migrants (Gering, pers comm.).

The high coppice is found in pockets throughout the pineyards. Typically on ridges or rises, these hardwood communities are dominated by large trees of poisonwood (*Metopium toxiferum*), horseflesh (*Lysiloma sabicu*), mahogany (*Swietenia mahogany*), *Exothea paniculata*, *Cocoloba diversifolia*, and others. The soil is thick and dark, putting the high coppice in the broadly described Blackland Community (Sealey, 1994). Many of these coppices have deep banana holes, some filled with soil and leaves, others reaching to the water table.

The Lowland

On the west side, the terrestrial communities are the lowland communities: swash, savanna, and scrub. Savanna and swash are the dominant communities of the uninhabited west side of the island. The savanna is on the edge of the pineyards, and is high enough and far enough inland to remain a fresh water area. It consists of a diverse, though dwarfed, plant community. The deep carbonaceous muddy soil is presumably very nutrient poor. Sawgrass (*Cladium jamaicense*) dominates this community, and a broad spectrum of plants, from white mangrove (*Leguncularia racemosa*) to five-finger (*Tabebuia bahamensis*), are found here. Land snails are also found here. The swash is a tidally influenced salt water marsh. It is a low diversity successional community, with red mangroves (*Rhizophora mangle*) stabilizing the thick carbonaceous mud. Bromeliads (primarily *Tillandsia*) grow on the mangroves. The low lying swash areas are almost always wet, with water of various salinity. They are sliced by highly saline channels which are 5 to 10 feet deep. From the air, these channels appear navigable, though the winding shallow branches often lead nowhere. Animal life is perhaps limited to the ants that reside in some bromeliads and small marine snails. The harsh swash abuts the extensive flats areas mentioned above.

South of Fresh Creek, the pineyards are less extensive, and a diverse scrubland community of dwarfed pineyard and coppice plants covers the jagged, potholed rock. Shallow pools of fresh water are inhabited by resilient killifish.

CONCLUSION

As you can tell from this brief overview, there are many environments and ecosystems on Andros. Unfortunately, this limited discussion could not isolate

communities such as the blue holes, lakes, cactus scrubs, and wet coppices, nor could it go into detail about further division of the major communities (dry and wet pineyards, mangroves, etc.). It also failed to give any detail about large categories of species such as the worms, insects, and the plankton. These omissions are largely due to lack of space, but also due to the shroud of mystery surrounding Andros which has prevented thorough study of the ecology of the island. In order to facilitate ecotourism, boost the local economy, and protect Andros from exploitation and gradual depletion of its resources, such as fish, lumber, sand, and fresh water, the communities and their interaction must be understood.

Smith, Prescott. 1996. Personal communication.

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