ARCHITECTURE OF A BAHAMIAN PLANTATION: NEGOTIATIONS OF SCOTTISH AND AFRICAN VERNACULAR ARCHITECTURE AT PROSPECT HILL PLANTATION

Christie Batka
DePaul University
Department of Anthropology
Chicago, IL

Planters in the early 19th century who had gained land grants in the Bahamas brought their interpretations of plantation life and architectural styles to the Bahamas, recreating a Loyalist style of plantation typical in the Southern United States. While economic, ecological, and personal preferences were integral in the architectural layout of each particular plantation, negotiations between the planter and his slaves ultimately gave each plantation a unique architectural record. On the out-island of San Salvador, Prospect Hill Plantation was architecturally derivative of the planter Charles Farquharson's interpretations of plantation life. During two field seasons in 2009 and 2010, an architectural survey was conducted at Prospect Hill Plantation by staff and students of DePaul University that mapped, surveyed, and photographed the buildings and landscape of this plantation. From these field seasons an analysis of the architecture at this plantation has revealed similarities to other Bahamian plantations, as well as distinct differences. These stylistic differences can be attributed to the planter's utilization of Scottish vernacular architecture, as well as the negotiations between the planter and his African slaves over time. Consequently, the architecture and landscape of Prospect Hill Plantation are a culmination of Scottish farmhouse vernacular and the interpretations that took place in a Bahamian context between the planter Charles Farquharson and his African slaves.

A PRELIMINARY TYPOLOGY OF LUCAYAN SHELL, STONE, AND CORAL BEADS FROM SAN SALVADOR, BAHAMAS (A.D. 900-1500): INTERPRETATIONS OF BEAD FINDS FROM THE 2003-2010 FIELD SEASONS

Jeffrey Blick & Richard Kim
Georgia College & State University
Archaeology & Physical Anthropology Lab.
Milledgeville, GA

Tyler G. Hill
Georgia State University

A variety of Lucayan shell, stone, and coral beads as well as beadmaking waste was recovered from several sites on San Salvador, Bahamas. Following detailed analysis, comparisons to other beadmaking sites in the Greater Caribbean region indicate that fabrication, material, color preference, and even general forms are similar across great distances from the Maya region to the Greater and Lesser Antilles, the Bahamian Archipelago, and even northern South America. In some cases, beads appear to have been made at the household level (Middle Pre-Classic Mayas, Post Saladoid Lucayans), although certain stratified societies (later Mayas, Classic Taínos) seem to have exerted more control or monopoly over bead manufacturing at various times. The beads were predominately white and red in color. Color symbolism suggests that white (or shiny) beads were more preferred and associated with peace, the "celestial complex," gold and silver, the sun and moon, and elite status. Red seems to have been associated with war, the agricultural complex, blood and fertility, the soil and earth, and lower social status. Appreciation of these Lucayan beads includes their beauty, simplicity, symbolism, and the laborious nature of their fabrication, it taking some two

months to produce a single strand of a few hundred beads for a single wearer.

BRINGING GOOGLE EARTH AND GPS HOME TO SAN SALVADOR ISLAND.

John Campion
St. Olaf College
Northfield, MN

Many researchers actively employ hand-held GPS devices and advanced mapping skills to plan and document research and classroom activities on San Salvador Island, Bahamas. This mini-workshop will offer the novice hands-on training in using these skills to both plan excursions, and record geographical coordinates of interest. We will show how to acquire coordinates for a location from Google Earth, from the Field Station's map collection, and from a GPS device. We will also show how to navigate to and from a location, and record its coordinates. Finally, (if available) we will show how to use a new high-resolution satellite image of San Salvador Island for arm-chair explorations.

Participants can bring their own hand-held GPS devices, or loaners will be provided.

MERCURY BIOACCUMULATION IN LIMITED TROPHIC LEVEL ANCHIALINE LAKES ON SAN SALVADOR ISLAND, BAHAMAS

Robert Erdman & John Dudley
Florida Gulf Coast University
Dept. of Biological Sciences
Fort Myers, FL

Mercury contamination of aquatic and marine ecosystems can cause resonating effects in food webs due to its toxic nature and ability to bioaccumulate through trophic level transfer of methyl-mercury in tissues. San Salvador Island, one of the eastern-most islands in the Bahamas, has unique anchialine lakes that exhibit low species diversity and short length food webs. As typical apex predators are absent, normal bioaccumulation patterns may be disrupted due to unique anchialine lake trophic dynamics. Five species of bivalve mollusks and fishes common to anchialine lakes across the island were examined to ascertain mercury concentrations. Tissue samples were analyzed utilizing thermal decomposition, amalgamation and atomic absorption. The mercury concentrations increase significantly as the lake locations move geographically closer to the Dixon Hill Lighthouse on the northeast corner of the island. This suggests that the mercury float system utilized by the lighthouse lens may be an anthropogenic source of mercury in the anchialine lake food webs.

AN INTERPRETATION OF THE ARTIFACTS AND MATERIAL REMAINS FROM PROSPECT HILL PLANTATION ON SAN SALVADOR BAHAMAS

Benjamin Gappa
DePaul University
Department of Anthropology
Chicago, IL

The material remains of Farquharson's plantation at Prospect Hill tell a rich story of historical negotiations between the Scotch-white planter class and the Afro-Bahamian slaves who worked the land. Over the course of two years, DePaul University's Bahamas Study Abroad program excavated, cataloged, and contextualized close to 2,000 artifacts from the site. Each of these is piece of the past that sheds light on important historical relationships of trade, economics, agriculture, and domestic life of those living at Prospect Hill from its construction, through emancipation, and into the first half of the 20th century. Prospect Hill is a valuable historical site not only for what makes it unique but also what the site can tell us about the greater trends of the lifeways of the people in Bahamian plantation system and the world in which they lived.

CAN SYMBIONTS BE USED TO UNDERSTAND CORAL EVOLUTION?

Sophie Gaynor, Elise Mead
and Craig Tepper
Cornell College
Department of Biology
Mount Vernon, IA

The evolutionary relationship of the Millepores in the Western Atlantic has been problematic for years. Current taxonomic distinction is based mainly upon morphological characters and habitat. Millepora complanta is found in shallower, more turbulent waters and is composed of sturdy blade-like colonies whereas M. alcicornis has delicate branching spires and inhabits deeper or more sheltered areas. However, the presence of a wide range of intermediate forms calls the currently accepted phylogeny into question. Genetic analysis of the Millepores conducted in our lab has demonstrated the existence of two distinct cryptic clades that are independent of morphology and habitat.

Millepores have a symbiotic relationship with an algal zooxanthellate called Symbiodinium. Our premise is that zooxanthellae-coral host specificity can be used as a diagnostic tool to understand the phylogenetic relationship between the Millepores. In order to determine if there is host specificity between Symbiodinium and Millepora, we sequenced the rDNA internal transcribed spacer (ITS) regions of Symbiodinium from various coral hosts. The sequenced samples included both duplicate sequences of the same individual as well as sequences from multiple individuals. Although our current sample size is small, within individual sequence differences tended to be less than between-individual variation and no host specificity was found among the samples analyzed.

We are currently isolating and sequencing common and rare Symbiodinium variants from each coral host using denaturing gradient gel electrophoresis (DGGE) in order to determine the level of intragenomic variation and whether multiple types of Symbiodinium are capable of colonizing a single host. This will allow us to determine if any of the symbionts display host specificity with the Millepores. We hope our efforts lead to a comprehensive understanding of the phylogenetic relationships in the Millepore complex.

BIODIVERSITY OF AMPHIBIANS, REPTILES AND BIRDS IN THE BAHAMAS: HOTSPOTS, PRIORITIZATION AND PROTECTION

William Hayes
Loma Linda University
Loma Linda, CA

As a part of the Caribbean biodiversity hotspot, The Bahamas hosts substantial species richness and endemism. However, like archipelagos elsewhere, and largely because of anthropogenic impacts, many of these species and the habitats they require are threatened. Islands, sadly, are at the forefront of the biodiversity crisis. Biodiversity hotspots have become prominent in conservation biology, but their delineation, prioritization, and protection can be elusive. To address these issues in The Bahamas, I identified biodiversity hotspots for terrestrial amphibians and reptiles (collectively) and, separately, for birds based on three indices (species richness, endemism, and threat) and two taxonomic levels (species and subspecies). Diversity lists were constructed from the literature for each of 19 islands or island groups. Within each of the six categories (three indices x two taxonomic levels), the two most diverse islands (10%) were deemed hotspots. For native terrestrial amphibians and reptiles (sea turtles were excluded due to inadequate information), there was poor congruence among the three indices and, for endemism, between taxonomic ranks. Habitat protection in the form of National Parks exists for the amphibian and reptile hotspots, but the only threatened species recognized (iguanas) and the vast majority of endemics lack protected habitat. For breeding birds, there was also poor congruence among indices and, for endemism, between taxonomic ranks (species and subspecies richness hotspots were not assessed due to inadequate information). Existing habitat protection is weak for seabirds, several critically endangered taxa, and many endemics. This approach, which can be applied to other taxonomic groups, provides an objective basis for hotspot prioritization and for decisions regarding management and protection of biodiversity. It also underscores two urgent needs: 1) to address species limits using modern systematics methods and concepts, and 2) to assess the current population status of many taxa. These needs are especially important for the 37 species and 87 subspecies of native terrestrial amphibians and reptiles. Current taxonomies of this neglected group are based on decades-old assessments (during the "lumping" era), and population status remains unknown for all but a few taxa.

BEHAVIOR, ECOLOGY AND CONSERVATION OF THE CRITICALLY ENDANGERED BAHAMA ORIOLE (ICTERUS NORTHROPI)

Melissa R. Price, Valerie A. Lee and William K. Hayes
Loma Linda University
Loma Linda, CA

Recent elevation of the critically endangered Bahama Oriole (Icterus northropi) to species status prompted us to evaluate its population status, habitat dependence, breeding ecology, population genetics, and vocalization behaviors. From surveys, we estimated that 90-162, 24-44, and 27-48 individuals remain on North Andros, Mangrove Cay, and South Andros, respectively. Orioles mostly used anthropogenic habitat (residential and agricultural land) during the breeding season, though home ranges included nearby pine forest and coppice (dry broadleaf forest). The majority (87%) of 46 nests observed were constructed in nonnative Coconut Palm (Cocos nucifera), with native Sabal palmetto and Thrinax morrisii, and an introduced Brassaia actinophylla also used. Trees selected by orioles for nesting were significantly taller, less likely to have shrubs underneath, farther from cover, and had more palm trees nearby than randomly available palm trees in the area. Three of eight nests with known contents were parasitized by Shiny Cowbirds (Molothrus bonariensis), a brood parasite that became established in the 1990s without subsequent population increases. Lethal yellowing disease recently devastated Coconut Palms and reduced local breeding oriole density on North Andros, but palms on Mangrove Cay and South Andros remained healthy. The juxtaposition of anthropogenic habitat to suitable native habitats may be more important than any single factor in

meeting the oriole's life history needs, especially for breeding adults and fledging chicks. Conservation of coppice habitat, at high risk for agricultural and residential development, is crucial for survival of this critically endangered synanthropic species. Molecular analyses indicated minor differences in genetic variation among metapopulations. Hatchlings and fledglings produced vocalizations that were higher pitched than those of adults. Adults possessed a large repertoire, including five main vocalization types that were delivered independently or in combination. Second-year and after-second-year-plumaged birds produced spectrographically similar vocalizations at similar rates. Adults vocalized at similar rates throughout the day, but singing waned after chicks hatched, whereas calling increased. Minor but significant variation in singing existed among the three metapopulations. Males and females often duetted together, especially prior to incubation. We concluded that the Bahama Oriole more closely resembles tropical oriole species (monochromatic, monovocal) than temperate species (dichromatic, divocal).

DIVERSIFICATION OF THE GENUS CAKILE (BRASSICACEAE)

Charlie Willis
Duke University
Durham, NC

The boundary between species is commonly defined by their inability to successfully breed. Barriers to reproduction prevent the introgression of genes between nascent species (reproductive isolation) and thereby facilitate their independent evolution. While there are many mechanisms of reproductive isolation, post-zygotic barriers such as genic incompatibilities are often considered the most absolute.

Darwin originally argued that new species arose as a consequence of populations adapting to different environments. However, despite the widespread acknowledgment that natural selection plays a role in the evolution of pre-zygotic and even post-mating pre-zygotic barriers, the question of whether adaptation to different versus similar environments accelerates the evolution of post-zygotic barriers remains poorly understood.

This study attempts to address the role of divergent adaptation in speciation by characterizing the degree to which reproductive isolation correlates with ecological divergence across the genus Cakile (Brassicaceae).

RECENT HISTORIC FINDS ON SAN SALVADOR ISLAND, THE BAHAMAS

John Winter
Molloy College
Chem. & Envir. Studies
Rockville Centre, NY

Don Bernier, John Copich, Susan Rice

Over the past six years, we have been exploring the San Salvador coppice in the hopes of finding freshwater wells or ponds, caves and buildings. Although many of these areas were known to San Salvador residents, we have been able to find three previously unrecorded historical settlements.

One settlement appears to be associated with the Polly Hill Plantation. It contains a row of slave houses, an overseer house, a barn and a raised stone platform. The platform probably held a guinea corn press to make molasses.

The next settlement is found between the Hard Bargain and Fortune Hill Plantations. This unknown complex appears to be a former plantation with a main house area and then nearby is a row of slave houses with an overseer house. There is a freshwater well near the main house, which was built of wood. Near the stone wall behind the slave houses, there can be found four mahogany trees.

The last settlement is built within a stone walled area; outside of the stone wall can be found a trash area. The buildings are too large to be slave houses. Not far from the buildings can be found a step-down freshwater well. These buildings may be the remains of the first Old Place settlement.

ARCHAEOLOGICAL REMAINS FROM THE FARQUARHSON CAVE, SAN SALVADOR

John Winter
Molloy College
Chem. & Envir. Studies
Rockville Centre, NY

Lee Newsom
Penn State University

In 2007 a wooden boat-shaped bowl was found covered in recent bat guano within an unexplored side chamber of a sinkhole near the Farquarhson Plantation. Excavations within the cave showed that the bowl was lying on an older layer of bat guano. The material from the excavations was processed using window screen mesh. No ceramic material was found in the cave. Fragments of Codakia shells were recovered, as well as teeth from various young Carcaridon species. In cleaning up the bowl, a pumice stone was found buried under the bat guano. The pumice stone preserved the surface of the bowl from the acid destruction of the bat guano. The bowl was constructed from a mahogany tree. A radiocarbon date with a 68% probability accuracy places the bowl between AD 1280 to 1300.