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FLORA AND VEGETATION OF BELL ISLAND (EXUMA CHAIN), BAHAMAS

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ABSTRACT

Bell Island is located within the southern boundary of the Exuma Cays Land and Sea Park in the Exuma Chain of the Bahamian archipelago. The island is approximately 2.5 square kilometers. We inventoried the plant species on the island in addition to mapping and describing the plant community types during the summers of 1995 and 1996. We identified 155 species, including 20 species previously unreported for the Exuma Chain. We also identified six plant communities, of which we sampled four quantitatively for species composition, using 2 x 2 meter quadrats along transect lines. Detrended Correspondence Analysis supported the classification of the Beach/Strand, Rocky Shore, Dry Evergreen Forest, and Palm Sand as distinct communities.

INTRODUCTION

Bell Island is located within the southern boundary of the Exuma Cays Land and Sea Park approximately 2.3 km north of Conch Cut and Rocky Dundas at 24° 18' north by 76° 33' east. The island is a rough semi circle, covering approximately 2.5 square kilometers. The western and southern coastlines are steep and rocky. The northern shore includes a 600 meter beach and the eastern shore is a series of four semi-circular pocket beaches alternating with low elevation peninsulas and rocky coastline.

Near the northern, western, and southern coastlines is a semi-circular ridge averaging 19 meters in elevation, with a single peak of 26 meters. There are four major salt ponds, as well as four low-lying regions that accumulate fresh water.

Recent geologic surveys in 1993 - 1994 revealed a substrate of two different geologic ages (Paul Hearty, pers. comm). The ridges and interior area were formed over 120,000 years ago. In contrast to these areas, the northern and western coastlines have pockets of skeletal sands < 5,000 years old. The young substrate has been deposited in low-lying regions trapping saline ponds in the interior. There are two small areas on the western side that also have a deposition of young strata but lack the saline ponds

Until 1967 the western half of the island was used extensively for cultivation. Air photos reveal deforestation from agriculture and grazing. Humans have been inhabiting the island for over 150 years although not continuously (Paul Hearty, pers. comm.). There are many sink holes in the interior of the island that intersect a fresh water lens and provide year round access to fresh water.

A geologic and vegetation survey prior to a sale of the island was done in 1957 by H.G. Christie and resulted in a map of the rough distribution of plant species and soil types. Bell Island was resurveyed geologically in 1994 by Paul Hearty. In 1994, H.L. Vacher (University of South Florida) determined that the fresh water lens primarily occurs underneath the high ridges, is 1.5 to 3.0 meters thick, and has 50 - 70 million gallons of fresh water (Paul Hearty, pers. comm.).

The Bahamas has had a relative dearth of ecological investigation (Smith 1991). The few papers that discuss plant communities within the Bahamian archipelago are mostly qualitative (Northrop 1902; Howard 1950; Gillis 1977; Correll 1979, Correll and Correll 1980; Smith 1986; Nickrent et. al. 1991; Eshbaugh and Wilson 1992). There are only two papers that are quantitative: Smith (1991) dealt only with Dry Evergreen Forest (DEF) types on North Andros Island focusing on tree dominance, and Byrne (1980) focused mainly on DEF on Cat Island and

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changes in the vegetation due to human disturbance.

Our project was undertaken to better understand the floristic and ecological diversity of Bell Island. The island was surveyed for the flora. Using this data we identified different plant communities. The communities were sampled quantitatively to ascertain their composition and then determined through Detrended Correspondence Analysis

METHODS

During July of 1995 we surveyed the flora of the island for 16 days. The surveys consisted of making lists of all species encountered along transect lines that went from one side of the island to the other systematically covering as much area as possible. New lists were started each time there was a vegetation or elevation change and at the same time we mapped the boundaries of plant communities.

In July 1996 we sampled along 24 transect lines within the plant communities identified during July 1995. Individual transect lines ranged from 80 to 220 meters in length. Every twenty meters, along each transect line, a 2 x 2 meter quadrat was established. Within each quadrat we counted every individual tree, shrub, herb, vine, and epiphyte. Each transect line sampled only one plant community along its entire length. The arrival of hurricane Bertha in mid-July prevented sampling in both the Mangal and *Sabal palmetto* communities.

Data from all of the quadrats along an individual transect line were combined, and the species importance percentages for shrubby and herbaceous taxa were calculated as the mean of their relative density and frequency. The species importance percentages for the tree, vine, and epiphyte data were not used in this analysis and will be the subject for a later paper. The species importance percentages were compared in a Detrended Correspondence Analysis (DCA) (Whittaker 1973) with the computer program PC-Ord to examine vegetation gradients and discontinuities. Transects that clustered on the DCA were similar in species composition. We classified plant communities based on the DCA analysis. Dominant shrub and herb species for each plant community were determined by calculating species importance percentages for all the species within a cluster on the two ordinations.

RESULTS

We identified 154 vascular plant species on Bell Island (Table 1). Voucher specimens of 104 species were deposited at the Bahamian National Herbarium and the Willard Sherman Turrell Herbarium at Miami University (MU) in Ohio. Our species list is incomplete because it does not include annuals that may have been present in the interior ephemeral fresh water areas or any orchids.

Table 1: Hierarchal diversity of the vascular plant taxa identified on Bell Island.

Divisions	2
Classes	3
Orders	34
Families	60
Genera	140
Species	154

We identified six major plant communities: Rocky Shore, Beach/Strand, Palm Sand, Dry Evergreen Forest (DEF), *Sabal palmetto*, and Mangal (Figure 1). The DEF was sub-divided into Coastal, Slope, and Interior types, based on differences in forest structure and location. There is a large *Casuarina litorea* grove which was not recognized as a separate community because the owner of the island is in the process of slowly removing all of the individuals in the grove in an attempt to return the area to its former floristic composition.

The species with >10 % species importance percentage are defined as dominants for a community (Tables 2 and 3). In order to compare our data with previously published qualitative ecological studies (Tables 4 - 7) species with > 5.0 % species importance percentages were considered common for a community.

The DCA for the shrubs shows four clusters that correspond to the four communities sampled (Figure 2). The cluster on the far right of the ordination figure encompasses transects 21 - 24 and is the Rocky Shore community. To its left is a cluster of transects 11 - 13 that is the Beach/Strand community. Further left is a cluster of transects 1 - 9 that is the Palm Sand community. The cluster of transects 10 and 14 - 20 to the furthest left is the DEF community. The DCA for herbs shows four similar clusters although in somewhat different positions on the ordination figure (Figure 3).

The Rocky Shore is the least species rich and the DEF the most species rich of the four community types sampled, both at the shrub and herb level (Tables 2 and 3) based on the average number of species/m^2. At the shrub level (Table 2), the Coastal DEF was the richest of all DEF plots that were surveyed, but at the herb level (Table 3) the slope DEF was the richest.

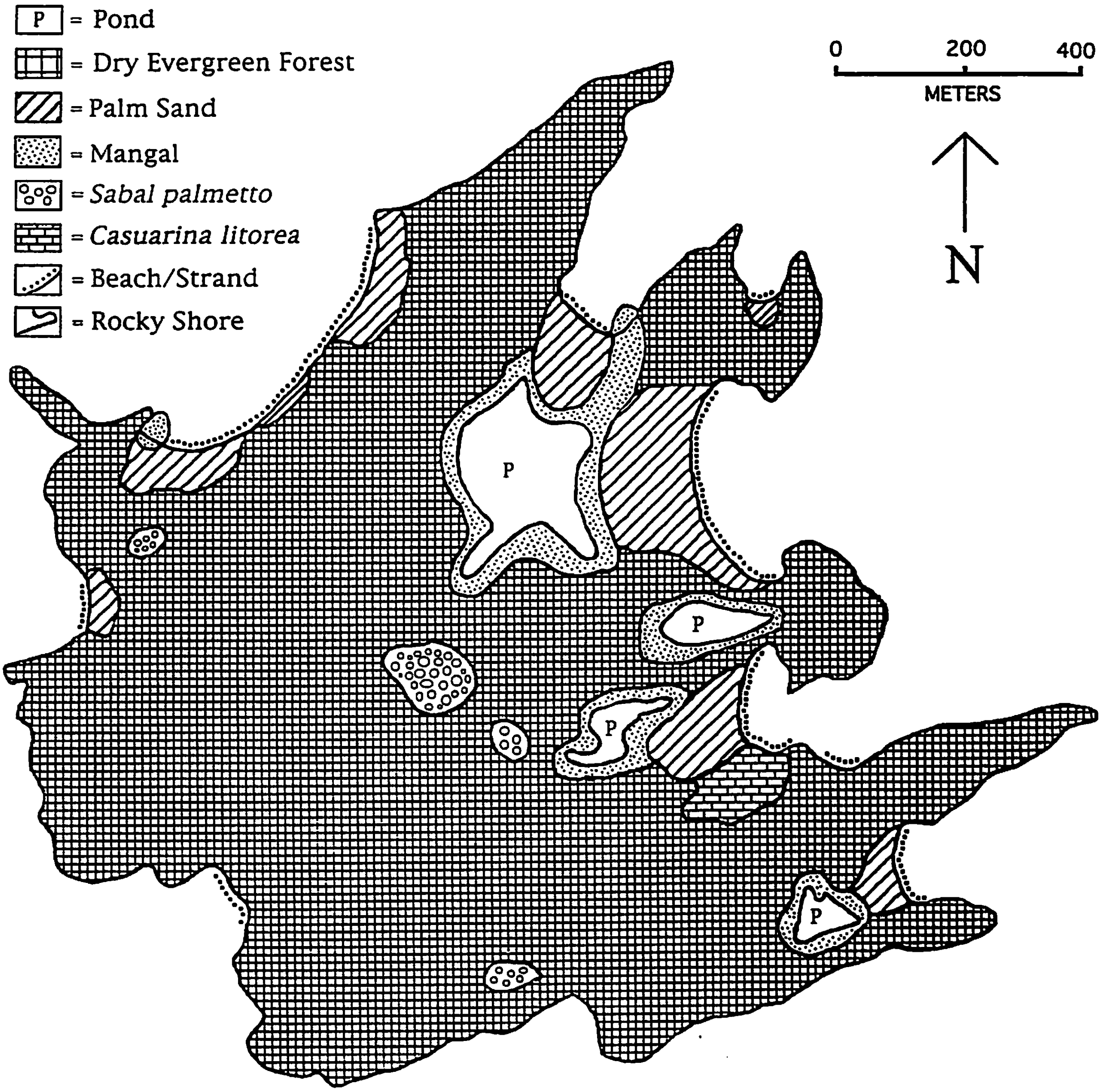

Figure 1: Plant communities of Bell Island (Exuma Chain), Bahamas

DISCUSSION

Flora

Bell Island shows the typical island floristic distribution having almost as many genera identified as species (Table 1). The DEF is the most species rich community but these numbers do not take into account that each community had a different number of square meters surveyed which may alter the interpretation of the results. The Coastal DEF still had the greatest number of species sampled even though it had the smallest area surveyed.

The identification of 20 taxa previously unknown to the Exuma Chain indicates that the Bahamian archipelago has not been adequately surveyed botanically.

DCA Ordination

The concept of the Beach/Strand, Palm Sand, Rocky Shore, and DEF as distinct communities, based not only on location and structure but also on species composition at the shrub and herb level, is supported by consistent clustering of transects on the DCA ordinations. The data is insufficient to indicate if the Coastal and Slope DEF are distinct from the Interior DEF and are considered subtypes.

Argument could be made that there is little distinction in the ordination figures between the Beach/Strand and the Palm Sand communities at the herb level (Figure 3), but we interpret the data as consistently showing the transects for each community clustering near each other rather than intercalated together. The separation of the transect clusters is an

Table 2. Shrubs with importance percentages >10.0 % for each community. Numbers in parentheses below each community type represents the richness (richness = # of species sampled/square meters sampled). DEF = Dry Evergreen Forest.

Beach/Strand (0.14 = 14/100)		Rocky Shore (0.11= 15/136)		Palm Sand (0.12 = 26/216)		Coastal DEF (0.72 = 32/44)		Slope DEF (0.42 = 27/64)		Interior DEF (0.20 = 29/140)	
Ernodea littoralis	26.0	*Rhachicallis americana*	54.0	*Coccothrinax argentata*	15.5	*Ateramnus lucidus*	17.0	*Ateramnus lucidus*	23.0	*Ateramnus lucidus*	14.0
Cassia lineata	17.0	*Strumpfia martima*	12.0	*Thrinax morrisii*	14.5			*Randia aculeata*	14.5	*Pithecellobiu m keyense*	13.0
Suriana maritima	12.5			*Pithecellobiu m keyense*	11.0						
Borrichia arborescens	12.0			*Guapira discolor*	10.5						
Gundlachia corymbosa	11.5										

Table 3. Herbs with importance percentages >10.0 % for each community. Numbers in parentheses below each community type represents the richness (richness = # of species sampled/square meters sampled). DEF = Dry Evergreen Forest.

Beach/Strand (0.18 = 18/100)		Rocky Shore (0.03 = 5/136)		Palm Sand (0.07 = 16/216)		Coastal DEF (0.22 = 10/44)		Slope DEF (0.26 = 17/64)		Interior DEF (0.15 = 22/140)	
Sporobolus viginicus	19.5	*Sporobolus virginicus*	51.0	Unidentifie d palms	38.0	Unidentified palms	40.0	*Ateramnus lucidus*	18.5	*Ateramnus lucidus*	19.5
Euphorbia lasiocarpa	13.5	*Borrichia arborescens*	12.0	*Cyperus fuligineus*	21.0	*Pithecellobiu m keyense*	18.5	*Randia aculeata*	14.5	Unidentifie d palms	16.0
Euphorbia blodgettii	12.0	Unidentified palms	12.0			*Aternamnus lucidus*	14.0	*Palm sp*	11.5	*Lasisicis divaricata*	13.0
Cyperus fuligineus	10.0	*Sesuvium portulacastrum*	12.0								
		Savia bahamensis	12.0								

indication of differences in species composition. These two communities occur next to each other in the landscape on essentially the same substrate. Over time, as sand is deposited along the Beach/Strand front, the Palm Sand community encroaches upon the previously solidified region as a natural succession. The ecotonal region leads to an overlap in species composition between the two communities.

The transects in the Palm Sand community were run in two different directions. Some were perpendicular and others parallel to the shore line. The first quadrat of each perpendicular transect was near the ecotonal region of the Beach/Strand and Palm Sand communities and thus Beach/Strand species were reported in those transects. Transects 1-2 and 5-6 were perpendicular to the shore line and do cluster near the beach strand transects. This pattern in the ordinations is clearest at the herb level.

It was often difficult to assess whether some of the clonal species, i.e. *Sporobolus virginicus*, were many or a few individuals. This fact tended to inflate the importance percentages of these taxa. This was especially true for the Rocky Shore because only one transect had herbaceous plants and four of the taxa were individual specimens.

Plant Community Descriptions

Beach/Strand

The Beach/Strand community occurs in seven locations on the western, northern, and eastern shoreline. The beaches are separated by areas of Rocky Shore. The community is typically 1- 3 meters wide and there is an abrupt transition to the Palm Sand community. The substrate consists of a mixture of compacted skeletal corals and sand. It is dominated by shrubs and herbs less than 2 meters tall. The Beach/Strand on Bell Island can be characterized as an *Ernodea-Cassia-Sporobolus* community (Tables 2 and 3).

Rocky Shore

The Rocky Shore community exists wherever Beach/Strand does not on the western, northern, and eastern shorelines, and is a continuous community along the southern shore. The substrate is dog-tooth limestone. This community occurs in the salt spray zone of coast lines where there is high energy wave action. There is a zone of exposed dog-tooth limestone without vegetation 2-4 meters inland, and then a transition to vegetation occurs. In regions that are less exposed to salt spray the transition from Rocky Shore to Coastal DEF can occur in less than 2 meters whereas in areas of high exposure the transition may take place over 4 to 5 meters with a noticeable wind shear effect. The vegetation is dominated by low shrubs < 1 meter tall with essentially no herbaceous layer. The Rocky Shore is characterized as a *Rhachicallis americana* community (Table 2).

Palm Sand

The Palm Sand community occurs along the northern and eastern shorelines above the Beach/Strand. The areas are roughly hemi-spherical in shape existing between the Beach/Strand and the Pond/Mangal communities. The substrate is < 5,000 years old and is a mixture of compacted skeletal corals and a sand matrix with organic debris. The vegetation is 1 - 2 meters tall and is dominated by patches of *Coccothrinax argentata* and *Thrinax morrisii* (Tables 2 and 3) alternating with areas that have no vegetation. Other than unidentifiable palms and the sedge *Cyperus fuligineus* there are few herbaceous species. There is a large *Casuarina litorea* grove, which covers approximately 1 hectare, on one beach.

Dry Evergreen Forest (DEF)

The Dry Evergreen Forest (DEF) on Bell Island can be characterized at both the shrub and herb level as an *Ateramnus lucidus* community. *Randia aculeata* and *Pithecellobium keyense* were also dominant species (Tables 2 and 3). The DEF was divided into three subcommunities for comparison.

The Coastal DEF occurs on the peninsulas of the eastern shoreline. The vegetation is composed of dense, skinny trees, 2-3 meters in height. The substrate is composed of broken limestone with a build up of organic matter. In areas closest to the coastline the limestone is increasingly eroded and becomes sharp and brittle (dog-toothed). The Coastal DEF has the greatest number of bromeliads and orchids of the three subtypes.

The Slope DEF exists along the steep hill slopes facing the western shore. The substrate is composed of exposed broken limestone with a shallow build up of organic matter. The vegetation is up to 4 meters in height. The trees are less dense than in the Coastal DEF but are generally larger in diameter.

The Interior DEF, as its name implies, is located within the interior of the island. The vegetation consists of trees up to 6 meters in height with an additional dense understory of shrubs 2-3 meters in height. The substrate is limestone with large solution holes 1 - 5 meters deep. The limestone matrix is broken apart but to a lesser degree than the other types of DEF. The Interior DEF type has the deepest layer of organic debris.

Mangal

The Mangal community exists primarily around the salt ponds with some isolated pockets along the shoreline. Along the shoreline it occurs in the transition zones between the Beach/Strand and Rocky Shore.

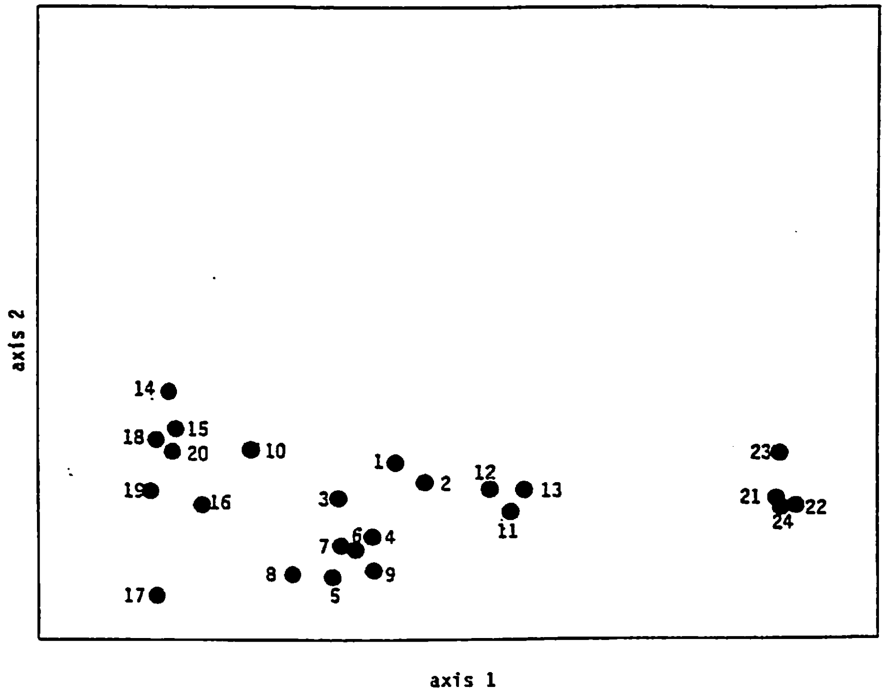

Figure 2: Detrended Correspondence Analysis (DCA) of transects based on species importance percentages for shrubby species.

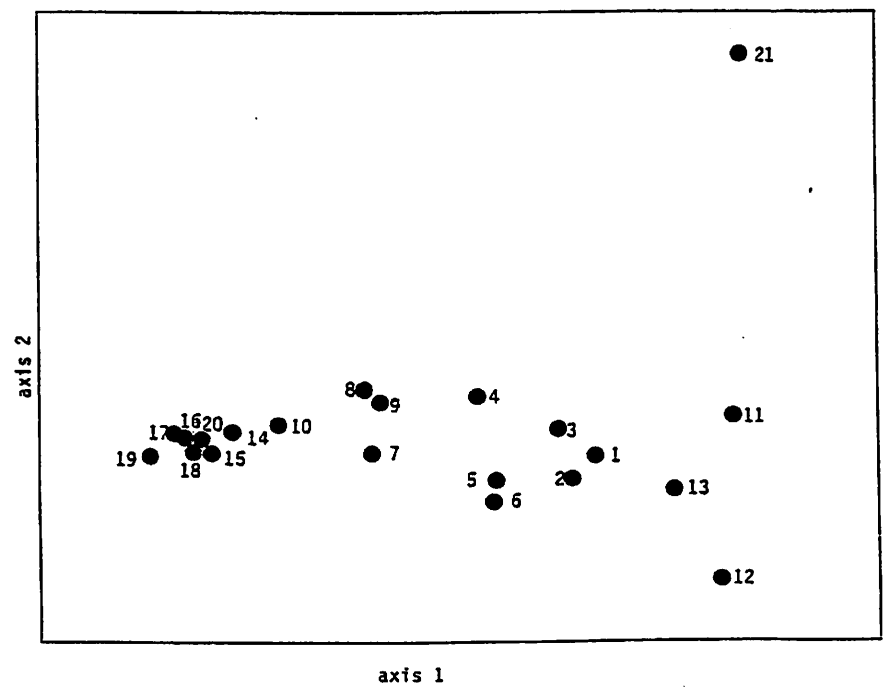

Figure 3: Detrended Correspondence Analysis (DCA) of transects based on species importance percentages for herbaceous species.

Table 4. Plants common to the Beach/Strand community in the Bahamian archipelago.

	Northrop	Howard	Correll	Smith	Nickrent	Freid
Scaevola plumieri	X	X	X	X	X	X
Suriana maritima	X	X	X	X	X	X
Chamaesyce mesembrianthemifolia	X	X	X	X	X	
Uniola paniculata		X	X	X	X	X
Ambrosia hispida	X	X	X	X		
Sesuvium portulacastrum	X	X	X		X	
Ipomoea pes-capre		X	X	X	X	
Cakile lanceolata		X	X	X	X	
Mallotonia gnaphalodes		X	X	X	X	
Salmea petrobioides		X	X		X	X
Coccoloba uvifera		X	X	X		
Hymenocallis arenicola		X	X	X		
Ernodea litoralis		X	X			X
Borrichia arborescens		X		X		X
Chrysobalanus icaco	X				X	
Lantana involucrata		X		X		
Leptochloopsis virgata		X		X		
Erithalis fruticosa		X			X	
Cassia lineata		X				X
Chamaecyse blodgettii		X				X
Canavalia rosea			X	X		
Iva imbricata			X	X		
Sporobolus virginicus			X			X
Cakile aequalis	X					
Canavalia obtusifolia	X					
Cassytha filiformis	X					
Salicornia ambigua	X					
Stenophorum secundatum	X					
Tournefortia gnaphaliodes	X					
Canavalia maritima		X				
Casasia clusiifolia		X				
Jacquemonita jamaicensis		X				
Suaeda linearis		X				
Borreria spp.			X			
Ipomoea stolonifera			X			
Passiflora pectinata			X			
Solanum bahamense			X			
Cenchrus incertus				X		
Cyperus planifolius				X		
Ipomoea violacea				X		
Sesuvium maritimum				X		
Canavalia nitidia					X	
Coccoloba diversifolia					X	
Distichilis spicata					X	
Philoxerus vermicularis					X	
Thespesia populnea					X	
Cyperus fuligineus						X
Euphorbia lasiocarpa						X
Gundlachia corymobosa						X
Heliotropum nanum						X

Common species to this community are *Rhizophora mangle*, *Laguncularia racemosa*, *Avicennia germains*, and *Conocarpus erectus*.

Sabal palmetto

The *Sabal palmetto* groves are found in four locations on Bell Island. Each location is a drainage basin that accumulates standing fresh water for extended periods of time. *Sabal palmetto* was the most prominent tree, but DEF species did occur in isolated spots. Fresh water indicators, such as *Typha domingensis* and *Annona glabra*, existed in areas that retain fresh water for the longest period of time. Each grove was unique in size and the herbaceous species diversity but identical in the dominant tree species (*Sabal palmetto*).

Comparisons Of The Recognized Plant Communities To Previous Studies

To compare data collected on Bell Island with other studies is difficult. Five of the six papers that deal with plant communities are qualitative and only four authors list species. In the four papers, species are listed as common rather than dominant. To facilitate a comparison between our data and that of the other studies we defined species as common if they had > 5.0% species importance percentages. The comparisons must be made without the understanding of the original authors who did not explicitly state what the criteria for a species to be common were. Common species could be dense or frequent or both. In the case of Correll, D. S. (1979) and Correll and Correll (1982) the communities are listed with interesting plants rather than common or dominant.

Gillis (1977) names 19 communities for Abaco and 12 communities for Eluethera. No meaningful comparison can be made with Gillis's work because he lists only characteristic species for each community. The species are assumed to be dominant for the community.

As with many plant communities the differences in species composition between our study and others may be due to specific environmental pressures unique to Bell Island in particular and the Exuma Chain in general rather than to fundamental differences at the community level. In many of the communities the same plants are not listed as common for all of the studies. Among the different islands, the plant communities are similar in structure and diversity but not in taxonomic composition.

One possible hypothesis to explain differences in species composition is that as the sea level rose and fell throughout the Pleistocene, most of the Bahamian archipelago was submerged and recolonization had to continually occur with each re-emergence. Every recolonization series resulted in different species having a random chance to recolonize each island first and become established as a common or dominant species. A mosaic pattern of species distributions for each community would occur such as what we see when comparing the different ecological studies done throughout the Bahamian archipelago.

Beach Strand

Six studies designate common plant species for the Beach/Strand to which we could compare our data. Among the studies 50 species were listed. Six species were found in at least four studies, two in five studies, and two in all six (Table 4). Only *Scaevola plumieri* and *Suriana maritima* is common on Bell Island and the other five studies. Gillis (1977) names a *Uniola* strand for Abaco but no strand community for Eluethera.

With the exception of Northrop (1902), our study of Bell | Island lists the lowest number of common species for Beach Strand.

Rocky Shore

Six studies designate common plant species for the Rocky Shore to which we could compare our data (Table 5). Thirty species were listed for the community. One species, *Borrichia arborescens*, exists in five studies, and two species, *Strumpfia maritima* and *Rachicallis americana*, were common to Bell Island and the six studies.

Palm Sand

Gillis (1977) lists a *Thrinax* and *Coccothrinax* Palm Thicket for Eleuthera but it was described as a community of the rockland. He also named for Eleuthera a Dwarf Shrublands with *Thrinax* Palm Stands in the littoral sands and dunelands. Either of these named communities may be similar to the Palm Sand community of Bell Island.

Both Howard (1950) and Smith (1986) describe communities similar in compositon and structure similar to the Palm Sand of Bell Island. Among these studies, 35 species were listed as common to the community. The Howard's study has only two species and Smith has only four species common also to Bell Island. Howard and Smith had six species as common between them. *Coccothrinax argentata* was the only species present in all three studies (Table 6).

Table 5. Plants common to the Rocky Shore community in the Bahamian archipelago.

	Northrop	Howard	Correll	Smith, R. R.	Nickrent	Freid
Rhachicallis americana	X	X	X	X	X	X
Strumpfia maritima	X	X	X	X	X	X
Borrichia arborescens	X		X	X	X	X
Conocarpus erectus	X	X		X	X	
Coccoloba uvifera	X			X	X	
Jacquinia keyensis	X				X	X
Manilkara bahamensis	X				X	
Ipomoea violocea		X		X		
Casasia clusiifolia			X		X	
Cordia sebestena	X					
Pithecelobium unguis-cati	X					
Caesalpinia bonduc		X				
Chamaecyse blodgettii		X				
Passiflora cuprea		X				
Ambrosia hispida				X		
Chamaecyse mesembrianthemfolia				X		
Erithalis diffusa				X		
Ernodea littoralis				X		
Gundlachia corymbosa				X		
Ipomoea pes-capre				X		
Mallotonia gnapholodes				X		
Scaevola plumieri				X		
Suriana maritima				X		
Coccoloba diversifolia					X	
Pithecellobium bahamense					X	
Salmea petrobioides						X
Savia bahamensis						X
Sesuvium portulacastrum						X
Sporobolus virginicus						X
Unidentifiable Palms						X

Table 6. Plants common to the Palm Sand community in the Bahamian archipelago.

	Howard	Smith,R.R.	Freid
Coccothrinax argentata	X	X	X
Antirhea myrtifolia	X	X	
Cassia lineata	X	X	
Catesbaea parviflora	X	X	
Croton linearis	X	X	
Ernodea littoralis	X	X	
Malpighia polytricha	X		X
Bourreria ovata		X	X
Guapira discolor		X	X
Pithecellobium keyense		X	X
Amyris elemifera	X		
Argythamnia lucayana	X		
Eugenia buxifolia	X		
Ipomoea carthartica	X		
Lantana involucrata	X		
Passiflora cuprea	X		
Rhacoma crossopetalum	X		
Torrubia longifolia	X		

	Howard	Smith,R.R.	Freid
Aristida ternipes		X	
Argythamnia candicans		X	
Bumelia americana		X	
Casasia clusiifolia		X	
Coccoloba uvifera		X	
Chrysobalanus icaco		X	
Crossopetalum rhacoma		X	
Cynachum inaguense		X	
Encylia hodgeana		X	
Erithalis fruticosa		X	
Reynosia septentrionalis		X	
Solanum bahamense		X	
Waltheria indica		X	
Cyperus fuligineus			X
Euphorbia lasiocarpa			X
Gundlachia corymbosa			X
Heliotropum nanum			X
Thrinax morrisii			X

Table 7. Plants common to the Dry Evergreen Forest (DEF) community in the Bahamian archipelago.

	Howard	Smith, R.R.	Nickrent		Smith, I. K.	Freid
			Coast	Interior		
Psychotria ligustrifolia	X			X	X	X
Amyris elemifera	X		X			X
Reynosia septentrionalis	X		X			X
Bourreria ovata	X				X	X
Lantana involucrata	X		X			
Bursera simaruba	X			X		
Coccoloba diversifolia	X			X		
Metopium toxiferum	X			X		
Guettarda elliptica	X				X	
Psychotria nervosa	X				X	
Galactia spiciformis	X					X
Guapira diacolor	X					X
Smilax havanensis	X					X
Nectrandra coriacea		X		X		
Guaiacum sanctum		X				X
Pithecellobium keyensis			X			X
Ateramnus lucidus				X		X
Randia aculeata					X	X
Agave sisalana	X					
Bidens pilosa	X					
Bumelia celestrina	X					
Bumelia retusa	X					
Cassia occidentalis	X					
Erythoxylum obovatum	X					
Euphorbia heterophylla	X					
Gymnanthes lucida	X					
Piscidia communis	X					
Pisonia aculeta	X					
Randia mitis	X					
Solanum blodgettii	X					
Zanthoxylum fagara	X					
Zanthoxylum coriaceum	X					
Capparis cynophallophora		X				
Erythoxylon aerolatum		X				
Lysiloma lastisiliqua		X				
Mimosa bahamensis		X				
Pithecellobium ungius cati		X				
Trema lamarckianum		X				
Bumelia salicifolia			X			
Byrsonima lucida			X			
Catesbaea parviflora			X			
Erithalis fruticosa			X			
Eugenia confusa			X			
Jacquinia keyensis			X			
Malpighia polytricha			X			
Psidium longipes			X			
Acacia coriophylla				X		
Bumelia salicifolia				X		
Clusea rosea				X		
Cordia bahamensis				X		
Drypetes diversifolia				X		
Calypthranthes pallens				X		

Table 7 continued.

	Howard	Smith, R.R.	Nickrent		Smith, I. K.	Freid
			Coast	Interior		
Exothea papiculata				X		
Ficus aurea				X		
Manilkara bahamensis				X		
Thrinax morrisii				X		
Chioccoa alba					X	
Guettarda scabra					X	
Picramnia pentandra					X	
Phyllanthus epiphyllanthus					X	
Pithellobium bahamensis					X	
Polygala oblongata					X	
Schaeffera frutescens					X	
Argythamnia candicans						X
Cassia chapmanii						X
Encyclia sp.						X
Eugenia axillaris						X
Unidentifiable Palms						X
Jacguinia havenensis						X
Lasisis divaricata						X
Psidium sp.						X
Savia bahamensis						X
Tillansdia sp.						X
Tillandsia utriculata						X

Dry Evergreen Forest (DEF)

Five studies list plants common to the DEF (Table 7). Smith (1991) is the only study with usable quantified data. She lists species with >10.0 % relative density for understory species which can be directly compared to our herb and shrub data. *Bourreria ovata*, *Pyschoteria ligustrifolia*, and *Randia acueleata* were all relatively dense within the DEF of North Andros Island and Bell Island.

There was a total of 74 species listed together in all five studies. Only one species, *Psychotria ligustrifolia*, was common to four studies and another three species were common in three studies. More telling than the similarities in species composition is that three quarters of the species listed existed in only one study. The lack of similarity between the studies emphasizes that the DEF in the Bahamian archipelago is best characterized as a diverse evergreen environment that has highly localized dominant/common species.

To define the DEF for the entire archipelago by a few species would misrepresent the community. The DEF is better characterized as a heterogenous environment of high species richness.

CONCLUSIONS

This study emphasizes that the Bahamian archipelago is a botanical region that has many things to be discovered, both at the taxonomic and plant community level. Our understanding of some islands is detailed, while others have been largely ignored. In addition, studies that have surveyed the archipelago broadly, in an attempt to cover the entire area, lose the finer details of the ecology of many islands because many islands are not well explored.

This is not meant to disparage the many fine collectors and field workers that have spent time in the Bahamas but to state that there remains much to be done.

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