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THE ISLAND OF ANEGADA AND ITS FLORA

by W. G. D'Arcy

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The island of Anegada in the British Virgin Islands is of interest because of its isolated location in relation to the Antillean island arc, its unusual topography amongst the Virgin Islands, and also the fact that it has received very little scientific attention. It now seems destined to join the list of islands which have succumbed to modern "development". This checklist combines past published reports with the writer's own collections and attempts to correct the nomenclature formerly applied to this flora.

THE ISLAND

Anegada is the northeasternmost of the British Virgin Islands and of the entire West Indian arc for that matter, vying with the rocky lighthouse, Sombrero, well to the southeast, as the closest Antillean approach to Europe. Its geographic coordinates are 18°45'N and 64°20'W, and it encompasses 14.987 square miles (Klumb and Robbins 1960) or about 33 square km. In shape it is a rather lumpy crescent with its long axis running approximately west by north and east by south. The nearest land, Virgin Gorda, some thirteen miles (ca 22 km) to the south and slightly west, is a prominent feature on the horizon (Fig. 1), as is the mass of the other Virgins--Tortola, Camanoe and Jost Van Dyke--further to the southwest. To the north and east there is no land for a long way.

Unlike the other Virgin Islands which display rather sharp relief, with an elevation of 1,780 feet (450 m) on Tortola and elevations of over 1,000 feet (300 m) on several other islands, Anegada is flat. On approaching it by small boat from the west, one sees the four or seven stunted coconut trees long before actual land can be perceived. Schomburgk (1832) mentions a height of 60 feet at the east end of the island, and Britton (1916) suggests a height of 30 feet. The greatest elevation today would seem to be less than half that, and much of the island must be less than ten feet above sea level.

The island surface is of an almost white coquina limestone which over much of the area has a flat, planed appearance as if some prehistoric workers had levelled it to make roads. Even in sandy places, there is considerable scree or broken rock lying about.

Schomburgk mentions taking "gravel" and not shells at depths of over thirty feet (9 m) from the surface, and it would be interesting to know what sort of gravel this is.

A considerable portion of the surface of Anegada is occupied by salt or brackish ponds, which in the west sometimes flood large areas. In places, there is a depth of sand which has been suitable for growing cotton, tomatoes and provision crops at various times in the past. In other places the surface is stony with little soil or sand cover. Here and there, but especially at the middle of the island nearer to the Atlantic coast, are a number of slobs, or funnel-like natural wells of fresh or almost fresh water. There is apparently one or more large aquifers beneath the island which have only minor connections with the sea. Although Schomburgk reports fluctuations in the water table, ground water is probably available to shrubs and trees at most times.

The original vegetation is difficult to envision, but it must have been much more developed than it is now. Schomburgk mentions clearing of the underwood, and since then there has been charcoal cutting and pasturing of goats and cattle. Near The Settlement, which is in the eastern portion of the island, there is severe overgrazing so that with the exception of one or two carefully kept yards, the landscape has the appearance of an unwholesome wasteland. Other parts of the eastern portion of the island consists of an open woodland with well dispersed trees of considerable basal girth but all evenly trimmed at the top by the winds so that only the few coconut trees already mentioned manage to surpass a height of about 15 feet. Along the south coast which is somewhat sheltered from currents and winds there is mangrove vegetation.

The 1960 population of Anegada was 300 (Klumb & Robbins 1960), but was declining until in 1967 it was only about 100 inhabitants. Most of them lived in The Settlement, getting their livings by fishing or remittances from outside. According to local legend, The Settlement was situated where it is, miles from any deep-water landing, so that there could be time for warning to hide the women when buccaneers landed. A more likely reason is the attempt to locate away from occasional flooding to the west near where the deep water is to be found. Another legend, perhaps of some charm to outsiders but not to Anegadians, is that Anegada will one day sink beneath the sea. Proof of this will be unfortunate for vegetation and residents alike.

Impact of the outside world has been gaining force. Charcoaling and grazing have traditionally taken their toll of the vegetation, and materials for the construction of fish-pots before wire came into general use were supplied by local species. In the 1950's an American missile tracking station was operated on Anegada. At about the same time, Mr. Norman Fowler, now a Road Town personality, brought modern concepts to bear on tomato farming and shark fishing; and for the past ten or fifteen years there have been numerous, well-equipped visits by

Puerto Rican duck hunters. With increased awareness of the island by outsiders and the declining population of Anegadians, it is not surprising that the island is now being developed. Recent issues of the Island Sun (Road Town) describe plans for large scale subdivision including an international airport. The present entrepreneurs seem to be well financed and the bulldozers are already at work.

Botanical Collections

Anegada was visited by N. L. Britton, Director of the New York Botanical Garden, and W. C. Fishlock, Curator of the Botanical Station at Road Town, Tortola, on February 19-20, 1913, and the botanical collections were described by Britton (1916). Courtesy of the Government Medical Officers, I was able to visit the island in 1959 and again in 1967, when I was able to take some botanical specimens. Time on these visits was limited to that of the two or three hour clinic conducted by the Medical Officer, but it did permit a walk from The Settlement to Loblolly Bay on the Atlantic side. Besides my account here and that by Britton, I know of no other published botanical records for the island, but Dr. R. A. Howard, The Arnold Arboretum, Jamaica Plain, Mass., Mr. Roy Woodbury, Agricultural Experiment Station, Rio Piedras, Puerto Rico, and Dr. Elbert L. Little, Jr., United States Forest Service, Washington, D. C., have each mentioned to me in the past that they know of other small collections now in different herbaria.

Acknowledgements

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THE FLORA

The known flora of Anegada comprises 139 species of angiosperms, two mosses, one charophyte and eight lichens. The flora consists of species capable of growing on limestone; in various, but always some, element of salt spray; and under xeric stress from oceanic winds passing over a small, hot land mass. Britton considered the island to have one endemic genus and five endemic species, a considerable number for an island of this size in the West Indies. The principal floristic relations are with the other Virgins and with Puerto Rico, but the relationships with the Bahamas and Hispaniola are also of interest. Much of the flora is of widespread West Indian species.

The endemic genus Fishlockia consists of one species, F. anegadensis, which was first described as an Acacia. It is a plentiful tree, with very dark green foliage and large fascicles of strong, acicular spines to 8 cm long on the trunk and main branches. In foliage it closely resembles a number of West Indian species of Pithecellobium, e.g., P. unguis-cati and P. kewensis, and to some extent the Mexican P. calostachys. The foliage does not resemble that of Acacia. An examination of all acacias at the Missouri Botanical Garden, which included a good representation of African and other Old World species, disclosed no species which approached Fishlockia even remotely. As for the spines on the trunk, such spines are recorded on Acacia acuifera, a species endemic to the Bahamas, but one which has multi-pinnate leaves, as is usual for West Indian acacias. The flowers closely resemble those of the pithecellobiums mentioned but have the Acacia character of free stamens. Britton & Rose (1928) may have had the same temptation as I, to transfer the species to Pithecellobium, but chose to consider it a distinct genus. Monographic work with a good circumscription of Pithecellobium would be useful in assigning this taxon. In any event, it is a highly distinctive entity with its closest relative apparently in the nearby Bahamas.

The other endemics are not so dramatic. Chamaesyce anegadensis may be a synonym of C. turpinii (see Burch 1966, p. 96). C. turpinii also occurs on Hispaniola, and I have collected it at Salinas de Ensenada on the south coast of Puerto Rico. It is a succulent little species that hides in holes in the limestone at the edge of the sea. The Astephanus mentioned by Britton (1916) was later described by him as a Metastelma and transferred to Cynanchum in 1963. This is a large genus which includes many Antillean species of rather inconspicuous distinction. Britton referred to a still undescribed species of Sabal which he thought was new, but he was unwilling to describe it because it lacked flowers and fruit. The fifth endemic was a lichen, Arthonia anegadensis, growing on bark of Pisonia subcordata. Thus, the endemism of the island reduces to one endemic genus and two described species of higher plants, plus one species of lichen.

The list of species includes few exotics. Dactyloctenium aegyptium, Cocos nucifera, Aloe barbadensis and Nerium oleander were introduced by post-Columbian man, and it is known that Lycopersicon esculentum and Gossypium spp. have been cultivated in the past. Any non goat-proof introductions were not likely to persist.

A good part of the Anegada flora is a littoral element widespread throughout the Caribbean area, and about a dozen species are common to the coasts of the New World and Africa (Guppy 1917). The closest relationship of the flora is with Puerto Rico and the other Virgin Islands. Some twenty non-endemic species in the Anegada list have not been reported for the other Virgins, and only seventeen are not found on the island of Puerto Rico. Species which do not occur on the other Virgins or on Puerto Rico have ranges north to the Bahamas or south to

the Leeward Islands, and a few reach others of the Greater Antilles. Fimbristylis inaguensis, Thrinax morrisii, Salicornia perennis, Malpighia linearis, M. infestissima, Centaurium brittonii, Jacquemontia cayensis, Evolvulus squamosus, Cordia bahamensis, Lycium tweedianum all miss Puerto Rico. They are better known from the flat islands to the outside of the island arc.

A striking feature of Anegada's floristic relationship is the affinity with Hispaniola. Over 100 species of the Anegada flora occur on Hispaniola, and of these seventy occur in Barahona Province, Dominican Republic. Several species have been reported for Hispaniola in Barahona or Azua provinces only, e.g., Piriqueta diffusa, Pilea tenerrima, and Phyllanthus polycladus (Moscoso 1943), but further collecting may show wider distributions on this island.

Anegada is isolated not only in terms of simple geography but also in terms of the vectors which might enrich the flora. Hurricanes are few and generally come from the south, perhaps never from the west or north. The prevailing winds are from the east and seldom pass over other land before reaching this island. Ocean currents come steadily from the southeast or east, the Antillean Stream mentioned by Guppy (1917). Winds and currents, when they do pass over land first, are associated with Sombrero, Anguilla or Barbuda, similar islands of the outer arc, but this is not usually the case, for the winds and currents from these islands most commonly pass more directly to the west. The continuous winds over Anegada must discourage most birds. Bond (1961) shows that the outer islands are on the migration routes of birds passing through the Bahamas on their way to the Leeward Islands to southward.

Ocean currents moving to the west may do so in two directions from Anegada. Schomburgk describes the drift to the northwest as steady at about one knot, and this current moves in the direction of Turks and Caicos and the Bahamas, but must sometimes shift southward and be deflected to the north by the bulge in Hispaniola near Puerto Plata, Dominican Republic. Ocean currents may also take a more southerly course to the west from Anegada, either through the Sir Francis Drake Channel, where it causes a substantial rip current at the west end of Tortola, or by way of the much larger Anegada Passage between Anegada and Anguilla. These two currents unite south of St. Thomas and continue westward along the south coast of Puerto Rico and Hispaniola until directed sharply southward into the Caribbean by Barahona Province.

The vectors relating to floristic interchange with Anegada make it feasible for propagules to move from east to west or northwest, but with the exception of bird movements from the Bahamas southeastward to Anegada, movements to the east are less likely, especially over the distances considered. The Mona Passage between Puerto Rico and Hispaniola is over fifty miles across, and the distance from Barahona to Anegada is over five hundred miles. The grand circular movements of currents to shores of Anegada via the coasts of Central America and the coasts of Europe

and Africa would disperse only those plants adapted to long time periods on the water.

As pointed out by Little (1969), as recently as 11,000 years ago Northern Hemisphere glaciations caused a lowering of sea level sufficient to join all of the Virgins except St. Croix with Puerto Rico. A lowering of about 120 feet would be sufficient to achieve this, while it is estimated (Clark & Stearn 1960) that the actual lowering may have reached 350 feet. A continuous Puerto Rico-Virgin Island land mass must have persisted for several thousand years at its latest occurrence (Wisconsin glaciation), and this no doubt allowed many plants to move between the now recognized islands by overland migration. As seas rose, species which were not adapted to dispersal over water became isolated on insular land areas. Those in the eastern part of the former area gradually ceased to receive genes from the western part, and with release from the larger gene pool, speciation was free to favor plants adapted to the special environments at the eastern edge. Plants in the west would for a long time, and do to some extent still, receive genes from the eastern populations in the form of pollen grains carried by wind-blown insects and off-course birds and as seeds and other propagules carried by winds and currents from east to west. This one-way movement of the vectors from the easternmost islands, of which Anegada is the extreme example, is clearly important in accounting for the endemism that occurs there. The question is why there is not more. There has been a time span of some 5,000-10,000 years for independent speciation to take place. There are many small islands which favor occurrence of populations varying as a result of random drift, as well as an environment which exerts important stresses by wind, salt spray, drought and insolation, and perhaps formerly by now-extinct herbivores. The answer seems to be the return of new genetic developments to the larger populations in the west, obscuring the extent of differentiation in the eastern populations, and sometimes affecting the parent strains on the western land mass. In other cases, species which developed sufficiently to be distinguished as such may have made the passage downhill (down wind or down stream) intact and taken their places in the flora of the area as a whole rather than as endemics to the eastern edge only.

With the sea level subsidence of Pleistocene glaciations, the Mona Passage may not have been above sea level, and if it was, it was not for long. Puerto Rico and Hispaniola were essentially distinct land masses throughout most of this period. Accordingly, we should not be surprised to find cases where plants evolved on eastern islands and moved westward with wind or currents to Hispaniola. Such is perhaps the case with Chamaesyce turpinii, Croton discolor, C. betulinus, Cassine xylocarpa, Heliotropium crispiflorum and probably others. Much of the flora of the Bahamas probably was received from the Leeward Islands, the Virgin Islands, and especially Anegada in just such a fashion.

The list of the Anegada flora as now known is too short to come to more than tentative conclusions. Certainly it seems likely that enlargement of the list by further collecting in the immediate future will turn up a number of species and forms, throwing important light on the evolution of many Greater Antilles taxa. The same considerations apply to fresh water algae and fauna, to insects and to other animals. Thomas (1965) has already turned up unexpected patterns in the worm snake genus Typhlops.

CHECKLIST OF ANEGADA FLORA

In the following list of species, nomenclature is corrected from the now discarded American Code names as far as possible, but no recourse was made to type material. Synonyms and wrong author citations are mostly restricted to names used by Britton, but in some cases, other names in current use have been added. All species named without citation of specimens are taken from Britton (1916) or Britton & Wilson (1923-25) whose supporting collections are at New York Botanical Garden (NY). The checklist proceeds in the order of Britton & Wilson, which is essentially that of Dalla Torre & Harms. Specimens have been lodged in several herbaria, e.g. Missouri Botanical Garden (MO), University of Florida, Gainesville (FLAS), Arnold Arboretum (A). Specimens were identified by the author except where noted. Those sent to Mr. Roy Woodbury for identification are at the Agricultural Experiment Station, Rio Piedras, Puerto Rico.

In a few cases, no specimens were taken, but the species was later identified from a color transparency. Citing such ephemeral sources is of course to be frowned upon, but in this case it seems reasonable as only strikingly distinctive plants are so named.

A. ANGIOSPERMS

POACEAE

Arundo sp.
Reported by Schomburgk (1832) but not collected since.

Dactyloctenium aegyptium (L.) Beauv.
D. aegyptium (L.) Willd.

Echinochloa colonum (L.) Link
D'Arcy 2127 (FLAS)

Eragrostis ciliaris (L.) R. Br.
E. ciliaris (L.) Link

Eragrostis urbaniana Hitchc.

Panicum geminatum Forsk.

Panicum utowanaeum Scribn.

Paspalum laxum Lam.
P. glabrum Poir.

CYPERACEAE

Cyperus cuspidatus H.B.K.

Cyperus elegans L.

Cyperus fuligineus Chapm.

Cyperus planifolius Rich.
C. brunneus Sw.

Fimbristylis inaguensis Britt.

Fimbristylis monostachya (L). Hassk.
Abildgaardia monostachya (L.) Vahl

ARECACEAE

Cocos nucifera L.
D'Arcy photo

Sabal sp.

Thrinax morrisii Wendl.

BROMELIACEAE

Tillandsia utriculata L.

COMMELINACEAE

Commelina elegans Kunth
C. elegans H.B.K.

LILIACEAE

Aloe barbadensis Mill.
Aloe vulgaris Lam.
D'Arcy photo. Naturalized around The Settlement.

AMARYLLIDACEAE

Agave missionum Trel.

Furcraea tuberosa Ait. f.

ORCHIDACEAE

Spiranthes stahlii Cogn. in Urb.
Mesadenus lucayanus (Britt.) Schlecht.

Tetramicra elegans (Hamilt.)

URTICACEAE

Pilea margarettae Britt.

Pilea microphylla (L.) Liebm.

Pilea tenerrima Miq.

OLACACEAE

Schoepfia obovata C. Wright

LORANTHACEAE

Dendropemon caribaeus Krug & Urb.
Phthirusa caribaea (Krug & Urb.) Engl.

POLYGONACEAE

Coccoloba krugii Lindau
Coccolobis krugii Lindau
D'Arcy 2138, det. R. Woodbury

Coccoloba uvifera (L.) L.
Coccolobis uvifera (L.) Jacq.
D'Arcy photo

CHENOPODIACEAE

Salicornia perennis Mill.
D'Arcy 2120 (FLAS).

AMARANTHACEAE

Achyranthes portoricensis (Ktze.) Standl.

Lithophila muscoides Sw.

Philoxerus vermicularis (L.) Beauv.
P. vermicularis (L.) Nutt.

NYCTAGINACEAE

Pisonia subcordata Sw.

BATACEAE

Batis maritima L.

AIZOACEAE

Cypselea humifusa Turp.

PORTULACACEAE

Portulaca halimoides L.

Portulaca oleracea L.

CRASSULACEAE

Kalanchoë pinnata (Lam.) Pers.
Bryophyllum pinnatum (Lam.) Kurz

MIMOSACEAE

Desmanthus virgatus (L.) Willd.
Acuan virgatum (L.) Medic.

Fishlockia anegadensis (Britt.) Britt. & Rose
Acacia anegadensis Britt.
D'Arcy 2124 (FLAS).

Pithecellobium unguis-cati (L.) Mart.

CAESALPINIACEAE

Cassia bicapsularis L.
Adipera bicapsularis (L.) Britt. & Rose

Cassia glandulosa var. swartzii (Wickstr.) J.F. Macbr.
Chamaecrista swartzii (Wickstr.) Britt.

Cassia occidentalis L.
D'Arcy 2123 (FLAS).

Cassia polyphylla Jacq.
Peiranisia polyphylla (Jacq.) Britt. & Rose

Cassia sophera L.

FABACEAE

Centrosema virginianum (L.) Benth.
Bradburya virginiana (L.) Ktze.

Crotalaria lotifolia L.

Galactia dubia DC.
D'Arcy 2116 (MO)

Pictetia aculeata (Vahl) Urb.
D'Arcy 2135 (FLAS)

Sophora tomentosa L.

Stylosanthes hamata (L.) Taub.

MALPIGHIACEAE

Byrsonima lucida (Mill.) DC.
B. cuneata (Turcz.) P. Wilson

Malpighia infestissima A. Juss. ex Ndz.
M. infestissima (A. Juss.) Rich.

Malpighia linearis Jacq.
D'Arcy 2121 (FLAS)

Stigmaphyllon periplocifolium (Desf.) Juss.
S. lingulatum (Poir.) Small

RUTACEAE

Amyris elemifera L.
D'Arcy 2126 (FLAS)

SURIANACEAE

Suriana maritima L.

POLYGALACEAE

Polygala hecatentha Urb.

EUPHORBIACEAE

Argythamnia candicans Sw.
D'Arcy 2115 (MO)

Argythamnia stahlii Urb.

Chamaesyce articulata (Aubl.) Britt.

Chamaesyce blodgettii (Engelm.) Small

Chamaesyce mesembrianthemifolia (Jacq.) Dugand
Chamaesyce buxifolia (Lam.) Small

Chamaesyce serpens (H.B.K.) Small

Chamaesyce turpinii (Boiss.) Millsp.
C. anegadensis Millsp.

Croton betulinus Vahl
D'Arcy 2113 (FLAS)

Croton discolor Willd
D'Arcy 2125 (FLAS)

Euphorbia petiolaris Sims
Aklema petiolare (Sims) Millsp.
D'Arcy 2137 (FLAS)

Hippomane mancinella L.
D'Arcy, observation only -- one tree behind Loblolly Bay.

Jatropha gossypifolia L.
Adenoropium gossypifolium (L.) Pohl
D'Arcy photo

Phyllanthus polycladus Urb.

CELASTRACEAE

Cassine xylocarpa Vent.
Elaeodendrum xylocarpum (Vent.) DC.

Crossopetalum rhacoma Cranz
Rhacoma crossopetalum L.
D'Arcy 2139 (A), det. R.A. Howard

Gyminda latifolia (Sw.) Urb.
D'Arcy 2130 (MO)

SAPINDACEAE

Dodonaea viscosa Jacq. var spatulata (J. E. Sm.) Benth.
D. ehrenbergii Schl.

Serjania polyphylla (L.) Radlk.

RHAMNACEAE

Colubrina arborescens (Mill.) Sarg.
C. colubrina (Jacq.) Millsp.
D'Arcy 2128, det. R. Woodbury.

Colubrina reclinata (L'Her.) Brongn.

Krugiodendron ferreum (Vahl) Urb.

Reynosia uncinata Urb.

Zizyphus rignonii Delp.
Sarcomphalus domingensis (Spreng.) Krug & Urb.
D'Arcy 2180 (FLAS), det. R. Woodbury; 2140 (MO)

VITACEAE

Cissus trifoliata (L.) L.
C. trifoliata L.

TILIACEAE

Corchorus hirsutus L.

MALVACEAE

Sida ciliaris L.

Sida procumbens Sw.

STERCULIACEAE

Waltheria indica L.
W. americana L.

CANELLACEAE

Canella winterana (L.) Gaertn.

TURNERACEAE

Turnera diffusa Willd.
D'Arcy 2112 (FLAS, MO)

PASSIFLORACEAE

Passiflora suberosa L.
P. pallida L.

CACTACEAE

Melocactus intortus (Mill.) Urb.
Cactus intortus Mill.

Opuntia aff. dillenii (Ker-Gawl.) Haw.
D'Arcy photo

Pilosocereus royeni (L.) Byles & Rowley
Cephalocereus royeni (L.) Britt.

TERMINALIACEAE

Conocarpus erecta L.

Laguncularia racemosa (L.) Gaertn. f.

MYRTACEAE

Eugenia axillaris (Sw.) Willd.

RHIZOPHORACEAE

Rhizophora mangle L.

THEOPHRASTACEAE

Jacquinia arborea Vahl
J. barbasco (Loefl.) Mez.

Jacquinia berterii Spreng.
D'Arcy 2134 (FLAS)

SAPOTACEAE

Bumelia obovata (Lam.) A. DC.

GENTIANACEAE

Centaurium brittonii Millsp.

APOCYNACEAE

Nerium oleander L.
D'Arcy photo, cultivated at The Settlement

Plumeria alba L.

Urechites lutea (L.) Britt.
D'Arcy 2119 (FLAS)

ASCLEPIADACEAE

Cynanchum anegadense (Britt.) Alain
Metastelma anegadense Britt.

CONVOLVULACEAE

Evolvulus glaber Spreng.

Evolvulus sericeus Sw.

Evolvulus squamosus Britt.
Listed by Britton, but van Ooststroom (1934) did not cite an Anegada specimen for this species.

Ipomoea pes-caprae (L.) Roth
D'Arcy photo -- Loblolly Bay.

Jacquemontia cayensis Britt.

EHRETIACEAE

Bourreria succulenta Jacq.

Cordia bahamensis (Urb.) Millsp.
Varronia bahamensis (Urb.) Millsp.

BORAGINACEAE

Heliotropium crispiflorum Urb.

Heliotropium microphyllum Sw.
H. inaguense Britt.
H. plumerii Urb. & Ekm.
D'Arcy 2117 (FLAS)

Tournefortia gnaphalodes (L.) R. Br.
Mallotonia gnaphalodes (L.) Britt.

Tournefortia microphylla Bert. ex Spreng.
D'Arcy 2129 (MO, FLAS)

VERBENACEAE

Citharexylum fruticosum L.

Clerodendrum aculeatum (L.) Schlecht.
Volkameria aculeata L.

Lantana involucrata L.

LAMIACEAE

Salvia serotina L.
D'Arcy 2114 (FLAS).

SOLANACEAE

Lycium tweedianum var. chrysocarpum (Urb. & Ekm.) C.L. Hitchc.
L. americanum Jacq.
D'Arcy 2136 (FLAS)

Physalis angulata L.

Solanum persicaefolium Dun.
D'Arcy 2154 (FLAS)

BIGNONIACEAE

Tabebuia pallida (Lindl.) Miers
T. heterophylla (DC) Britt.

RUBIACEAE

Erithalis fruticosa L.

Ernodea littoralis Sw.

Exostema caribaeum (Jacq.) R. & S.

Randia aculeata L.
R. mitis L.

Spermacoce tenuior L.

Strumpfia maritima Jacq.
D'Arcy 2141 (FLAS)

CUCURBITACEAE

Cucumis anguria L.

GOODENIACEAE

Scaevola plumieri (L.) Urb.

COMPOSITAE

Borrichia arborescens (L.) DC.

Gundlachia corymbosa (Urb.) Britt.
D'Arcy 2122 (MO)

Pluchea purpurascens (Sw.) DC.

Wedelia parviflora L.C. Rich.
D'Arcy 2131 (MO)

B. BRYOPHYTES

Bryum microdecurrens E. G. Britt.

Hymenostomum breutelii (C. Muell.) Broth.

C. CHAROPHYTES

Chara sp.

D. LICHENS

Anthracothecium libricolum (Fée) Muell.-Arg.

Arthonia interducta Nyl.

Arthonia anegadensis Riddle

Arthopyrenia fallax (Nyl.) Arnold

Buellia parasema var aeruginascens (Nyl.) Muell.-Arg.

Glyphis cicatricosa Ach.

Pyxine meissneri Tuck.

Ramalina denticulata (Eschw.) Nyl.

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Plate 1. View of Anegada from near Loblolly Bay looking to the southwest. Virgin Gorda is to be seen in the distance.

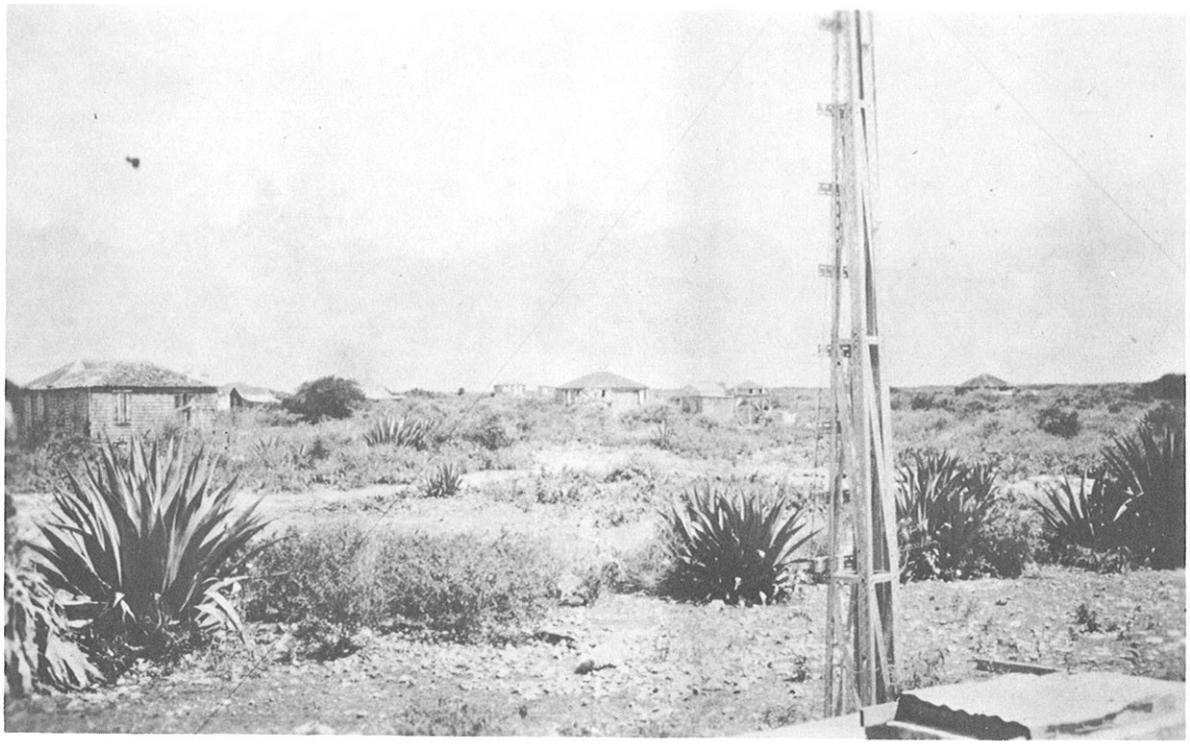

Plate 2. View of the landscape at The Settlement showing the extent of overgrazing.

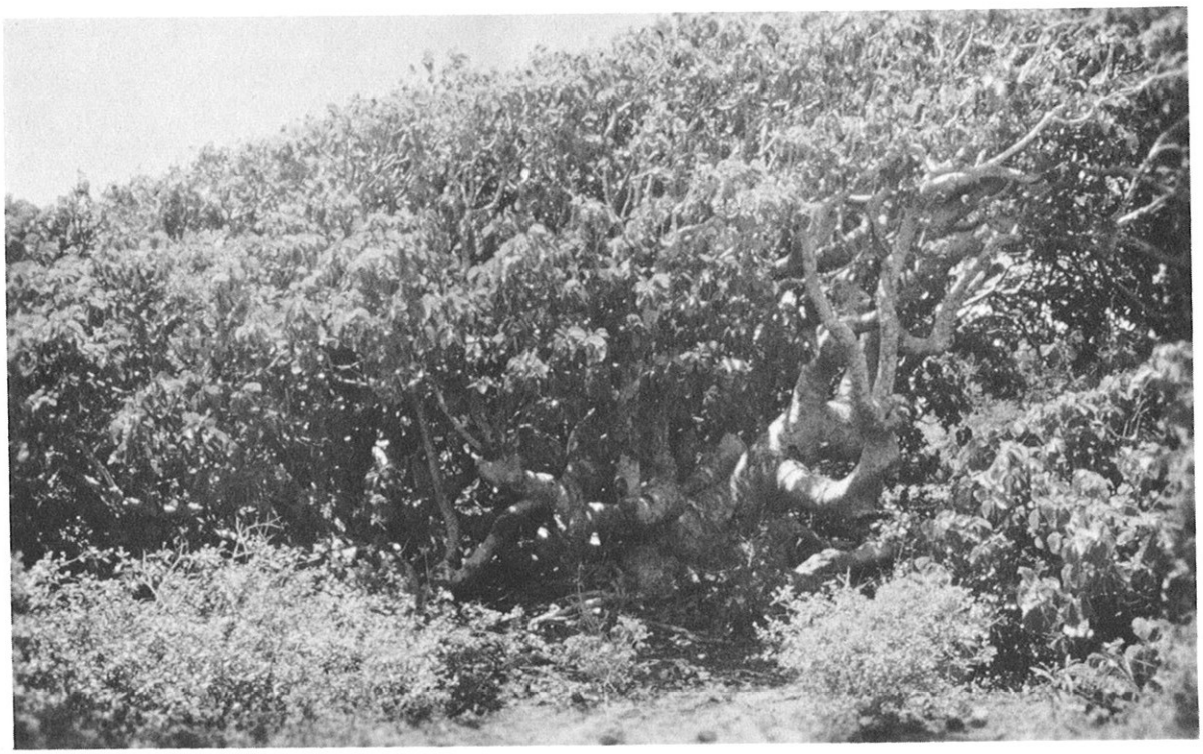

Plate 3. Large Pisonia tree showing planing of the top by the winds.

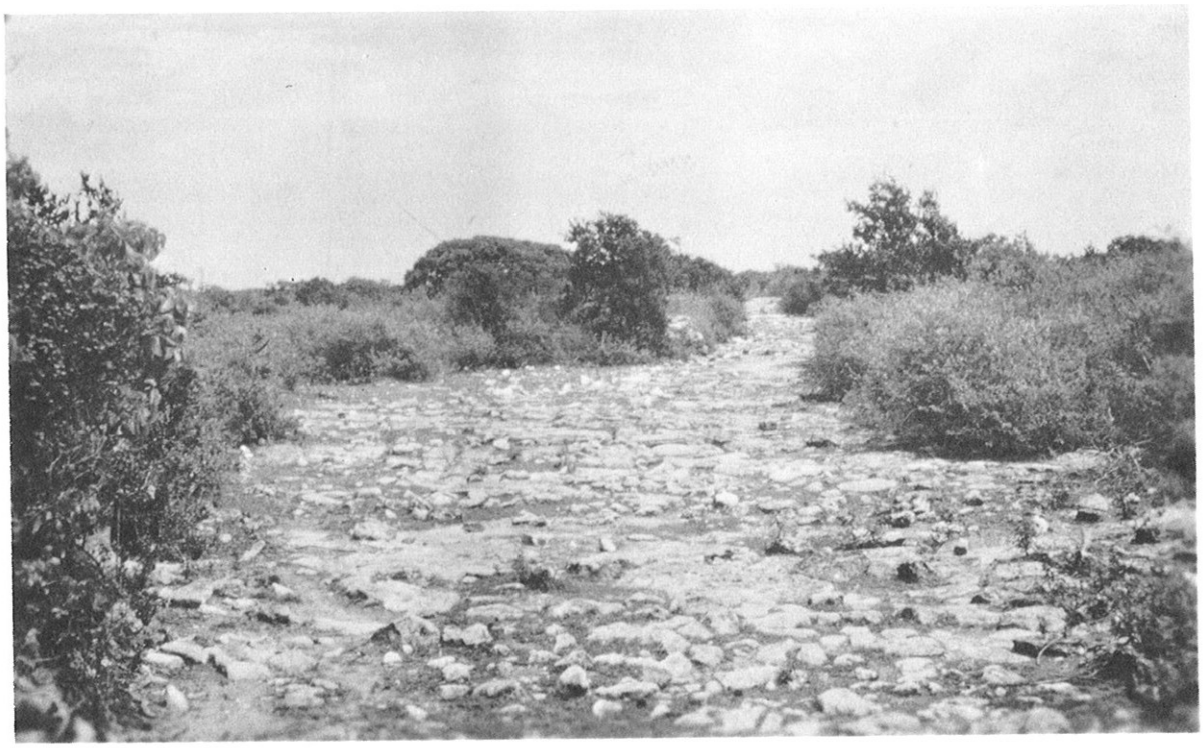

Plate 4. View of the rocky plain between Loblolly Bay and The Settlement.

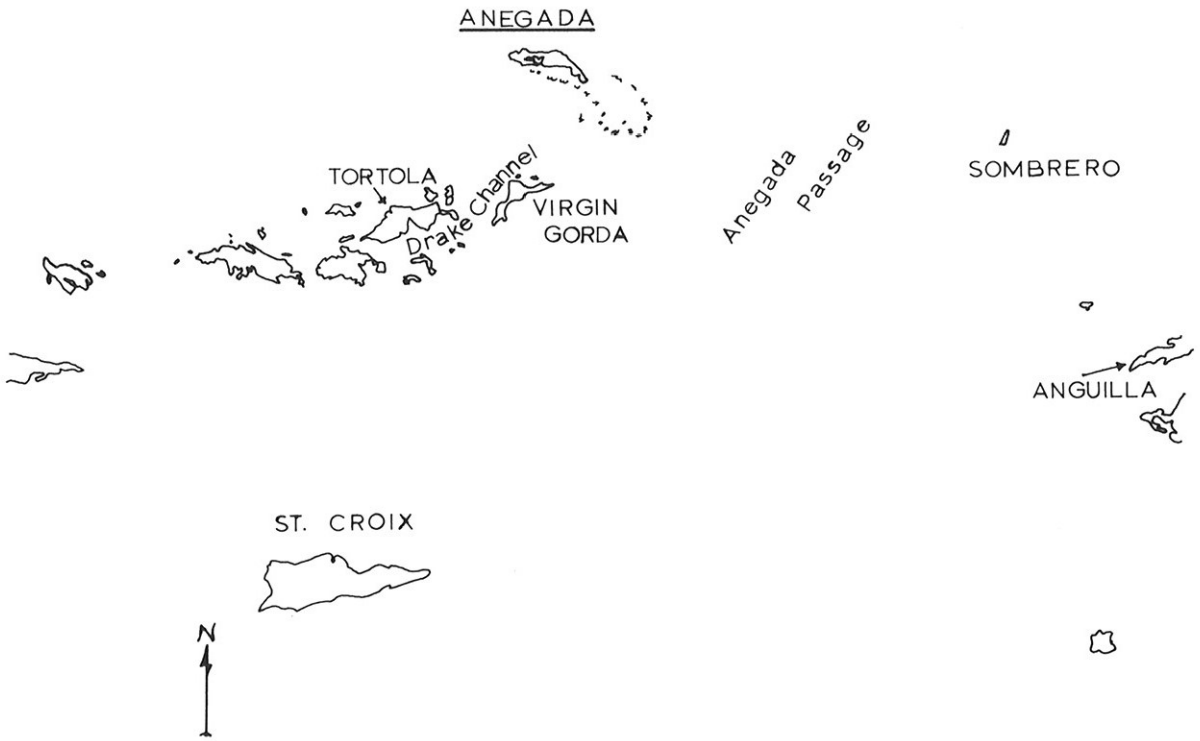

Plate 5. Map showing Anegada in relation to the Virgin Islands.

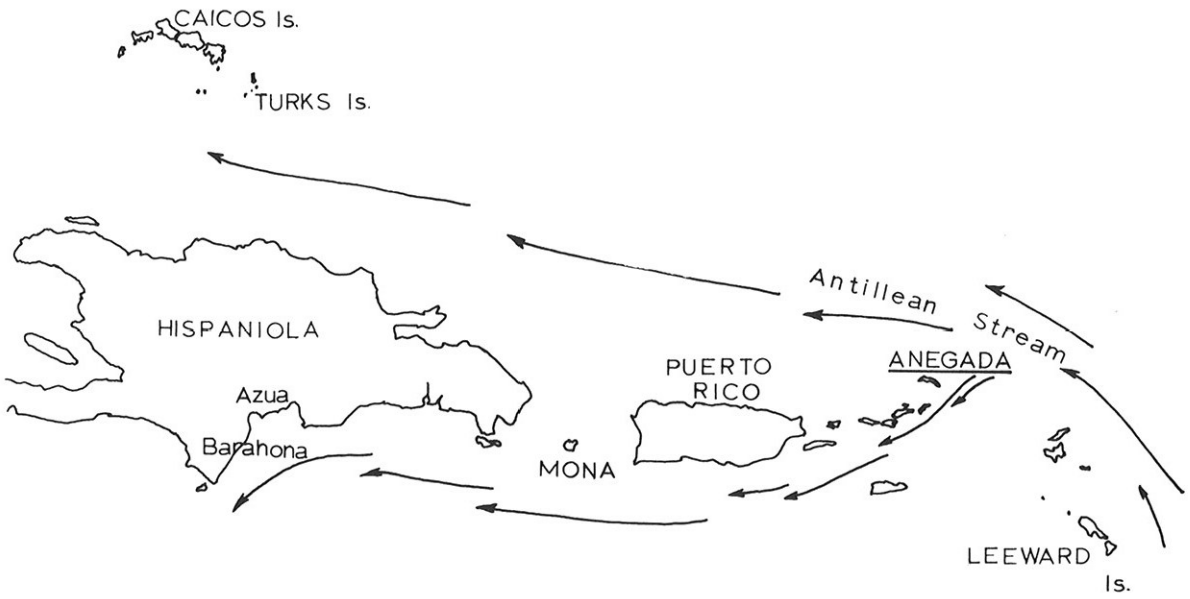

Plate 6. Map showing Anegada in relation to ocean currents and the islands to the west.