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## The habitats of *Leptochloopsis virgata* in the Dominican Republic

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*Abstract.*- This paper deals with the *Leptochloopsis virgata* esparto patches growing in the Dominican Republic. These communities thrive mostly in shaded areas, as happens in the southwest of the island and the Cibao valley, where xericity records are high and vegetative inactivity lasts for over 7 months. The *Leptochloopsis virgata* esparto patches tend to be located in the Caribbean-Atlantic Subprovince, on the Quaternary marls of the Cibao valley, Azua, Bani, Lago Enriquillo, and on the serpentines of Puerto Plata, with an ombrotype ranging from semiarid to subhumid, but with a semiarid and dry character in the areas colonized by the espartillo and a thermotype which always remains infratropical. The high percentage of endemic species and media give rise to a high number of endemic, ecologically and geobotanically, highly valuable habitats. This paper suggests two new alliances and four associations. These latter, at least, present an endemic character and, consequently, should be considered as priority habitats for preservation purposes, since they are located in man-altered areas and the risk of species extinction cannot be ignored.

*Key words* : endemic species - esparto patch - phytosociology - association - Dominican Republic.

*Résumé.*- Nous avons étudié les communautés de *Leptochloopsis virgata* en République Dominicaine. Elles sont généralement dans des sites ombragés, comme dans le sud-ouest et la vallée de Cibao. Elles sont localisées généralement dans la sous-province Caribéo-Atlantique, sur marne à Cibao, Azua, Bani, Lac Enriquillo, et sur les serpentines de Port Argent. Le haut pourcentage d'endémicité et les biotopes créent un grand nombre d'habitats endémiques, de haute valeur écologique et géobotanique. Nous proposons dans ce travail deux nouvelles alliances et quatre associations ; au moins celles-ci possèdent un caractère endémique et devraient être considérées comme des habitats prioritaires pour la conservation, d'autant qu'elles sont localisées dans des régions influencées par l'homme, avec un risque d'extinction d'espèces.

*Mots clés* : endémisme - espartal - phytosociologie - association - République Dominicaine.

## I. INTRODUCTION

The Dominican Republic belongs to the so-called Greater Antilles. With its 76,484 km<sup>2</sup> surface, it is the second largest island in the group, only after Cuba (110,861 km<sup>2</sup>), and is located in the central part of the Caribbean Sea. As a result of different tectonic movements in the origin of the island, the territory is rugged and presents high altitudes, such as Pico Duarte (3,175 m) in the cordillera Central, near Sierra de Bahoruco, La Selle and the Oriental and Septentrional cordilleras. All these mountains are linked by large valleys of Quaternary origin (*e.g.* the valleys of San Juan, Cibao and the eastern coastal plains). The oldest territories of the Cordillera Central are siliceous, but the rest of the territory is made up of basic materials, *i.e.* coralline, calcareous rocks, serpentines and marls.

The *Leptochloopsis virgata* esparto patches grow in the Caribbean-Atlantic Subprovince (Cano *et al.*, 2009), on the Quaternary marls of the Cibao valley, Azúa, Bani, Lago Enriquillo, etc., and on the serpentines of Puerto Plata. The ombrotype ranges between semiarid and subhumid, but semiarid and dry conditions tend to dominate in the areas colonized by the espartillo. The thermotype always remains infratropical (Rivas-Martínez *et al.*, 1999).

The espartillo communities usually intermingle with tall scrub forming spinescent copses. *Leptochloopsis virgata* is a species which can be found in some other areas of the Caribbean such as Puerto Rico (Yates, 1966). In the studies on the phytogeography and vegetation of Cuba by Borhidi (1991), there is no mention of the esparto communities. However, they probably grow in all the dry areas of the Antilles. There are no phytosociological studies on these communities. Nevertheless, Borhidi (1991) mentions the order *Lantano-Cordietalia* Borhidi *in* Borhidi *et al.* 1979, belonging to the *Coccothrinacetoplugerietea* class, which comprises copses growing on limestone terraces in the west of the Indies. These present semidesert and thorny characteristics and their growth is conditioned by a tropical, bixerid season with 8-10 dry months and 600-1000 mm annual rainfall rates. The *Leptochloopsis virgata* communities growing in the Dominican Republic frequently show genera and species peculiar to this order in Cuba: *Lantana*, *Cordia*, *Tabebuia*, *Eugenia*, *Guettarda*, *Maytenus buxifolia*, etc. Since these esparto patches frequently intermingle with dry forest species, for the time being we have included the esparto patches thriving on marls in the *Lantano-Cordietalia* order. For these we suggest a new alliance, because they cannot be included in any of the different alliances already described in Cuba for this order. However, we include the esparto patches growing on the serpentines of Puerto Plata and presenting a peculiar serpentinelicolous flora in the class *Phyllantho-Neobracea valenzuelanae* Borhidi & Muniz *in* Borhidi *et al.* 1979. This class represents a spinescent vegetation on serpentines with a remarkable occurrence of endemic species. Although *Neobracea valenzuelana* cannot be found in the Dominican Republic, the presence of some species belonging to this class in some of our relevés leads us to include, for the time being, the esparto patches on serpentines not only in this class but also in the order *Ariadno-Phyllanthetalia* Borhidi & Muniz *in* Borhidi *et al.* 1979. It is also necessary to propose a new alliance for these communities.

So far we have sampled these espartillo communities in the following territories: Pedernales-Ceitillan (Procurrente de Barahona). Bani-Azua-Lago Enriquillo, Valle del Cibao, serpentines in Puerto Plata.

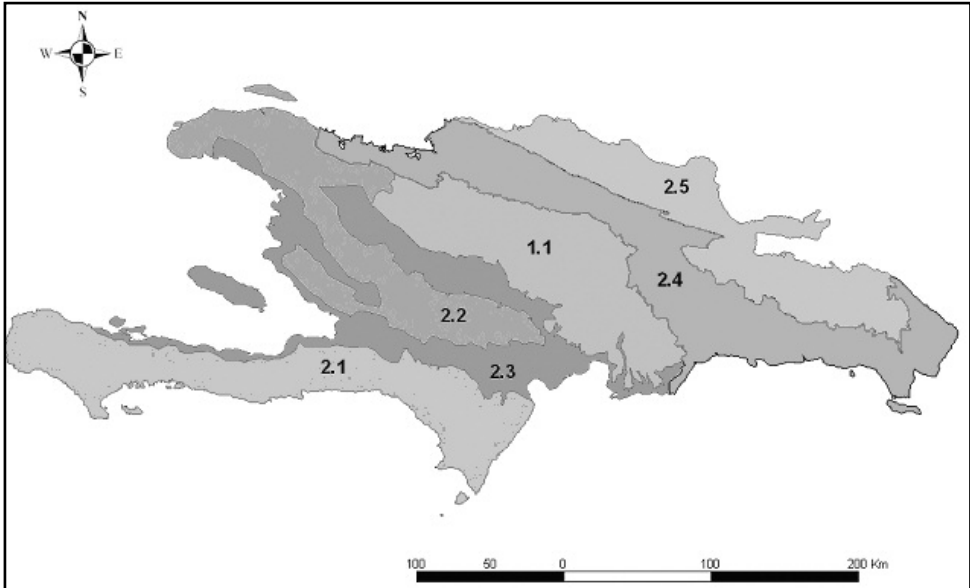


Fig. 1.- Map of the biogeographic sectors of Hispaniola. 1.1 - Central. 2.1 - Bahoruco-Hottense, 2.2 - Neiba-Matheux-Northwest, 2.3 - Azua - San Juan - Hoya Enriquillo - Port-au-Prince - Artibonite - Gonaïvès, 2.4 - Caribbean-Cibensean, 2.5 - North.

Fig 1.- Carte des secteurs biogéographiques de La Hispaniola.

## II. MATERIAL AND METHODS

We studied the esparto patches of the Dominican Republic. The field sampling carried out followed the phytosociological method suggested by Braun-Blanquet (1979). With the climatological data recorded we obtained the indexes suggested by Rivas-Martínez & Loidi (1999). Our biogeographic analysis is based on the studies of Rivas-Martínez *et al.* (1999) and Cano *et al.* (2009; Fig. 1) and our floristic study of the sampled land plots follows Liogier (1996-2000). Since there are no phytosociological studies on the island, we used studies on neighbouring islands, such as the studies of Borhidi (1991) for Cuba.

## III RESULTS AND CONCLUSIONS

### A. Bioclimatic study

Since Hispaniola is located between the 17<sup>th</sup> and 19<sup>th</sup> parallels north, the climate is tropical with fluctuations caused only by the Atlantic trade winds and the topography of the island. The average temperature is 25 °C with hardly any night, day or seasonal variation. The hottest month is August and January is the coldest one. Annual rains tend to be concentrated in two seasons, from April to June and from September to November, while the dry period lasts from December to March. The dry areas are located in the south of the island and in the large Cibao valley. The rainfall rates in the area under study range from

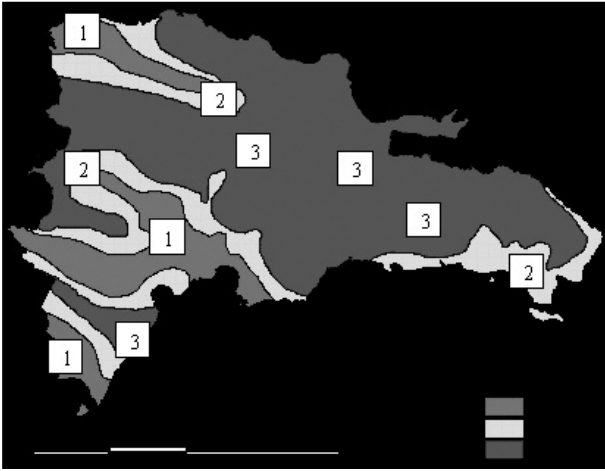


Fig 2.- Maps of ombrotypes of the Dominican Republic. 1 - Semi-arid. 2 - Dry. 3 - Subhumid-humid.  
 Fig. 2.- Carte des ombrotypes de République Dominicaine.

Table I.- Bioclimatic table (ombrotypes). Tm = hottest month average temperature. Tmi = coldest month average temperature. T = average annual temperature. Tp = positive temperature. P = average annual rainfall rate. ETP = potential evapotranspiration. Ioe = annual ombro-evaporation index. Io = ombrothermic index. Ic = continentality index.

Tableau I.- Tableau bioclimatique (ombrotypes).

Site	Site n°	Al. m.	Tm	Tmi	T	Tp	P	ETP	Ioe	Ic	Io	Ombrotype	Ref. Io value
S.P.M.	0296	3	27.5	24.8	26.0	3120	1043	1608	0.64	2.7	3.3	Upper dry	2.8-3.6
Matayaya	5401	430	24.8	22.5	23.7	2844	998	1561	0.63	2.3	3.5	Upper dry	2.8-3.6
Santiago	0404	160	27.5	22.5	25.3	3036	824	1719	0.47	5.0	2.7	Lower dry	2.0-2.8
Quinigua	0405	148	29.0	23.9	26.7	3204	755	1633	0.46	6.0	2.3	Lower dry	2.0-2.8
Mao	0406	90	28.3	23.5	26.2	3144	642	1838	0.34	4.8	2.0	Lower dry	2.0-2.8
La Antona	0408	48	28.1	22.9	25.9	3108	718	1919	0.37	5.2	2.3	Lower dry	2.0-2.8
Bani	0436	60	28.7	25.3	27.0	3240	988	1668	0.59	3.4	3.0	Upper dry	2.8-3.6
Santiago	0460	186	28.3	23.1	26.0	3120	971	1725	0.56	5.2	3.1	Upper dry	2.8-3.6
Cabo Enga	0478	2	27.9	24.9	26.5	3180	1027	1404	0.73	3.0	3.2	Upper dry	2.8-3.6
Barahona	0482	26	27.6	24.4	26.1	3132	1047	1412	0.74	3.2	3.3	Upper dry	2.8-3.6
Aeropuerto	0485	14	27.2	24.2	25.9	3108	1075	1387	0.77	3.0	3.4	Upper dry	2.8-3.6
P. L. Casas	0559	510	26.0	22.0	24.5	2940	762	1610	0.47	4.0	2.5	Lower dry	2.0-2.8
Azua	0595	76	28.6	25.3	27.0	3240	680	1763	0.38	3.3	2.0	Lower dry	2.0-2.8
Mao	0622	78	29.5	24.4	27.3	3276	750	1759	0.42	5.1	2.2	Lower dry	2.0-2.8
Cabral	0655	19	27.8	24.5	26.6	3192	916	1664	0.55	3.3	2.8	Lower dry	2.0-2.8
Oviedo	0668	3	28.2	24.3	26.2	3144	873	1672	0.52	3.9	2.7	Lower dry	2.0-2.8
Temayo	0684	21	27.9	24.7	26.7	3204	480	1804	0.26	3.2	1.4	Lower semiarid	1.0-1.5
Neyba	0698	-	29.1	25.9	27.9	3348	581	1838	0.31	3.2	1.7	Upper semiarid	1.5-2.0
Ladescur	0715	9	29.7	26.7	28.5	3420	582	1867	0.31	3.0	1.7	Upper semiarid	1.5-2.0
Salcedo	0745	5	29.2	24.8	27.2	3264	826	1736	0.47	4.4	2.5	Lower dry	2.0-2.8
Enfarfarn	0759	430	27.1	23.5	25.9	3108	1003	1600	0.62	3.6	3.2	Upper dry	2.8-3.6
Diverge	0781	2	29.7	25.7	27.9	3348	482	1864	0.25	4.0	1.4	Lower semiarid	1.0-1.5
M. Cristo	0783	7	28.6	23.9	26.5	3180	690	1752	0.39	4.7	2.1	Lower dry	2.0-2.8
Pedernales	0715	11	29.6	25.5	27.9	3348	709	1807	0.39	4.4	2.1	Lower dry	2.0-2.8
Jimani	0797	31	29.3	25.0	27.3	3276	823	1739	0.47	4.3	2.5	Lower dry	2.0-2.8
A. Sisal	4701	40	26.6	24.5	25.7	3084	369	1849	0.19	2.1	1.1	Lower semiarid	1.0-1.5
San J. M.	4903	378	25.7	22.8	24.7	2964	962	1734	0.55	2.9	3.2	Upper dry	2.8-3.6
El Penon	4904	-	27.6	23.7	25.9	3108	655	1873	0.34	3.9	2.1	Lower dry	2.0-2.8
Barahona	4905	23	27.6	24.4	26.3	3156	897	1625	0.55	3.2	2.8	Lower dry	2.0-2.8
Neyba	5301	100	27.9	25.0	27.7	3324	482	1835	0.26	2.9	1.4	Lower semiarid	1.0-1.5
A Resoli	4602	140	27.7	24.6	26.2	3144	570	1850	0.30	3.1	1.8	Upper semiarid	1.5-2.0
P Escondido	5302	400	24.4	19.9	22.6	2712	549	1628	0.33	4.5	2.0	Upper semiarid	1.5-2.0
Pto. Plata	0457	24	26.9	22.8	25.0	3000	1786	1367	1.30	4.1	5.9	Subhumid superior	4.8-7.0

Table II.- Bioclimatic table (thermotypes). Tm = hottest month average temperature. Tmi = coldest month average temperature. Tmmax = average temperature of maximum values recorded during the coldest month in the year. Tmmi = average temperature of minimum values recorded during the coldest month in the year. Tmax and Tmin = average temperature of the maximum records and average temperature of the minimum records taken during the month with the highest fluctuations in the year, i.e. the month with the widest daily range between maximum and minimum temperatures. T = average annual temperature. Tp = positive temperature (Tx12). P = average annual rainfall rate. ETP = potential evapotranspiration. loe = annual ombro-evaporation index (P/ETP). lo = ombrothermic index (= Pp = P/Tp). Ic = continentality index (Tmax-Tmi). Id = diurnality index (daily temperature range, Tmax-Tcmin).

Tableau II.- Tableau bioclimatique (thermotypes).

Site	Site n°	Alt.	Tm	Tmi	Tmmax	Tmmi	Tmax	Tmin	T	Tp	P	ETP	loe	lo	Ic	Id	I/Itc	Thermotype
Barahona (P. Barahona)	78482	10	28.0	24.8	29.2	20.3	29.8	20.7	26.4	3168	1018.7	2451	0.41	3.2	3.2	9.1	759/701	Infratrop.
Punta Cana (Altgracia)	78478	122	27.2	24.7	27.6	21.8	30.5	23.6	26.2	3144	1102.6	-	-	3.5	2.5	6.9	756/691	Infratrop.
Jimani (Independencia)	78480	31	29.6	26.0	32.0	20.0	33.4	21.1	27.9	3348	728.9	-	-	2.1	3.6	12.3	799/745	Infratrop.
L. Américas (D.Nacional)	78485	17	28.9	24.1	29.4	18.8	29.5	18.8	25.7	3084	1171.6	-	-	3.7	4.8	10.7	739/697	Infratrop.
M. Cristi (P. Monte Cristi)	78451	7	28.5	24.1	28.9	19.2	33.8	23.3	26.5	3180	672.1	-	-	2.1	4.4	10.5	746/700	Infratrop.
Santiago (P. Santiago)	78460	183	27.7	23.5	28.8	18.2	30.4	19.0	25.8	3096	1021.2	1581.2	0.64	3.2	4.2	11.4	728/680	Thermotrop.

400 mm to 1,786 mm, with areas having an Io ranging from 1.1 (Sisal) to 5.9 in P. Plata. The macrobioclimate is tropical, Caribbean-Mesoamerican, pluvial and tropical, Caribbean-Mesoamerican, xeric. The ombrotype ranges from semiarid to subhumid, and the thermotype from the infra- to the thermotropical (Tables I and II; Fig. 2).

## B. Phytosociological study

1 - There is a *Leptochloopsis virgata* community in the territories of Cofresi (Puerto Plata) located in the northwest of the Dominican Republic, in the biogeographic North Sector and on serpentines. The ombrotype is subhumid and the thermotype is infratropical. This community has 5-8 endemic species per sampling unit. Most of the plants of these esparto patches are peculiar to serpenticolous scrub and intermingle with serpenticolous thorny scrub. Although in the data recorded in Table I with an Io = 5.9, the ombrotype is upper subhumid, the xericity of this kind of substrate induces serpenticolous thorny scrub which becomes intermingled with the espartillo. The *Leptochloopsis virgata* hemicyptophytic community presents a high cover rate and a considerable number of endemic species, some of them exclusive to the serpentines: *Leptogonum buchii*, *Croton sidaefolius*, *Chamaecrista pedicellaris* var. *adenosperma*, *Rheedia barkeriana*, *Calyptrogenia biflora*, *Diodia ekmanii*. Consequently, we propose the new association *Leptogono buchii-Leptochloopsietum virgatae nova* (Table III, rel. 1 to 5; typus: rel. 1; Fig. 3), which we include in the new *Tetramicro canaliculatae-Leptochloopsion virgatae all. nova*.

2 - The Cibao valley comprises a large territory located between the cordilleras Central and Septentrional. The Quaternary sedimentary materials are mostly marls and occasionally serpentines (e.g. in Dajabón). The esparto patches are frequently intermingled with the dry forest, forming a savannah-like vegetation to the south and north of Morro de Montecristi (Velóz & Peguero, 2002). This vegetation is characterized by a high number of endemic species peculiar to the Caribbean-Cibensean (Cano *et al.*, 2009) biogeographic sector. The communities consist of bushes and the *Leptochloopsis virgata* (espartillo). The

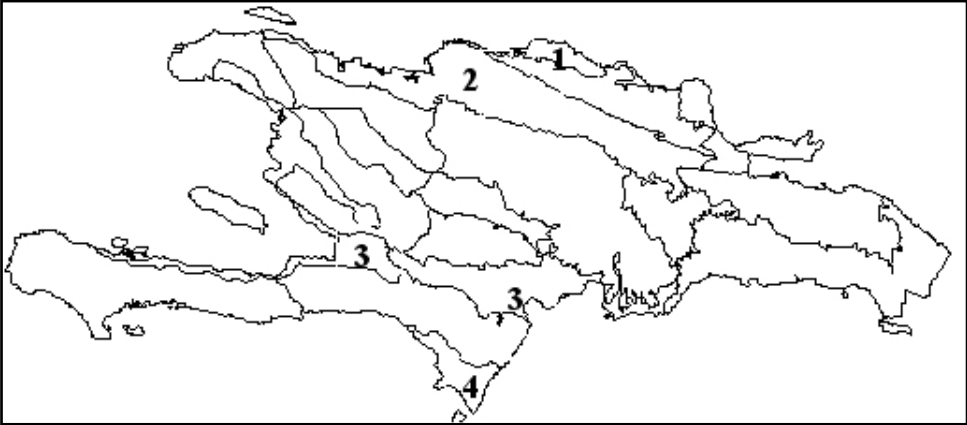


Fig 3.- Distribution of the associations under study. 1 - *Leptogono buchii*-*Leptochloopsisietum virgatae* nova. 2 - *Crotono astrophori*-*Leptochloopsisietum virgatae* nova. 3 - *Melocacto pedernalensi*-*Leptochloopsisietum virgatae* nova. 4 - *Solano microphylli*-*Leptochloopsisietum virgatae* nova.

Fig 3.- Distribution des associations étudiées.

*Leptochloopsis virgata* community grows mostly in the infratropical, dry belt, but it can also reach as far as the thermotropical belt in the Cordillera Septentrional foothills. The floristic composition includes not only many endemic species of the island which provides the alliance with a clear profile, but also some native Caribbean elements and local endemic species which permit easy discrimination of the community from the rest of the espartillo communities growing on Hispaniola. The characteristic species of this association are *Leptochloopsis virgata*, *Croton discolor*, *C. humilis*, *Turnera diffusa*, *Bastardia viscosa*, *Melochia tomentosa*, *Lantana exarata*, *Mammillaria prolifera*, *Evolvulus arbuscula*, *Heteropogon contortus* and the following local endemic taxa *Croton astrophorus*, *Lantana pauciflora*, *Gochnatia microcephala* var. *buchii*, *Lantana leonardorum*. We, therefore, propose the association *Crotono astrophori*-*Leptochloopsisietum virgatae* nova (Table IV, rel. 1 to 14; typus: rel. 2; Fig. 3).

Since there are no phytosociological studies of the island and since we cannot include the new communities in any of the alliances described for the *Lantano-Cordietalia* order, we propose the new *Crotono poitaei*-*Leptochlooion virgatae* all. nova, which should include all possible *Leptochloopsis virgata* associations. This alliance grows in at least one area of the island of Hispaniola, in the Hispaniola biogeographic province, and its characteristic species are not only *Leptochloopsis virgata*, *Croton discolor*, *C. humilis*, *Turnera diffusa*, *Bastardia viscosa*, *Melochia tomentosa*, *Lantana exarata*, *Mammillaria prolifera*, *Evolvulus arbuscula*, but also the endemic species *Croton poitaei*, *C. sidaefolius*, *Pictetia spinifolia*, *Cordia salvifolia*, *Melocactus lemairei*, *Lantana buchii*, *Galactia synandra*, *Solanum aquartia* var. *luxurians*. As typus for this new alliance, we propose the association *Crotono astrophori*-*Leptochloopsisietum virgatae*.

3 - In the territories of Pedernales-Ceitillan located in the southeast of Hispaniola, on dog-tooth limestones, under infratropical conditions and with a semiarid-dry ombrotype, there is a dry forest which we can be considered hyperxerophilous because of its long vegetati-

ve inactivity period (7 months or more; Cámara, 2004). In some sites, *i.e.* in areas with more favourable soil conditions, this forest gives way to an espartillo community dominated by *Leptochloopsis virgata*, which is also characterized by other species, such as *Chamaesyce adenoptera*, an endemic plant growing in Bahoruco and Valle del Cibao, or *Melocactus pedernalensis*, a local endemic species of Cabo Rojo-Pedernales (Procurrante de Barahona), which, together with other species such as *Portulaca rubricaulis*, *Melochia tomentosa*, *Turnera diffusa* and the endemic species *Cordia salvifolia*, *Harrisia nashii*, *Ipomoea desrousseauxii*, *Lantana exarata*, *Cameraria linearifolia*, etc., give a clear profile to this community peculiar to the biogeographic Bahoruco-Hottense Sector (Cano *et al.*, 2009). On average this habitat has 8-10 endemic plants per sampling unit. We, therefore, propose the association *Melocacto pedernalensis-Leoptochloopsietum virgatae nova* (Table V, rel. 1 to 2; typus: rel. 1; Fig. 3).

4 - The ombrotype is also frequently dry in Bani, Azua and Lago Enriquillo, and it continues into Haiti via Jimaní (Lago Henriquillo). In this case the esparto patch-scrubs develop on crumbly marls under an infratropical thermotype and a dry ombrotype. The territory is located in the sector of Azua - San Juan - Hoya Enriquillo - Port-au-Prince - Artibonite - Gonaïvès. García *et al.* (2007) have sampled the occurrence of *Leptochloopsis virgata* in the arid zones of the Sierra Martín García near the study area. In García *et al.* (2002) there are also some records of it in the Parque Nacional del Este, where possibly it gives rise to another association. According to García & Clase (2002), these plants grow in the dry forest of the province of Azua and Barahona.

As compared with the esparto patches of Pedernales-Ceitillan, the community presents some floristic differences. Not surprisingly, in these sites the dry forest is also different. Apart from *Leptochloopsis virgata*, characteristic species of this community are not only *Tribulus cistoides*, *Bastardia viscosa*, *Tephrosia cinerea*, *Tunera diffusa*, *Lantana camara*, *Croton humilis*, *C. discolor*, but also those endemic species peculiar to this sector and Pedernales-Ceitillan (Bahoruco-Hottense Sector), such as *Scolosanthus triacanthus*, *Solanum microphyllum*, *Eugenia lindahlia*, *Pictetia sulcata*, the local endemic species *Mimosa diplotricha* and the local companion taxon *Neoabbottia paniculata*. The new association suggested here, *Solano microphylli-Leptochloopsietum virgatae nova* (Table VI, rel. 1 to 3; typus: rel. 1; Fig. 3), is included in the *Crotono poitaei-Leptochloosion virgatae* alliance.

### **Syntaxonomical scheme**

*Phyllantho-Neobracea valenzuelanae* Borhidi & Muñoz *in* Borhidi *et al.* 1979

*Ariadno-Phyllanthetalia* Borhidi & Muniz *in* Borhidi *et al.* 1979

*Tetramicro canaliculatae-Leptochloopsion virgatae* all. nova

1 - *Leptogono buchii-Leptochloopsietum virgatae* ass. nova

*Coccolthrinaceto-Plumerietea* Knapp *in* Borhidi 1991

*Lantano-Cordietalia* Borhidi *in* Borhidi *et al.* 1979

*Crotono poitaei- Leptochloopsion virgatae* nova

2 - *Crotono astrophori-Leptochloopsietum virgatae* all. nova

3 - *Melocacto pedernalensis-Leptochloopsietum virgatae* ass. nova

4 - *Solano microphylli-Leptochloopsietum virgatae* ass. nova



Table III.- *Leptogono buchii-Leptochloopsisietum virgatae nova*. LF: life form (H, annual or perennial herbaceous; SH, succulent herbaceous; Ar, scrub; T, climber; A, tree-like plant; Ep, epiphyte); S: statut (E, endemic; N, native); F: family.

Tableau III.- *Leptogono buchii-Leptochloopsisietum virgatae nova*.

Altitude in m	41	95	100	69	18	LF	S	F
Area in m <sup>2</sup> x 10	40	40	30	40	40			
Cover ratio in %	80	80	90	70	75			
Xm/in m	1.00	1.00	0.80	0.90	0.90			
N° rel.	48.1	49.1	50.1	51.1	52.1			
N° order	1	2	3	4	5			
Characteristics of the association and higher units								
<i>Leptochloopsis virgata</i>	4	4	5	3	3	H	N	Poaceae
<i>Zombia antillarum</i>	2	1	1	1	1	Ar	E	Arecaceae
<i>Croton sidaefolius</i>	2	2	.	2	2	Ar	E	Euphorbiaceae
<i>Leptogonum buchii</i>	1	1	+	1	+	Ar	E	Polygonaceae
<i>Tabebuia ophiolitica</i>	2	1	+	.	.	Ar	E	Bignoniaceae
<i>Cordia lima</i>	1	1	.	.	1	Ar	N	Boraginaceae
<i>Chamaecrista pedicellaris</i> var. <i>adenosperma</i>	1	.	.	1	1	Ar	E	Leguminosae
<i>Coccoloba jimenezii</i>	1	1	+	.	.	Ar	E	Polygonaceae
<i>Ouratea ilicifolia</i>	1	.	1	1	+	Ar	N	Ochnaceae
<i>Melochia villosa</i>	1	.	.	.	.	H	N	Sterculiaceae
<i>Rheedia barkeriana</i>	1	+	+	1	.	Ar	N	Clusiaceae
<i>Galactia dictyophylla</i>	+	.	.	.	.	T	E	Leguminosae
<i>Galactia synandra</i>	.	.	.	1	.	T	E	Leguminosae
<i>Psidium sessilifolium</i>	1	2	.	.	.	Ar	E	Myrtaceae
<i>Lasiacis divaricata</i>	+	.	.	1	.	H	N	Poaceae
<i>Bourreria divaricata</i>	1	.	1	1	1	Ar	N	Boraginaceae
<i>Coccoloba buchii</i>	+	.	.	.	1	Ar	E	Polygonaceae
<i>Scleria secans</i>	.	2	.	.	1	H	N	Cyperaceae
<i>Exostema spinosum</i>	.	1	.	.	.	Ar	N	Rubiaceae
<i>Stachytarpheta jamaicensis</i>	.	.	+	.	+	H	N	Verbenaceae
<i>Polygala grandiflora</i> var. <i>g.</i>	.	.	+	+	.	H	N	Polygalaceae
<i>Tetramiera canaliculata</i>	.	.	1	1	.	SH	N	Orchidaceae
<i>Isidorea pedicellaris</i>	.	.	.	1	.	Ar	E	Rubiaceae
<i>Calyptrogenia biflora</i>	.	.	.	1	.	Ar	E	Myrtaceae
<i>Diodia ekmanii</i>	.	.	.	.	1	T	E	Ebenaceae
<i>Reynosia mucronata</i>	.	.	.	.	+	Ar	N	Rhamnaceae
Companion species								
<i>Vitex hectaphylla</i>	1	+	.	+	.	Ar	N	Vitaceae
<i>Eugenia foetida</i>	1	1	+	1	1	Ar	N	Myrtaceae
<i>Coccoloba microstachya</i>	1	1	.	.	.	Ar	N	Polygonaceae
<i>Coccoloba diversifolia</i>	.	.	.	.	+	Ar	N	Polygonaceae
<i>Clusia rosea</i>	+	+	.	.	.	A	N	Clusiaceae
<i>Cassytha filiformis</i>	+	.	.	1	1	T	N	Lauraceae
<i>Angadenia lindemiana</i>	+	.	.	.	.	T	N	Apocynaceae
<i>Diospyros caribaea</i>	+	+	+	1	+	A	N	Ebenaceae
<i>Stigmaphyllon emarginatum</i>	+	.	.	+	.	T	N	Malpighiaceae
<i>Bumelia cubensis</i>	1	1	.	+	1	Ar	N	Sapotaceae
<i>Randia aculeata</i>	1	1	+	+	+	Ar	N	Rubiaceae
<i>Jacquinia umbellata</i>	1	1	+	1	+	Ar	N	Theophrastaceae
<i>Tillandsia balbisiana</i>	+	.	.	.	.	Ep	N	Bromeliaceae
<i>Tillandsia recurvata</i>	+	.	.	.	.	Ep	N	Bromeliaceae
<i>Bursera simaruba</i>	+	+	.	+	.	A	N	Burseraceae
<i>Eupatorium sinuatum</i> var. <i>viscegerum</i>	+	.	.	.	.	Ar	E	Asteraceae
<i>Maytenus buxifolia</i>	1	.	.	.	+	Ar	N	Celastraceae
<i>Passiflora suberosa</i>	+	.	.	+	.	T	N	Passifloraceae
<i>Passiflora ekmanii</i>	+	.	.	.	+	T	E	Passifloraceae
<i>Passiflora laurifolia</i>	+	.	.	.	.	T	N	Passifloraceae
<i>Metopium toxiferum</i>	.	1	.	+	.	A	N	Anacardiaceae
<i>Citharexylum fruticosum</i>	.	1	.	.	.	Ar	N	Verbenaceae
<i>Centrosema virginianum</i>	.	+	+	+	.	T	N	Leguminosae
<i>Guettarda pungens</i>	.	1	.	.	.	Ar	N	Rubiaceae

<i>Guettarda scabra</i>	.	.	+	.	+	Ar	N	Rubiaceae
<i>Corchorus hirsutus</i>	1	.	1	1	+	Ar	N	Tiliaceae
<i>Polygala pennaea</i>	1	.	.	.	.	Ar	N	Polygalaceae
<i>Byrsonima lucida</i>	1	.	.	.	.	Ar	N	Malpighiaceae
<i>Erythroxylum minutifolium</i>	+	.	.	.	.	Ar	N	Erythroxylaceae
<i>Plumeria obtusa</i>	.	+	.	+	+	Ar	N	Apocynaceae
<i>Tabebuia polyantha</i>	.	.	1	1	1	A	E	Bignoniaceae
<i>Samyda dodecandra</i>	.	.	.	+	.	Ar	N	Flacourtiaceae
<i>Leucanea leucocephala</i>	.	.	.	+	.	Ar	N	Leguminosae
<i>Calliandra haematomma</i>	.	.	.	1	1	Ar	N	Leguminosae
<i>Coccoloba costata</i>	.	.	.	.	1	Ar	N	Polygonaceae
<i>Chrysophyllum oliviforme</i> subsp. <i>o.</i>	.	.	.	.	+	A	N	Sapotaceae
<i>Cornutia pyramidata</i>	.	.	.	.	+	A	N	Verbenaceae

Sites - 1, 2, 3 and 4: Cofresi-Puerto Plata (9Q0318408/2192458), (19Q0318034/2192804), (19Q0318198/2192601). 5.- Puerto Plata (19Q0318595).

Table V.- *Melocacto pedernalensis-Leptochloopsisietum virgatae nova*. LF: life form (H, annual or perennial herbaceous; SH, succulent herbaceous; Ar, scrub; T, climber; A, tree-like plant; Ep, epiphyte); S: statut (E, endemic; N, native); F: family.

Tableau V.- *Melocacto pedernalensis-Leptochloopsisietum virgatae nova*.

Altitude in m	15	18	LF	S	F
Area in m <sup>2</sup>	400	400			
Cover ratio in %	60	65			
Xm/in m	1,2	1,4			
N° rel.	33-1	33-2			
N° order	1	2			
Characteristics of the association and higher units					
<i>Leptochloopsis virgata</i>	3	3	H	N	Poaceae
<i>Melocactus pedernalensis</i>	2	1	SH	E	Cactaceae
<i>Chamaesyce adenoptera</i>	2	1	H	E	Euphorbiaceae
<i>Portulaca rubricaulis</i>	2	+	H	N	Portulacaceae
<i>Mammillaria prolifera</i>	1	1	SH	N	Cactaceae
<i>Turnera diffusa</i>	2	1	Ar	N	Turneraceae
<i>Cordia salvifolia</i>	1	+	Ar	E	Boraginaceae
<i>Croton discolor</i>	1	+	Ar	N	Euphorbiaceae
<i>Melochia tomentosa</i>	1	+	Ar	N	Sterculiaceae
<i>Lantana exarata</i>	+	+	Ar	E	Verbenaceae
<i>Ipomoea desrousseauisii</i>	+	+	T	E	Convolvulaceae
<i>Serjania sinuata</i>	+	+	T	E	Sapindaceae
<i>Caesalpinia domingensis</i>	+	+	Ar	E	Leguminosae
<i>Senna angustisiliqua</i>	+	.	Ar	N	Leguminosae
Companion species					
<i>Cameraria linearifolia</i>	1	+	Ar	E	Apocynaceae
<i>Cissus trifoliata</i>	+	.	T	N	Vitaceae
<i>Consolea moniliformis</i>	1	+	SA	N	Cactaceae
<i>Thouinia domingensis</i>	+	.	Ar	E	Sapindaceae
<i>Calliandra pedicellata</i>	+	+	Ar	E	Leguminosae
<i>Bursera spinicens</i>	1	+	Ar	E	Burseraceae
<i>Pilosocereus polygonus</i>	+	+	SA	N	Cactaceae
<i>Lemaireocereus hystrix</i>	1	+	SA	N	Cactaceae
<i>Harrisia nashii</i>	+	.	Ar	E	Cactaceae
<i>Capparis flexuosa</i>	+	.	T	N	Capparaceae
<i>Phyllostylon rhamnoides</i>	+	+	Ar	N	Ulmaceae
<i>Convolvulus nodiflorus</i>	+	.	T	N	Convolvulaceae
<i>Stigmaphyllon emarginatum</i>	+	+	T	N	Malpighiaceae
<i>Pentalinum luteum</i>	+	.	T	N	Apocynaceae
<i>Thouinidium inaequilaterum</i>	+	.	A	E	Sapindaceae
<i>Rhynchosia reticulata</i>	+	+	T	N	Leguminosae

Sites - 1: Pedernales-Ceitillan  
C r o s s r o a d s  
(19Q219323E/1990191N). 2: Road  
to Ceitillan (19Q  
19219738E/1993286N).

Table IV.- *Crotono astrophori-Leptochloopsisietum virgatae nova*. LF: life form (H, annual or perennial herbaceous; SH, succulent herbaceous; Ar, scrub; T, climber; A, tree-like plant; Ep, epiphyte); S: statut (E, endemic; N, native); F: family.

Tableau IV.- *Crotono astrophori-Leptochloopsisietum virgatae nova*.

Altitude in m	84	16	162	94	121	16	8	26	21	25	27	71	58	8	LF	S	F
Area in m <sup>2</sup> x 10	40	40	40	40	40	40	40	30	40	30	40	40	40	40			
Cover ratio in %	70	90	80	80	90	70	70	90	85	100	80	80	75	80			
Xm/in m	1.40	1.00	0.80	0.90	1.00	0.90	1.00	1.00	1.00	1.00	0.90	1.00	1.00	0.90			
N° rel.	1.1	2.1	28.1	29.1	30.1	31.1	32.1	33.1	34.1	36.1	38.1	41.1	42.1	43.1			
N° order	1	2	3	4	5	6	7	8	9	10	11	12	13	14			
Characteristics of the association and higher units																	
<i>Leptochloopsis virgata</i>	4	4	4	4	5	3	3	4	4	5	4	4	3	4	H	N	Poaceae
<i>Croton astrophorus</i>	.	2	.	2	2	.	.	.	2	.	.	.	.	.	Ar	E	Euphorbiaceae
<i>Croton discolor</i>	.	+	.	.	1	+	1	2	.	1	.	1	+	+	Ar	N	Euphorbiaceae
<i>Croton humilis</i>	1	+	.	.	.	.	.	.	.	.	.	.	.	.	Ar	N	Euphorbiaceae
<i>Croton poitaei</i>	.	.	.	.	.	1	.	.	2	1	1	.	2	.	Ar	E	Euphorbiaceae
<i>Croton betulinus</i>	.	.	.	.	.	+	.	.	.	.	.	.	.	.	Ar	N	Euphorbiaceae
<i>Croton lobatus</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	2	H	N	Euphorbiaceae
<i>Mammillaria prolifera</i>	1	1	.	.	1	.	.	.	.	.	.	.	+	.	SH	N	Cactaceae
<i>Bastardia viscosae</i>	1	.	1	.	.	.	2	+	.	.	.	.	.	.	H	N	Malvaceae
<i>Ruellia tuberosa</i>	1	.	+	1	.	.	.	.	.	.	.	.	.	.	H	N	Acanthaceae
<i>Brya buxifolia</i>	1	.	+	.	.	+	1	.	1	.	.	.	2	1	Ar	N	Leguminosae
<i>Lantana camara</i>	.	+	.	.	.	.	1	.	.	.	.	.	.	.	Ar	N	Verbenaceae
<i>Abutilon abutiloides</i>	.	+	.	.	.	.	.	.	.	.	.	.	.	.	Ar	N	Malvaceae
<i>Turnera diffusa</i>	.	1	.	.	1	1	.	1	.	1	1	1	1	.	Ar	N	Turneraceae
<i>Pictetia sulfata</i>	.	+	.	.	.	.	.	.	.	.	.	.	.	.	Ar	E	Leguminosae
<i>Pictetia spinifolia</i>	.	.	.	+	+	+	+	2	1	2	.	1	1	.	Ar	N	Leguminosae
<i>Lantana pauciflora</i>	.	1	.	.	.	.	.	.	.	.	.	.	.	.	Ar	E	Verbenaceae
<i>Lantana exarata</i>	.	.	.	.	.	2	.	.	1	.	.	.	.	.	Ar	N	Verbenaceae
<i>Lantana leonardorum</i>	.	.	.	.	.	1	1	+	.	.	.	.	.	.	Ar	E	Verbenaceae
<i>Lantana buchii</i>	.	.	.	.	.	.	1	.	1	.	.	.	.	.	Ar	E	Verbenaceae
<i>Lippia micromera</i>	.	1	.	.	.	+	+	.	.	.	.	.	.	+	Ar	N	Verbenaceae
<i>Evolvulus alsinoides</i>	.	+	.	.	.	.	.	.	.	.	.	.	.	.	H	N	Convolvulaceae
<i>Evolvulus arbuscula</i>	.	.	.	.	1	.	1	.	.	.	.	.	.	.	Ar	N	Convolvulaceae
<i>Cordia salvifolia</i>	.	.	.	+	.	.	.	.	.	.	.	.	.	.	Ar	E	Boraginaceae
<i>Scolosanthus triacanthus</i>	.	.	.	+	+	1	1	.	1	.	.	.	.	.	Ar	E	Rubiaceae
<i>Malpighia setosa</i>	.	.	.	1	.	.	.	.	.	1	.	.	.	.	Ar	E	Malpighiaceae
<i>Malpighia coccigera</i> subsp. <i>horrida</i>	.	.	.	.	.	.	.	.	.	.	.	.	+	.	Ar	N	Malpighiaceae
<i>Melochia tomentosa</i>	.	.	.	+	.	.	.	1	1	.	.	1	.	.	H	N	Sterculiaceae
<i>Guapira discolor</i>	.	.	.	.	+	.	.	.	1	1	.	.	.	.	Ar	N	Nyctaginaceae
<i>Guapira brevipedunculata</i>	.	.	.	.	.	.	.	.	.	.	.	.	1	Ar	E	Nyctaginaceae	
<i>Desmanthus girgatus</i>	.	.	.	.	+	.	.	.	.	.	.	.	.	.	Ar	N	Leguminosae
<i>Agave antillarum</i>	.	.	.	.	+	+	+	.	.	.	.	.	+	.	SA	E	Agavaceae
<i>Karwinskia coloneura</i>	.	.	.	.	+	.	.	.	.	.	.	.	.	.	Ar	E	Rhamnaceae
<i>Hibiscus brasiliensis</i>	.	.	.	.	1	.	.	.	.	1	.	.	.	.	Ar	N	Malvaceae
<i>Capparis indica</i>	.	.	.	.	+	.	.	.	.	1	.	.	.	.	Ar	N	Capparaceae
<i>Gochmatia microcephala</i> var. <i>buchii</i>	.	.	.	.	.	2	2	.	1	.	.	.	.	.	Ar	E	Asteraceae
<i>Antirhea montecristina</i>	.	.	.	.	.	+	.	.	1	.	.	.	.	.	Ar	N	Rubiaceae
<i>Galactia synandra</i>	.	.	.	.	.	.	.	.	1	.	.	.	.	.	T	E	Leguminosae
<i>Mesechites repens</i>	.	.	.	.	.	.	.	.	.	+	.	.	.	.	T	N	Apocynaceae
<i>Mosiera urbaniana</i>	.	.	.	.	.	.	.	.	.	(+)	.	.	.	.	Ar	E	Myrtaceae
<i>Reynosa uncinata</i>	.	.	.	.	.	.	.	.	.	.	+	+	.	.	Ar	N	Rhmnaceae
<i>Coccoloba leoganensis</i>	.	.	.	.	.	.	.	.	.	.	2	.	.	.	Ar	E	Polygonaceae
<i>Isidorea pedicellaris</i>	.	.	.	.	.	.	.	.	.	1	.	.	.	.	Ar	E	Rubiaceae
<i>Senna angustisiliqua</i>	.	.	.	.	.	.	.	.	.	1	.	.	.	.	Ar	N	Leguminosae
<i>Lasiacis divaricata</i>	.	.	.	.	.	.	.	.	.	1	.	.	.	.	H	N	Poaceae
<i>Adelia recinella</i>	.	.	.	.	.	.	.	.	.	.	+	.	.	.	Ar	N	Euphorbiaceae
<i>Serjania sinuata</i>	.	.	.	.	.	.	.	.	.	.	+	.	.	.	T	E	Sapindaceae
<i>Crossopetalum decusatum</i>	.	.	.	.	.	.	.	.	.	.	.	+	2	1	Ar	E	Celastraceae
<i>Tetramicra canaliculata</i>	.	.	.	.	.	.	.	.	.	.	.	2	.	.	SH	N	Orchidaceae
<i>Bouteloua juncea</i>	.	.	.	.	.	.	.	.	.	.	.	.	+	+	H	N	Poaceae
<i>Solanum aquartia</i> var. <i>luxurians</i>	.	.	.	.	.	.	.	.	.	.	.	.	1	1	Ar	E	Solanaceae
<i>Melocactus lemairei</i>	.	.	.	.	.	.	.	.	.	.	.	.	(+)	1	SA	E	Cactaceae
<i>Zanthoxylum spinifer</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	1	Ar	N	Rutaceae
<i>Coccoloba buchii</i>	.	.	.	.	.	+	.	.	.	.	.	.	.	.	A	E	Polygonaceae



<i>Eupatorium sinuatum</i> var. <i>viscegerum</i>	.	.	.	.	.	.	.	1	+	1	.	Ar	E	Asteraceae
<i>Thouinia trifoliata</i>	.	.	.	.	.	.	.	1	.	.	.	A	N	Sapindaceae
<i>Oplonia spinosa</i>	.	.	.	.	.	.	.	1	.	.	+	Ar	N	Acanthaceae
<i>Angadenia angustifolia</i>	.	.	.	.	.	.	.	1	.	.	.	T	.	Apocynaceae
<i>Rajania quinquefolia</i>	.	.	.	.	.	.	.	+	.	.	.	T	N	Dioscoreaceae
<i>Citharexylum fruticosum</i>	.	.	.	.	.	.	.	+	.	.	.	A	N	Verbenaceae
<i>Acacia macracantha</i>	.	.	.	.	.	.	.	.	.	.	.	A	N	Leguminosae

Sites - 1: From Doña Antonia to Montecristi (km 47) (19Q0267385/2176805). 2: Near Montecristi (19Q0228891/2192923). 3: La Guajaca. Prov. Montecristi (19Q0265579/2177120). 4: Road to Punta Rusia (km 4) (19Q0262954/2180708). 5: Road to Punta Rusia (km 6) (19Q0262882/2181400). 6: Morro Montecristi (19Q0222565/2200698). 7: Morro Montecristi (19Q0222610/2200836). 8: Morro Montecristi (19Q0222986/2200769). 9: Morro Montecristi (19Q0223543/2201543). 10: Oeste del Morro de Montecristi (19Q0223546/2201547). 11: Punta Mangle (19Q0238370/2202751). 12: Old road from Montecristi to Puerto Plata (19Q0234505/2201316). 13: Old road from Montecristi to Puerto Plata (19Q0232308/2200291). 14: Old road from Montecristi to Puerto Plata (km 10) (19Q0228383/2200317).

Table VI.- *Solano microphylli-Leptochloopsisietum virgatae nova*.

LF: life form (H, annual or perennial herbaceous; SH, succulent herbaceous; Ar, scrub; T, climber; A, tree-like plant; Ep, epiphyte); S: statut (E, endemic; N, native); F: family.

Tableau VI.- *Solano microphylli-Leptochloopsisietum virgatae nova*.

Altitude in m	15	18	12	F	E	F
Area in m <sup>2</sup>	400	400	400			
Cover ratio in %	80	80	80			
Xm/in m	1.00	1.00	1.20			
N° rel.	42-1	42-2	14-1			
N° order	1	2	3			
Characteristics of the association and higher units						
<i>Leptochloopsis virgata</i>	4	4	4	H	N	Poaceae
<i>Bastardia viscosa</i>	2	2	2	H	N	Malvaceae
<i>Solanum microphyllum</i>	1	2	+	Ar	E	Solanaceae
<i>Tribulus cistoides</i>	2	.	.	H	N	Zygophyllaceae
<i>Brya buxifolia</i>	+	.	.	Ar	N	Leguminosae
<i>Agave antillarum</i>	+	.	.	SH	E	Agavaceae
<i>Tephrosia cinerea</i>	2	.	.	H	N	
<i>Turnera diffusa</i>	2	.	.	Ar	N	Turneraceae
<i>Heliotropium curassavicum</i>	2	2	.	H	N	Boraginaceae
<i>Lantana camara</i>	.	+	.	Ar	N	Verbenaceae
<i>Exostema spinosum</i>	.	+	.	Ar	N	Rubiaceae
<i>Scolosanthus triacanthus</i>	.	1	.	Ar	E	Rubiaceae
<i>Croton discolor</i>	.	+	+	Ar	N	Euphorbiaceae
<i>Croton humilis</i>	.	+	.	Ar	N	Euphorbiaceae
<i>Croton poitaei</i>	.	.	1	Ar	E	Euphorbiaceae
<i>Helicteres semitriloba</i>	.	+	.	Ar	N	Sterculiaceae
<i>Pictetia sulfata</i>	.	1	1	Ar	E	Leguminosae
<i>Guapira brevipetiolata</i>	.	.	+	Ar	E	Nyctaginaceae
<i>Melochia tomentosa</i>	.	.	+	H	N	Sterculiaceae
<i>Lantana exarata</i>	.	.	2	Ar	N	Verbenaceae
<i>Melocactus lemairei</i>	.	.	1	SH	E	Cactaceae
<i>Justicia abegghii</i>	.	.	+	H	E	Acanthaceae
<i>Mammillaria prolifera</i>	.	.	1	SH	N	Cactaceae
<i>Tillandsia recurvata</i>	.	.	+	Ep	N	Bromeliaceae
<i>Hibiscus brasiliensis</i>	.	.	+	Ar	N	Malvaceae
<i>Heliotropium angiospermum</i>	.	.	+	H	N	Boraginaceae
<i>Crossopetalum decussatum</i>	.	.	+	Ar	E	Celastraceae
<i>Malpighia coccigera</i> subsp. <i>horrida</i>	.	.	1	Ar	N	Malpighiaceae
<i>Herissantia crispa</i>	.	.	1	H	N	Malvaceae
Companion species						
<i>Exostema caribaeum</i>	+	+	.	Ar	N	Rubiaceae
<i>Thouinia domingensis</i>	1	.	.	Ar	E	Sapindaceae
<i>Tillandsia recurvata</i>	+	+	.	Ep	N	Bromeliaceae
<i>Cordia alliodora</i>	.	+	.	A	N	Boraginaceae

<i>Cylindropuntia caribaea</i>	.	1	1	SA	N	Cactaceae
<i>Senna atomaria</i>	.	+	.	A	N	Leguminosae
<i>Stigmaphyllon emarginatum</i>	.	1	.	T	N	Malpighiaceae
<i>Guaiacum officinale</i>	.	+	+	A	N	Zygophyllaceae
<i>Phyllostylon rhamnoides</i>	+	+	.	Ar	N	Ulmaceae
<i>Phyllostylon brasiliensis</i>	.	.	+	Ar	N	Ulmaceae
<i>Consolea moniliformis</i>	.	+	+	SA	N	Cactaceae
<i>Acacia scleroxyla</i>	.	+	.	A	E	Leguminosae
<i>Plumeria obtusa</i>	.	+	.	A	N	Apocynaceae
<i>Rocheftortia acanthophora</i>	.	+	.	Ar	N	Boraginaceae
<i>Bourreria ovata</i>	.	+	.	Ar	N	Boraginaceae
<i>Ziziphus rhodoxylon</i>	.	+	.	A	N	Celastraceae
<i>Convolvulus nodiflorus</i>	.	+	.	T	N	Convolvulaceae
<i>Reynosia uncinata</i>	.	+	.	Ar	N	Rhamnaceae
<i>Mimosa diplotricha</i>	.	+	.	Ar	E	Leguminosae
<i>Eugenia lindahlil</i>	.	+	.	Ar	E	Myrtaceae
<i>Pilosocereus polygonus</i>	.	+	+	SA	N	Cactaceae
<i>Lemaireocereus hystrix</i>	.	.	+	SA	N	Cactaceae
<i>Thouinia trifoliata</i>	.	+	.	A	N	Sapindaceae
<i>Harrisia nashii</i>	.	.	+	SA	E	Cactaceae
<i>Tournefortia stenophylla</i>	.	.	1	Ar	N	Boraginaceae
<i>Caesalpinia buchii</i>	.	.	+	Ar	E	Leguminosae
<i>Galactia striata</i>	.	.	+	T	N	Leguminosae
<i>Cissus trifoliata</i>	.	.	+	T	N	Vitaceae
<i>Pithecellobium circinale</i>	.	.	+	Ar	N	leguminosae
<i>Opuntia dillenii</i>	.	.	+	SA	N	Cactaceae
<i>Senna atomaria</i>	.	.	+	Ar	N	Leguminosae
<i>Capparis flexuosa</i>	.	.	+	Ar	N	Capparaceae
<i>Prosopis juliflora</i>	.	.	+	A	N	Leguminosae

Sites - 1: Near Fondenegro (Prov. Azua) (19Q275855 E/2035891N). 2: From Compostela to Bani (Prov. Azua) (19Q 19340420E/2031565N). 3: Between Villa Jaragua and Los Ríos (19Q0233257/2046743).

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Table VII.- Presence of characteristic and companion species of endemic character in the described associations. 1 - *Melocactus pedernalensis*-*Leptochloopsisietum virgatae nova*. 2 - *Solano microphylli*-*Leptochloopsisietum virgatae nova*. 3 - *Crotono astrophori*-*Leptochloopsisietum virgatae nova*. 4 - *Leptogono buchii*-*Leptochloopsisietum virgatae nova*.  
Tableau VII.- Présence d'espèces caractéristiques et compagnes endémiques dans les associations décrites.

Characteristics	1	2	3	4	FV	Family
<i>Melocactus pedernalensis</i>	x	.	.	.	SH	Cactaceae
<i>Chamaesyce adenoptera</i>	x	.	.	.	H	Euphorbiaceae
<i>Cordia salvifolia</i>	x	.	x	.	Ar	Boraginaceae
<i>Lantana exarata</i>	x	.	.	.	Ar	Verbenaceae
<i>Ipomoea desrousseauii</i>	x	.	.	.	T	Convolvulaceae
<i>Serjania sinuata</i>	x	.	x	.	T	Sapindaceae
<i>Caesalpinia domingensis</i>	x	.	.	.	Ar	Leguminosae
<i>Solanum microphyllum</i>	.	x	.	.	Ar	Solanaceae
<i>Agave antillarum</i>	.	x	x	.	SH	Agavaceae
<i>Scolosanthus triacanthus</i>	.	x	x	.	Ar	Rubiaceae
<i>Croton poitaei</i>	.	x	x	.	Ar	Euphorbiaceae
<i>Pictetia sulfata</i>	.	x	x	.	Ar	Leguminosae
<i>Guapira brevipetiolata</i>	.	x	x	.	Ar	Nyctaginaceae
<i>Melocactus lemairei</i>	.	x	x	.	SH	Cactaceae
<i>Justicia abegghii</i>	.	x	.	.	H	Acanthaceae
<i>Crossopetalum decussatum</i>	.	x	.	.	Ar	Celastraceae
<i>Croton astrophorus</i>	.	.	x	.	Ar	Euphorbiaceae
<i>Lantana pauciflora</i>	.	.	x	.	Ar	Verbenaceae
<i>Lantana leonardorum</i>	.	.	x	.	Ar	Verbenaceae
<i>Lantana buchii</i>	.	.	x	.	Ar	Verbenaceae
<i>Malpighia setosa</i>	.	.	x	.	Ar	Malpighiaceae
<i>Karwinskia coloneura</i>	.	.	x	.	Ar	Rhamnaceae
<i>Gochnatia microcephala</i> var. <i>buchii</i>	.	.	x	.	Ar	Asteraceae
<i>Galactia synandra</i>	.	.	x	x	T	Leguminosae
<i>Mosiera urbaniana</i>	.	.	x	.	Ar	Myrtaceae
<i>Coccoloba leoganensis</i>	.	.	x	.	Ar	Polygonaceae
<i>Solanum aquartia</i> var. <i>luxurians</i>	.	.	x	.	Ar	Solanaceae
<i>Isidorea pedicellaris</i>	.	.	x	x	Ar	Rubiaceae
<i>Coccoloba buchii</i>	.	.	x	x	A	Polygonaceae
<i>Coccoloba jimenezii</i>	.	.	.	x	Ar	Polygonaceae
<i>Leptogonum buchii</i>	.	.	.	x	Ar	Polygonaceae
<i>Zombia antillarum</i>	.	.	.	x	Ar	Arecaceae
<i>Tabebuia ophiolitica</i>	.	.	.	x	Ar	Bignoniaceae
<i>Croton sidaefolius</i>	.	.	.	x	Ar	Euphorbiaceae
<i>Chamaecrista pedicellaris</i> var. <i>adenosperma</i>	.	.	.	x	Ar	Leguminosae
<i>Galactia dictyophylla</i>	.	.	.	x	T	Leguminosae
<i>Psidium sessilifolium</i>	.	.	.	x	Ar	Myrtaceae
<i>Calyptrogenia biflora</i>	.	.	.	x	Ar	Myrtaceae
<i>Diodia ekmanii</i>	.	.	.	x	T	Ebenaceae
<i>Eupatorium sinuatum</i> var. <i>viscigerum</i>	.	.	.	x	Ar	Asteraceae
<i>Passiflora ekmanii</i>	.	.	.	x	T	Passifloraceae
<b>Companions</b>						
<i>Cameraria linearifolia</i>	x	.	.	.	Ar	Apocynaceae
<i>Thouinia domingensis</i>	x	x	.	.	Ar	Sapindaceae
<i>Calliandra pedicellata</i>	x	.	.	.	Ar	Leguminosae
<i>Bursera spinicens</i>	x	.	.	.	Ar	Burseraeae
<i>Harrisia nashii</i>	x	x	x	.	Ar	Cactaceae
<i>Thouinidium inaequilaterum</i>	x	.	.	.	A	Sapindaceae
<i>Acacia scleroxyla</i>	.	x	.	.	A	Leguminosae
<i>Mimosa diplotricha</i>	.	x	.	.	Ar	Leguminosae
<i>Eugenia lindahlil</i>	.	x	.	.	Ar	Myrtaceae
<i>Caesalpinia buchii</i>	.	x	x	.	Ar	Leguminosae
<i>Guettarda tortuensis</i>	.	.	x	.	A	Rubiaceae
<i>Tabebuia polyantha</i>	.	.	.	x	A	Bignoniaceae