

# **The VEGETATION of the SIPALIWINI SAVANNA in Southern Suriname**

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## **Abstract**

This report deals with the various Vegetation Types of the Sipaliwini Savanna. Twenty six plant communities are described in detail.

During a six month period in the dry season of 1968-69 we surveyed the Suriname part of the Sipaliwini/Paru savanna complex. Apart from collecting plants and mapping the vegetation, we took 130 samples of the vegetation according to the Braun-Blanquet method and organised them in synoptic tables. These tables, containing all sample data, are part of this report. A number of relevant photographs are also presented.

## **Introduction**

### **Location**

The Sipaliwini Savanna Area in Southern Suriname is part of a nature reserve of 100,000 ha, situated at 2°00'N and 56°00'W.

The Sipaliwini Savanna itself covers an area 630 sq. km. and is the smaller part of a large savanna complex situated on both sides of the frontier between Suriname and Brazil. This frontier is formed by the relatively flat watershed between the West Paru River, a tributary of the Amazon River, and the Sipaliwini River which belongs to the basin of the Corantyne River, one of the main Guiana streams.

The Sipaliwini Savanna is divided in two parts: The Great Sipaliwini Savanna in the East and the Little Sipaliwini Savanna to the South West. Within the forest belt west of the Sipaliwini Savanna are some smaller, isolated savannas, a small white sand savanna complex among them.

### **Climate**

The mean annual rainfall amounts to 2000 mm, the mean annual temperature is 27.5°C. There is a marked dry season from August till January. During October and November precipitation is even less than 50 mm. Therefore the climate is within the limits of the monsoon climate of the Koppen system, positioned near the dry end of its spectrum as a typical A w savanna climate. Humidity varies between 60 – 80 % .

### **Geology**

The northern, eastern and south-eastern part of the Sipaliwini Savanna consists of granitic rocks, whereas the remaining central, western and southern parts contain metamorphic, quartzitic and volcanic parent material.

## **Landscape**

The whole landscape is in a progressive state of peneplanisation and shows a general decline from East to West: 375m down to 275 m (above sea level).

The surface of the landscape is mainly undulating or hilly. Hills are the dominant aspect, covering app. 70% of the land surface. Many hills carry scattered rocks and boulders. In between the hills narrow to broad valleys extend in all directions, levelled out by interbraiding small creeks and valley river systems.

Above the horizon rise the domes and silhouettes of some isolated inselbergs and small mountain clusters. The Morro Grande (Brazil) 596m in the North, 4-Brothers Mountains 544m in the East and 'Ultima Sur' to the South.

Four landscape types may be distinguished (for more details see Riezebos, 1979):

1. MORRO GRANDE landscape on granite in the North. It looks like an undulating plain with isolated hills and many forest islands.
2. SPALIWINI landscape on metamorphic, quartzitic and volcanic parent material occupies the greater part of the savanna in the western, central and southern areas. It consists of rather high, often parallel running hills with scattered rocks. The valleys in between are narrow.
3. INSELBERG landscape contains the miniature mountain massif in the East, extending to the South in the form of a complex of high hills. The slopes are covered with granitic boulders and show a high density of scrub woodland.
4. RIVER VALLEY-FLOOR landscape occurs within some of the former landscapes as wide alluvial river/creek valleys with natural levees, sometimes marked by gallery forests and flood plains. These low relief areas in which rivers meander are completely submerged during the rainy season. The central eastern and southern part has very wide alluvial valley floors grading into low, gently rolling hills.



## Vegetation

The savanna vegetation within the Sipaliwini landscape is well covered by the following definition given by Beard (1953):

“Savannas are communities in tropical America comprising a virtually continuous, ecologically dominant stratum of more or less xeromorphic plants of which grasses and sedges are the principal components and with scattered shrubs, trees or palms sometimes present”. (Beard, 1953)

The prominent aspect of the vegetation is that of an “open orchard savanna”, characterised by widely interspaced, gnarled savanna trees on hill tops and slopes. *Salvertia convallariodora* is the dominant savanna treelet. Subdominant species are *Curatella americana*, *Byrsonima crassifolia*, *Tabebuia caraiba* and *Bowdichia virgilioides*. The sometimes wide valleys between the hills typically have a cover of short grasses and sedges without trees. The central axes of the valleys are marked by seasonal swamps with *Mauritia flexuosa*, indicating the drainage pattern of the watercourses.

In the wide valleys the transition zone between the short-grass and sedge savanna and the seasonal swamp carries a vegetation of high-grasses and semi-shrubs like *Coelorachis aurita*, *Eriochrysis cayennensis*, *Rhynchanthera grandiflora* and *Ludwigia rigida*. The soil shows a hog wallow structure of gullies and humps called “kawfutu” in Surinam.

The main creeks are accompanied by gallery forest, galley woodland or lower bushes and scrub. Occasionally mesophytic forest islands occur, especially in the North, on steep slopes of higher hills and inselbergs.

The greater part of inselberg slopes however are covered by a scrub-woodland vegetation.

Sometimes exposed granitic rock outcrops occur, carrying a typical xeromorphic rock pavement vegetation or rock savanna sensu Lindeman and Molenaar, 1959).

The forest, bordering the savanna in the West may be described as a semi-deciduous tropical forest or semi-evergreen seasonal forest as described by Beard (1955).

## Formations

The vegetation of the Sipaliwini Savanna area has been subdivided by us into 9 floristic-ecological groups or formations. These are communities of plant species all belonging to definite life forms which have become associated with definite external (edaphic or climatological) factors of the habitat to “which they are adapted and which are the expression of certain defined conditions of life not concerned with floristic differences” (Warming, 1909). In a generalised and abstract way these formations are shown in a typified profile diagram of a cross section through the landscape (see, also on this website, Ecological Investigations Veg.Sip Sav 1973, fig 4).

The formations coincide with so-called ecotopes, locally determined subsystems within the savanna ecosystem as a whole, which are characterised by environmental attributes of a cross section through a stand of vegetation (biotic) and the site (abiotic) it occupies.

On the Sipaliwini Savanna the hydrology of the system plays a major role in determining the growth form and structure of the many vegetation types.

Within the limits of the formations the savanna part of the vegetation has been further analysed using the Braun-Blanquet method. This resulted in a subdivision into 26 floristic units, plant communities or so-called associations, sub-associations and their variants. These plant communities differ in floristic composition and may be distinguished from each other by a combination of characteristic and differentiating species.

Our formations on the other hand are of an abstract, general nature, composed for practical reasons, especially to be able to recognise them by stand, sit and physiognomy in the field. To differentiate between the local grass forms we have used criteria based on descriptions and categories of Bews (1928) and Beard (1953).

FORMATIONS (sensu Norde and Oldenburger) on the SIPALIWINI SAVANNA :

- I Tall bunch grass formation on hill tops and slopes
- II High grass formation on colluvium
- III Sedge and short-grass formation in valleys
- IV Hygrophytic high-grass and semi-shrub formation with palms in depressions
- V Scrub-woodland formation on inselberg slopes
- VI Xerophytic herb and shrub formation on granitic outcrops
- VII Gallery forest and gallery woodland formation on river banks
- VIII Tropical rainforest
- IX Hydrophytic herb formation in creeks

### **Plant Communities**

The savanna vegetation has been studied in more detail by using the Braun-Blanquet method. Some 130 sample plots varying in size from 4 – 25 (- 100) m<sup>2</sup> were analysed using the 5-point scale for cover/abundance.

The samples were then converted to synoptic tables in 3 categories:

1. Vegetation of hill tops and slopes
2. Vegetation on colluvium and in depressions
3. Vegetation of flat valley floors (outside the depressions)

In all three tables the plant communities were arranged along a dry >>> wet gradient (from left to right).

A total of 26 plant (sub) communities have been distinguished on a floristic basis.

Tables I, II and III are included in full detail. See EXCEL files attached to this report.

Generally this grouping shows the savanna vegetation as a continuum from the hill tops down to the depressions. The dry habitats in Table I even have some species in common with the wet habitats like kawfutu and seasonal swamps in Table II. Examples are *Sauvagesia sprengelii*, *Cassytha filiformis*, *Rhynchospora barbata*, *Mesosetum cayennense*, *Rhynchospora globosa*.



## TABLE I      **Vegetation of Hill Tops and Slopes**

7 Plant communities could be distinguished on the basis of characteristic and differentiating combinations of plant species.

*Trachypogon plumosus* and *Axonopus pulcher* are the most important species in this table, showing a high presence in all communities. *Merremia aturensis* comes in a good second, while the typical hill species *Bulbostylis spadicea* is present with a high abundance in 6 out of 7 communities.



Species exclusive for this group (Table I) are:

*Byrsonima verbascifolia*, *Paspalum albidulum*, *Declieuxia fruticosa*, *Lisianthus uliginosus*, *Paspalum contractum*, *Mesosetum tenuifolium*, *Salvertia convallariodora*, *Scleria cyperina*, *Bulbostylis spadicea*, *Miconia rufescens*, *Axonopus pulcher*, *Merremia aturensis*, *Elyonurus adustus*, *Palicourea rigida*, *Ctenium cirrosum*, *Bowdichia virgilioides*, *Aristida recurvata*, *Sisyrinchium marchio* etc. This list is not exhaustive; see also Oldenburger, Norde and Riezebos 1973.

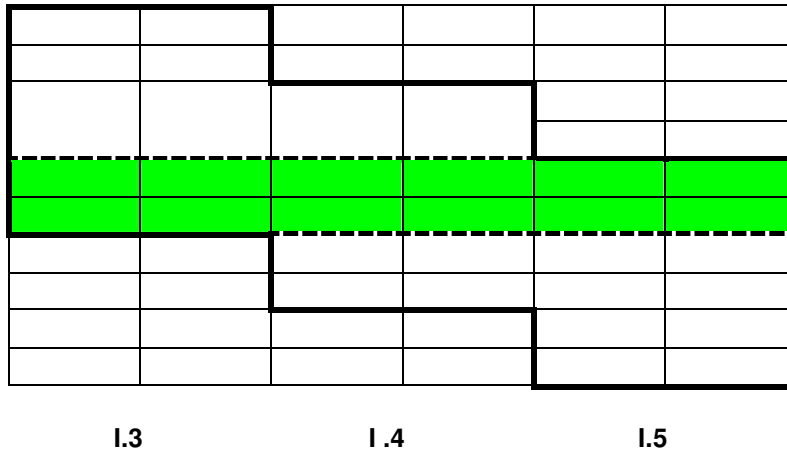
**I.1 Community of *Paspalum albidulum* and *Byrsonima verbascifolia* on dry hills** Characteristic and differentiating species are *Paspalum albidulum*, *Byrsonima verbascifolia*, *Sauvagesia spregelii* and *Cassytha filiformis*. Notably common hill species like *Elyonurus adustus* and *Palicourea rigida* are missing as is *Byrsonima crassifolia* in most cases.

**I.2 Community of *Bulbostylis capillaris* and *Raddiella nana* on dry hill tops with rock outcrops.**

Characteristic and differentiating species are *Raddiella nana*, *Declieuxia fruticosa*, *Bulbostylis capillaris* and *Himatanthus articulatus*.

In the vicinity of rocks and boulders the density of shrubs and treelets may be higher. This community is common in the 4-Brothers mountain area.

**I.3 - I.5 Vegetation on dry to moist hills.**



Schematic representation of the central part of Table I.

The green area shows the species they have in common.

**Fig. 1.** There is a dry>>moist gradient from left to right.

**Communities of *Salvertia convallariodora* and *Aristida tinctoria*.** They have a great number of species in common: *Salvertia convallariodora*, *Aristida tinctoria*, *Tibouchina aspera*, *Bulbostylis spadicea*, *Trachypogon plumosus*, *Axonopus pulcher*, *Elyonurus adustus*, *Palicourea rigida*, *Byrsonima crassifolia*, *Casearia sylvestris* etc.

**I.3 – I.4 Vegetation on dry hills.**

**Communities of *Paspalum contractum* and *Mesosetum tenuifolium*.**

Characteristic and differentiating species are *Paspalum contractum*, *Mesosetum tenuifolium* and *Rhynchospora barbata*. These are ‘dry species’, also occurring in communities I.1 and I.2.

**I.3 Community of *Bulbostylis spadicea* and *Mesosetum tenuifolium*.**

This community is widespread on the slopes of dry hills. *Paspalum albidulum* and *Sauvagesia sprengelii* are missing; they are typically found in the Southern part of the Sipaliwini savanna, where community I.1 is very common on dry hills. On the ‘moist side’ of the Table I species like *Sporobolus cubensis* and *Aristida recurvata* are absent. *Curatella americana*, preferring more moist conditions, is rare.

**I.4 Transition community of *Paspalum contractum*, *Roupala montana* and *Curtia tenuifolia* on dry to moist hills.**

This community is sharing ‘dry species’ with communities I.1-3 and ‘moist species’ with I.5-6. Species differentiating I.4 from I.3 are *Leptocoryphium lanatum* and *Aristida recurvata*.

**I.4 – I.5 Vegetation of moist hills** (perhaps including I.6).

Communities of *Sporobolus cubensis*, *Leptocoryphium lanatum* and *Curatella americana*. Characteristic and differentiating are ‘moist species’ which are shared with community I.6 like *Curatella americana*, *Sporobolus cubensis*, *Leptocoryphium lanatum*, *Thrasya petrosa* and *Aristida recurvata*.

**I.5 Community of *Trachypogon plumosus*, *Axonopus pulcher* and *Sporobolus cubensis*.**

‘Dry species’ like *Mesosetum tenuifolium* and *Paspalum contractum* are missing while *Hyptis lantanaefolia*, although not common, is an indicator for moister conditions.

**I.6 Community of *Byrsonima crassifolia* and *Rhynchospora cephalotes*, the ‘*Byrsonima orchard*’.**

This community can be found on the lower hill slopes at the head of some valleys.

Most characteristic is the absence of *Salvertia convallariodora*.

Differentiating specie are *Scleria micrococca* and *Miconia alba*. *Curatella americana* is common.

Otherwise this community may be seen as a *Byrsonima crassifolia* dominated type of I.5.

**I.7 Community of *Byrsonima coccolobaefolia* and *Bulbostylis vestita*.**

Typical for ‘green clay slopes’ this community is characterised by *Bulbostylis vestita*, *Byrsonima coccolobaefolia* and *Baccharis varians*.

High presence is shown by *Axonopus pulcher* and *Schyzachyrium riedelii*.

Missing are *Salvertia convallariodora*, *Aristida tinctoria*, *Tibouchina aspera* and *Bulbostylis spadicea*.

Also missing are ‘moist specie’s like *Curatella americana*, *Leptocoryphium lanatum*, *Sporobolus cubensis*, *Thrasya petrosa* etc.

**General observations on Table I.**

All units (plant communities) are arranged horizontally along a dry>>wet gradient, from left to right in descending order, whilst the species list is organised in a vertical column perpendicular to this gradient. This offers the possibility to determine the presence and relative ecological amplitude on this gradient for each species in this table.

Table I and Table II share the following species: *Aristida tinctoria*, *Sporobolus cubensis*, *Leptocoryphium lanatum*, *Trachypogon plumosus* and *Curatella americana*.

Ecologically wide-ranging species like *Aristida tinctoria* and *Trachypogon plumosus* also figure in Table III .

## TABLE II VEGETATION on COLLUVIUM and in DEPRESSIONS

This table is, like the preceding one, structured along a dry >>>wet gradient. It shows a remarkable, very gradual transition of 'dry *Axonopus gentilis* zone' >> 'wet *Axonopus gentilis* zone' >> Kawfutu valley >> Maurisie swamp.

This made us arrive at the conclusion that the kawfutu valleys as well as the seasonal maurisie swamps (as described in this report) **probably belong to the Savanna formation as such.**

Within Table II a distinction can be made between the *Axonopus gentilis* zone (II.1 – 5) and the **Kawfutu valleys (II.8 – 10)**, although both categories clearly have a lot of species in common.

Throughout the zone that carries its name *Axonopus gentilis* is abundantly present, as is *Leptocoryphium lanatum*.

*Bulbostylis stenocarpa*, *Trachypogon plumosus* (growing high), *Elephantopus angustifolius* and *Curatella americana* also show a high frequency over the whole range of communities within the *Axonopus gentilis* zone.

Characteristic species for this zone are *Axonopus gentilis*, *Tabebuia caraiba*, *Paspalum plicatum*, *Elephantopus angustifolius* and *Tephrosia purpurea*.

Characteristic species for the Kawfutu vegetations are *Coelorachis aurita*, *Cyperus haspan* and *Paspalum densus*.



Occurring in the *Axonopus gentilis* zone **and** in Kawfutu vegetations are *Bulbostylis stenocarpa*, *Cuphea gracilis*, *Euphorbia brasiliensis* and *Hyptis atrorubens*.



### **II.1 Community of *Axonopus gentilis* and *Rhynchospora nervosa*.**

This community may be found on dry colluvium at the foot of the hills.

Characteristic and differentiating species are *Rhynchospora globosa*, *Rhynchospora nervosa*, *Panicum rudgei*, *Eriosema simplicifolium* and *Mesosetum cayennense*. These are mainly ‘dry species’ also featuring in Table I. They still haven’t reached their ecological limit at the wet end.

Species like *Schyzachyrium condensatum*, *Riencourtia oblongifolia*, *Paspalum plicatulum*, *Luehea paniculata* and *Eriosema rufum* are –conspicuously- absent.

### **II.2 Community of *Luehea paniculata* and *Eriosema rufum*.**

Found on wet colluvium, this community is characterised by *Luehea paniculata*, *Eriosema rufum*, *Psidium guineense* and *Cassia patellaria*.

‘Dry species’ (see II.1) are missing while ‘moist species’ like *Cuphea gracilis* and *Euphorbia brasiliensis* are appearing.

II.1 and II.2 have *Sporobolus cubensis*, *Thrasya petrosa* and *Bulbostylis stenocarpa* in common.

### **II.3 Community of *Curatella americana* and *Trachypogon plumosus*, the ‘Curatella orchard’.**

This is a species-poor variety of II.2, dominated by a relatively dense stand of *Curatella americana*. Covering up to 75%, *Trachypogon plumosus* is dominant in this community with *Axonopus gentilis* also showing a high presence. As a result many species of II.2 are squeezed out by these tall grasses.

### **II.4 Facies community of *Paspalum plicatulum* and *Arundinella hispida*.**

Another species-poor variety of II.2, found in depressions, with some ‘wet species’ (also in II.7 and II.8) like *Arundinella hispida*, *Melochia villosa* and *Buettneria scabra*.

### **II.5 Community of *Tabebuia caraiba* and *Eriosema violaceum*, the ‘Tabebuia orchard’.**

Characteristic species is *Eriosema violaceum*. Missing is *Leptocoryphium lanatum*! The dominant grass here is *Paspalum plicatulum*.

This community is closely related to II.4. It has a dense growth of *Tabebuia caraiba*.

### **II.6 Facies community of *Tripsacum dactyloides*, *Helicteres pentandra* and *Cordia schomburgkii*.**

This community, found in depressions, is dominated by the very tall and sturdy grass *Tripsacum dactyloides*.

The position of II.6 is not clear. Part of the *Axonopus gentilis* zone?

### **II.7 Community of *Axonopus pubivaginat* and *Echinolaena inflexa*.**

This community marks the transition of colluvium to kawfutu valley.

Characteristic and differentiating species are *Axonopus pubivaginat* and *Andropogon bracteatus*, whereas *Axonopus chrysites*, *Echinolaena inflexa* and *Rhynchospora rufa* occupy their optimal ecotope here.

With the 'moist *Axonopus gentilis* zone' it shares species like *Paspalum plicatulum*, *Crotalaria pterocaula*, *Desmodium barbatum* and *Scleria bracteata*.

Species in common with the '**Kawfutu** vegetation' are *Melochia villosa*, *Andropogon bicornis*, *Panicum cyanescens* etc.

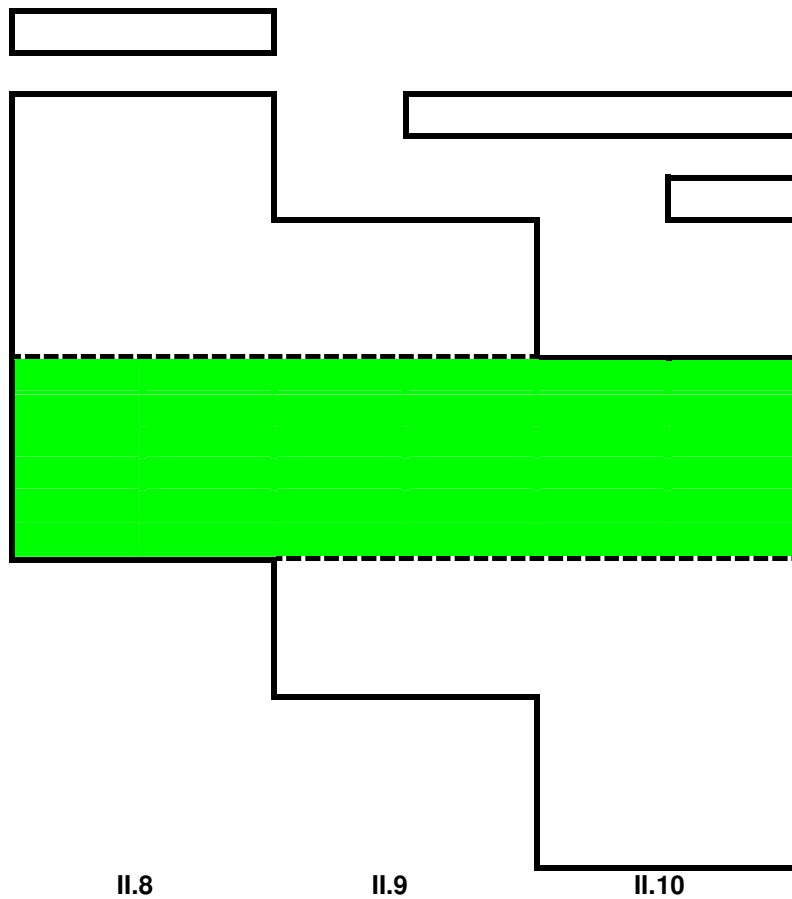
Some savanna treelets present are *Curatella americana* and *Tabebuia caraiba*.

### II 8 – 10 Vegetation of the Kawfutu valleys.

#### Communities of *Coelorachis aurita* and *Luwigia rigida*.

Characteristic and differentiating species are *Sacciolepis myuros*, *Ludwigia rigida*, *Cyperus haspan*, *Coelorachis aurita* and *Paspalum densusum*.

A schematic representation of the 'Kawfutu part' of Table II looks like this:



The shaded area contains species in common between the three communities. From left to right ecotypes become wetter.

Because of the micro relief or hog-wallow structure \_Π\_Π\_Π\_ of the soil dry species also figure in the samples.

All savanna treelets are missing in this type of vegetation.

Constant *Axonopus gentilis* zone species like *Trachypogon plumosus*, *Axonopus gentilis* and *Leptocoryphium lanatum* are absent from the Kawfutu vegetation.

### **II.8 Community of *Rhynchospora globosa* and *Paspalum plicatum***

in Kawfutu valleys.

Characteristic and differentiating species are *Paspalum plicatum*, *Rhynchospora globosa*, *Hyptis lantanaefolia*, *Paspalum maculosum* and *Eriochrysis cayennensis*.

Markedly absent is *Erianthus trinii*.

### **II.9 Community of *Panicum cyanescens* and *Erianthus trinii*,**

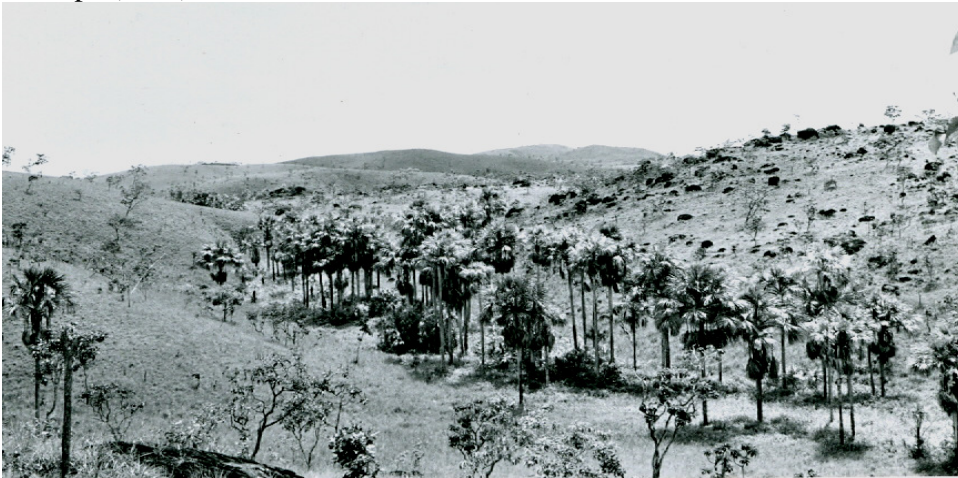
also in Kawfutu valleys.

No *Mauritia flexuosa* in this community.

### **II.10 Community of *Ludwigia nervosa* and *Rhynchanthera limosa* (ONS 286).**

Scattered *Mauritia flexuosa* palms are constantly present.

Species differentiating between II.10 and II.8-9 are, among a lot of others, *Ludwigia nervosa*, *Rhynchanthera limosa* and *Pavonia julianae*, all of them species which also occur in Maurisic swamps (II.11).



### **II.11 Community of *Ischaemum guianense* and *Mikania micrantha*.**

These are the **Maurisic swamps** sensu stricto.

Characteristic and differentiating species are *Ischaemum guianense* and *Mikania micrantha*.

Most of the specific Kawfutu species are missing, although *Melochia villosa*, *Buettneria scabra* and to a certain extent *Erianthus trinii* and *Pavonia sessiliflora* do occur regularly.

There are species that can be found in the *Axonopus gentilis* zone **and** in the Maurisic swamps but not in the Kawfutu vegetation, for example *Sebastiania linearifolia*, *Desmodium barbatum* and *Heliconia psittacorum*, perhaps preferring high, dense vegetation.

## II.12 Community of *Mauritia flexuosa*, *Costus arabicus* and *Panicum pilosum*.

This vegetation might be described as **Maurisic forest**.

*Mauritia flexuosa* is present in high density, up to total crown cover.

### General observations on Table II.

All plant communities are, as in Table I, arranged according to a dry>>>wet gradient from left to right.

This pattern is modified or disturbed by:

1. **Orchard** aspect whereby species like *Curatella americana* or *Tabebuia caraiba* grow in dense stands, causing species- poor variants of related communities.

2. **Facies** forming of grasses like *Paspalum plicatulum* or *Trypsaicum dactyloides*. These variants show a very restricted species composition.

3. **Micro-relief** in Kawfutu valleys. This may cause anomalies such as the occurrence of a mixture of dry and wet species within one sample. This in turn will influence the total picture, making some units look rather heterogeneous.

Another (micro) sampling technique might be useful.

Not all species can be grouped along a dry>>>wet gradient. *Rhynchospora globosa* for example figures in all three main Tables, as do *Sauvagesia sprengelii*, *Mesosetum tenuifolium* and *Cassytha filiformis*.

Other criteria for structuring the vegetation tables could be soil texture and/or fertility, exposure to fires etc.

## TABLE III VEGETATION on FLAT VALLEY FLOORS.



**Communities of *Paspalum pulchellum* and *Rhynchospora podosperma*.**

Although this table is - again – set up in accordance with a dry >>>wet gradient, the general pattern is less clear because of the topographic flatness and minimal differences in altitude. The main divisions occur reflect the textural soil differentiation (sand and clay) rather than the dry-wet gradations correlated to the relief.

Characteristic species for the flat valley vegetation as a whole are *Paspalum pulchellum*, *Rhynchospora podosperma*, *Comolia veronicaefolia*, *Xyris savannensis* and *Xyris paraensis*. Species belonging to the genera *Utricularia*, *Drosera*, *Polygala* and *Syngonanthus*, all of them small and delicate plants, are exclusively found in these communities.

**Trees are absent throughout.**

**III. 1-3 Vegetation of *Abolboda pulchella* and *Xyris malmeana* on sandy soils of flat valley floors.**

Characteristic species are *Abolboda pulchella* and *Xyris malmeana*.

Missing are *Rhynchospora graminea*, *Rhynchospora rufa* and *Eriochrysis cayennensis*.

**III.1 Community of *Paspalum pulchellum*, *Bulbostylis lanata* and *Perama hirsuta*.**

Characteristic species are *Bulbostylis lanata*, *Perama hirsuta* and *Drosera* species.

**III. 2 Community of *Rhynchospora barbata* and *Mesosetum tenuifolium*.**

This community is closely related to III.1, but relatively poor in species.

Typically *Bulbostylis lanata* is absent.

**III.3 Community of *Rhynchospora barbata* and *Abolboda pulchella*.**

This is an impoverished variant of community III.1.

*Mesosetum tenuifolium* has even disappeared completely.

**III.4-7 Vegetation of *Paspalum pulchellum* and *Rhynchospora graminea* on clay soils of flat valley floors.**

Characteristic and differentiating (within the context of Table III) species are *Rhynchospora graminea*, *Rhynchospora rufa*, *Cuphea gracilis*, *Sauvagesia rubiginosa* and *Echinolaena inflexa*.

The clay soils are less well drained, retaining more moisture.

**III.4 Community of *Rhynchospora graminea* and *Paspalum maculosum*.**

Characteristic and differentiating species are *Axonopus chrysites* and *Paspalum maculosum*.

**III.5 Community of *Rhynchospora graminea* and *Buchnera palustris*.**

Characteristic and differentiating species are *Bulbostylis stenocarpa*, *Eriochrysis cayennensis* and some species also occurring in the Kawfutu vegetation like *Hypogynium virgatum*, *Bulbostylis stenocarpa* and *Eriochrysis cayennensis*.

Communities III.4 and III.5 are obviously closely related.



### III.6 Community of *Cyperus unioides* and *Panicum succisum*.

Characteristic and differentiating species are *Schultesia brachyptera* and *Melasma melampyroides*. Species in common with Kawfutu vegetation are *Lipocarpa sellowiana* and *Cyperus unioides*, while *Sacciolepis myuros* and *Manisurus guianensis* also figure in III.7. Strikingly absent are *Paspalum pulchellum* and *Rhynchospora podosperma*.

### III.7 Community of *Lycopodium cernuum* and *Lycopodium alopecuroides*.

Both these species are characteristic for this community, which is found in seepage zones.

### General observations on Table III

There is a sharp distinction between both the ‘Vegetation of Hill tops and slopes (Table I) and the ‘Vegetation of Kawfutu valleys and Maurisie swamps (part of Table II)’ on the one hand **and** the ‘*Paspalum pulchellum* vegetation of Flat valley floors (Table III)’ on the other.

The *Axonopus gentilis* zone (part of Table II) has more species in common with the Kawfutu vegetation than with the *Paspalum pulchellum* vegetation in the flat valleys.

However, the *Axonopus gentilis* zone has a great number of characteristic and exclusive species of its own. It certainly is not just a transition zone.

The vegetation of the scattered Granitic outcrops and the Vier Gebroeders scrub woodland will be described elsewhere on this site.

*Dreaming the great savanna*

*Diapokoimape*

*Full of stones.*



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THE SIPALIWINI SAVANNA .... A DREAM

