

# The Flowering Phenology of some plants of the Aripo Savannas

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In the latter part of 1985 the Botany Group of The Trinidad and Tobago Field Naturalists Club undertook a preliminary study of the flowering phenology of some of the more common and conspicuous plants of the Aripo Savannas as an adjunct to a more detailed study of their ecology being undertaken by Miss Sharon Schwab as work towards a degree from the College of Natural Resources, University of Wisconsin, U.S.A.

## Methods

A site was chosen in Svanna III (Anonymous 1980) on which was marked out a plot as shown in Fig. 1. The narrow L shape was chosen so that all observations could be made without stepping into the plot. The location was also deliberately selected so that one arm of the L contained longer and the other shorter grasses and sedges. The plan was to visit the site once every month for a year. Observations were made in September and October of 1985 but as no visits were made in November and December of that year the monthly visits were continued until December 1986.

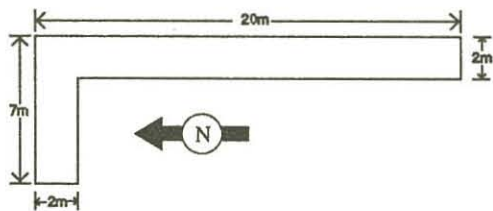


Fig. 1 Plan of the observation plot.

Difficulties were experienced in the identification of the *Utricularia* species and some were relatively rare in the plot. As a result, records for some of the different species were too few to be significant. Nevertheless, there is a good record for one species that was easily recognisable - *U. peckii*.

Although the rule for the dicots was to count the number of plants in flower, for the sedges the number of flowering stalks was counted instead. Grasses are excluded from the report as only the common *Paspalum pulchellum* was observed and it either did not flower during the period of observation or it was missed when it did. Its normal flowering time is early in the wet season. In what follows the nomenclature of the Flora of Trinidad and Tobago is used.

## Results

The observations are recorded in Table I and Fig. 2. A brief inspection of the table shows that very few flowering specimens were observed for some species. Thus there were twelve *Xyris grisebachii*, thirteen *Drosera capillaris* and only one *Acisanthera bivalvis*. On the other hand some species were plentiful, e.g. *Perama hirsuta*, *Utricularia peckii* and *Rhynchospora longibrachiata*. Some show seasonal behaviour and some do not. Thus, *Sauvagesia sprengelii* flowered practically year round. *Drosera capillaris* may also flower year round. Although the table shows several months without flowers, a larger sample may well have produced flowers in every month since, as will be shown later, it is very sparing in the production of flowers. *Rhynchospora holoschonoides*, *Xyris gri-*

*achii*, *Abolboda americana* and *Utricularia peckii* seem to be definitely seasonal (Fig. 2). A third category is observable. It consists of *Perama hirsuta* and *Rhynchospora longibrachiata* which flower for many months of the year but have pronounced peaks of flowering over a 3-4 month period.

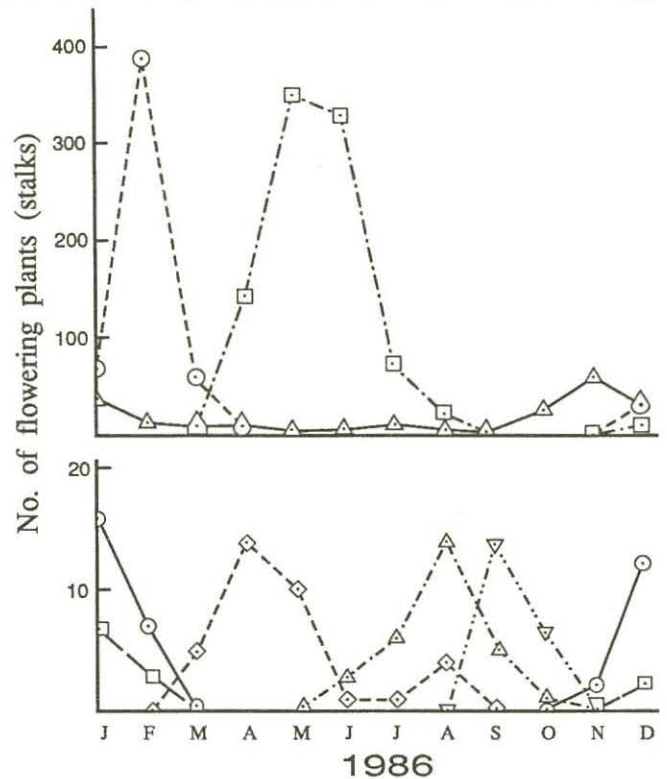


Fig. 2. The flowering behaviour of some plants of the Aripo Savannas during 1986



## Discussion

Although this study is concerned with only a small number of the species in the savannas and suffers from the defect that no grass is included, it nonetheless provides some useful information. Two species, *Utricularia peckii*, and *Rhynchospora longibrachiata* have sharply defined flowering periods in February and May - June respectively. Five other species with fewer recorded observations seem also to have well defined flowering periods. These are *Utricularia viscosa*, *Rhynchospora holoschonoides*, *Xyris grisebachii*, *Spiranthes griesbachii* and *Abolboda americana* with peaks in January, April, January, August and September respectively. Thus, of the seven species only two have their peak flowering period in the same month. This we find to be a very interesting phenomenon.

If water status is important as a trigger for flowering, the most

Table I. Numbers of plants (stalks) in flower per month

Species	1985		1986											
	Sep	Oct	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
<i>Drosera capillaris</i>	0	2	0	0	0	0	3	2	0	0	3	3	2	0
<i>Perama hirsuta</i>	22	16	40	12	7	7	3	3	10	5	1	27	59	29
<i>Acisanthera bivalvis</i>			1	0	0	0	0	0	0	0	0	0	0	0
<i>Sauvagesia sprengelii</i>			0	6	2	3	5	8	2	8	8	4	4	2
<i>Utricularia peckii</i> (yellow)		20	65	395	60	5	2	2	0	0	0	0	0	29
<i>U. spp</i> (all other yellow spp)			71	23	3	8	2	1	0	2	22	89	170	98
<i>U. viscosa</i> (pale violet)			16	7	0	0	0	0	0	0	0	0	2	12
<i>U. spp</i> (all other non-yellow)			11	34	1	3	0	0	0	1	1	2	4	0
<i>Rhynchospora longibrachiata</i>	65	52	0	0	4	144	350	330	68	43	0	0	1	9
<i>Rhynchospora holoschonoides</i>			0	0	5	14	10	1	1	4	0	0	0	0
<i>Xyris grisebachii</i>			7	3	0	0	0	0	0	0	0	0	0	2
<i>Abolboda americana</i>			0	0	0	0	0	0	0	0	14	6	0	0
<i>Spiranthes griesbachii</i>			0	0	0	0	0	3	6	14	5	1	0	0

likely time for a response is in May - June when rain brings the dry season to an end. The transition from wet to dry in December - January is likely to be protracted and less likely to act as a trigger. The "petit careme", or little dry season, about late September is also unlikely to act as a trigger because the water-logged condition of the soil at this time of the year would hardly have time to be affected. Of the seven species mentioned above only one, *R. longibrachiata*, has a flowering peak in May - June. The others are spread through the year. The peak flowering of *R. holoschonoides* in April may be a response to drought but those species with flowering peaks in the period November - February, viz. *U. viscosa*, *X. grisebachii* and *U. peckii*, are just as likely to have been triggered by shortening day length or cold temperatures as by drier conditions. *Spiranthes griesbachii* and *A. americana* with peak flowering in August and September respectively have no obvious environmental triggers and may simply flower a fixed time after growth from underground storage organs begins at the start of the wet season. Although *Perama hirsuta* flowers year round there is a peak in November. This may be due to shortening days, colder temperatures or a combination of both.

As mentioned above, identification of the different species of *Utricularia* was not always possible and as a result in Table I the flowering records of all yellow-flowered species other than *U. peckii* have been lumped together and all white, pink, mauve or purple species apart from *U. viscosa* were also grouped together. The former group includes *U. subulata* and *U. juncea* and the latter *U. amethystina* and *U. sp cfr denticulata*. The first group has a long season that peaks in November and the second has a shorter season that peaks in February like *U. peckii*. The long season of the first group may, of course, result from the grouping together of different species. The individual

species obviously require further study.

On our first visit to the site we counted all specimens (flowering or not) of some of the species within the plot. Some of the results are : *Drosera capillaris* 52, *Perama hirsuta* 191, *Rhynchospora longibrachiata* 630. at the peak of flowering of two of the species the number of individuals was a fair proportion of the total number. In the case of *Drosera*, however, the total number of plants in flower for the year was 13, only 25%, and the percentage at the peak only 6% of the total. Thus, it would seem that not all individuals flower every year ; in fact, the majority do not.

Although the savanna seemed fairly wet through most of the dry season of 1986, rainfall that year was close to average. Since then rainfall has been well below average. It would be interesting to repeat our observations in years of differing rainfall conditions, to expand them to include other species, to study the *Utricularia* species as individual species rather than as groups and to study the flowering of *Drosera* in a lot more detail. Such a project must be seriously considered.

### Acknowledgements.

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### References

Anonymous, (1980) Management and Development Plan : Aripo Savannas Scientific Reserve, Forestry Division Ministry of Agriculture, Lands and Fisheries, Port of Spain, Trinidad, 43 pp.