

PD-AAK-370  
54776

Dept. of Botany  
University of Peradeniya  
Peradeniya  
22nd July 1985.

The Director General  
NARESA  
47/5, Maitland Place  
Colombo 7.

4.188

Dear Sir,

Progress Report upto July 1985 - RG/AID/8

- (a) Report upto July 1985
- (b) Grantee: C.V.S. Gunatilleke & I.A.U.N. Gunatilleke
- (c) Title of the Project: (Population Biology of Tropical Plant Species in Relation to Conservation and Domestication.)
- (d) Date of Award of Grant:
- (e) Description of Work Done: See annex
- (f) Whether or not the work is on Schedule: The work is on Schedule.
- (g) Plan of Work for the Next Half of Year: i) Demarcation of further populations in the case of species with low densities; ii) Observations on phenology iii) Growth rate measurements of seedlings and iv) pollination experiments where flowering material is available.
- (h) Signature of the Grantee: *C.V.S. Gunatilleke*
- (i) Signature of the Head: *M. Jayawardena*

Rec'd in SCI AUG 13 1985

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DESCRIPTION OF WORK DONE UPTO JULY 1985 - RG/AID/8

Recruitment of Staff: 2 research assistants and 2 field/technical assistants have now been chosen for the project and approved by NARESA. A driver has been selected and an application made to NARESA for approval of his appointment.

Purchase of Equipment: Since observations on phenology, pollinating agents and pollination experiments all require suitable ladders to reach the flowers, one aluminium ladder, 60 ft. in length, has now been obtained. The suitability of this ladder is yet to be tested out in the field before others are to be ordered.

A double cab pickup truck has also been purchased now. However, it need further accessories such as a hood/rack and a suitable cover for the rear compartment.

Work Carried Out: During this period the following preliminary observations have been made with respect to the species selected for study:

a) Caryota urens: Several trees at Sinharaja were examined to identify suitable individuals for study. Since the inflorescences are being tapped for sugar sap most of the trees are not suitable for our purposes. However, some of them will be monitored to study the manner in which sugar sap is extracted & if possible to measure the quantities of sap extracted.

A few individuals of this species in the vicinity of the Peradeniya Campus have now been identified for phenological observations and pollination experiments.

Seeds of Caryota urens collected in March were planted out in nursery beds to study their germination rate. Although, 3000 seeds were put down only a few show signs of germination now. Others have been examined to determine whether the embryos have perished. It was found that some are still viable and would germinate in a few months.

At Sinharaja 1000 seedlings that had germinated beneath 2 mother trees were also collected and planted out in polythene bags to study their establishment and rate of growth. Some of these

will be periodically measured to understand their growth performance.

b) Coscinium fenestratum: 14 vines of this species growing in the disturbed roadside vegetation of Sinharaja were identified for observations on phenology, pollination biology and pollination experiments. Use of quantitative measures to describe individuals of these vines is quite a puzzle, as they show so much branching and rooting from older portions of the vine which touch the ground. As such it was decided to trace the main rooted portion and measure the girth 50 cm away from the point of rooting. The girth measurements of these stems were also made at 100 cm, and 150 cm away from the rooted base. Further, the ascending branch at breast height was also girthed. With time whether this method is suitable or not would have to be considered.

Young shoots of Coscinium fenestratum were also tagged in order to monitor their growth rates and the longevity of leaves.

Since some of the vines were in fruit, they were bagged so as to collect them at a later stage. This way fruits from separate individuals could be kept and collected separately to examine any intra-specific differences in their germination. Some mature fruits were also collected from the ground and also from individuals and planted in separate polythene bags. In each case the seeds were subject to three treatments, heat cracking the seed coat and without any pretreatment to see whether these factors affect germination. These have been planted out at Sinharaja.

c) Shorea megistophylla: 30 individuals have been examined at Sinharaja for phenological studies in the selectively logged forests along the road-sides. Disturbed sites appear to be more suited for the growth of this species. This has to be confirmed with further observations.

Using bamboo scaffoldings a ladder and platform were also constructed on one Shorea megistophylla tree. The platform was at 30.4 m. Although the method is suitable bamboo perishes in about 3-4 months therefore, another material has to be used for the purpose. Hence, aluminium ladders have been resorted to, but a substitute material for the platform has yet to be found. Young buds on this Shorea tree were also being monitored

for some time. However, they all gave rise to vegetative shoots. This species appears not to flower annually. Continued monitoring of tagged individuals alone will enable us to know how frequently each would flower.

The distribution of this species in the five undisturbed forest sites sampled for phytosociological studies have also been identified from the field data collected. Only in two of these sites is there a high density of this species. One site is at Deniyaya which is accessible from the western side of the forest. The second is at Warukandeniya where the approach is from the same side as we normally enter the forest, but because of a broken bridge this latter area is difficult to reach. Thus, whether the time spent going back and forth to this site on foot could justify the information eventually obtained would have to be weighed carefully. These plants if monitored will provide information on the performance of these species in undisturbed habitats.

d) Vateria copallifera: Two populations each comprising 19 and 14 individuals at Pitakele and Halmandiya Dola respectively were identified. In the latter population a 50m x 50m plot was demarcated around the larger individuals and 147 smaller individuals of this species were tagged for biannual monitoring of growth rates.

Three individuals of the Pitakele population were also used to study their flowering biology. Two of these trees were each about 45ft tall and the third about 60 ft tall. Ladders and platforms using bamboo were constructed as before to observe the development of inflorescences. Some information has been collected about the growth of them.

Along a stream in the Hantana range near the campus 4 large Vateria copallifera trees were also discovered. This population too would be useful for further studies.

From this Hantana population fruits were collected and grown in the Botany Department premises. Their growth performance has been followed since. Some of these plants which have grown 2-3 ft during the last year were also planted out during the south west monsoons along a small stream in the Hantana range. The growth of these individuals are also still being followed.

e) Elatteria cardomum: 5 'populations' each comprising about 20, 24, 15, 10 and 25 bushes of this species have been identified at Sinharaja and they have been observed at monthly intervals to understand the rate at which new leaves and inflorescences are produced.

Fruits of this species have also been examined and mature seeds planted out in Feb/Mar. These have now grown into seedlings, which were transferred to large polythene bags last month.

Since research assistants for the project were only selected in June/July 1985, most of the preliminary work reported here was done by the local co-investigators whenever visits were made to the forest and time could be devoted to them. These studies are now extremely useful to plan and programme the work ahead.