

## *Leucaena insularum* in Guam

by F. R. FOSBERG and B. C. STONE

*U. S. Geological Survey, Washington D. C.; College of Guam.*

Along the coasts of the islands of the South Pacific Islands, from the Society and Austral groups at least as far west as the Solomons, is a native shrub or small tree belonging with the mimosoid legumes, *Leucaena insularum* (Guill.) Däniker. It differs from the widely introduced, but originally American, *L. leucocephala* (Lam.) deWit (usually known as *L. glauca*) in the usually more numerous pinnae, oblong rather than lanceolate pinnules 4-8 mm long rather than 10-16 mm, heads 1 cm or less across at anthesis rather than 1.5-2.5 cm, pods 5-10 cm long with 6-12 seeds rather than 10-23 cm with 10-22 seeds. The species is not uniform but does not vary more conspicuously than do most widely distributed strand species. Plants from the Solomon Islands tend to have larger leaves with more pinnae while a specimen from Niue (*Yuncker 9899*) has less pinnae than usual.

Back of the shores on Guam, Marianas Is., occurs a similar plant, differing in several features, but which must be referred to the same species. Its small heads and short pods immediately separate it from the abundant *L. leucocephala*. It is described below as *L. insularum* var. *guamensis*. The species may be summarized as follows:

*Leucaena insularum* (Guill.) Däniker, Vierteljahrsschr. Nat. Ge. Zürich 77 (Beibl. 19): 176. 1932.

*Mimosa glandulosa* Sol. ex Forst. f., Prodr. 92, 1786 (nom. nud.)

*Acacia insularum* Guill., Am. Sci. Nat. II, 8: 360, 1837.

*Leucaena forsteri* Benth., London Jour. Bot. 5: 94, 1846.

*Prosopis insularum* Breteler, Acta Bot. Neerl. 9: 398, 1960.

The species was recently transferred to *Prosopis* by F. J. Breteler on the basis of the presence of a gland on the tip of each anther, a character found consistently in *Prosopis*. However, in all other characters by which the two genera differ, especially those of the fruit, and in general habit, the Pacific Island plant resembles *Leucaena*. We do not feel that this one character should outweigh all the rest and prefer to retain *L. insularum* in *Leucaena*. Its distribution is no more logical for one than the other, as neither genus has other native plants in Polynesia, Melanesia, or Micronesia, nor in the Indo-Malaysian region from which the greater part of the Pacific Island flora seems to have come.

### ***Leucaena insularum* var. *insularum***

The leaves usually have 9-12 pairs of pinnae, rarely as few as 6 or as many as 15, rachises closely but noticeably pubescent.

Distribution: Society Islands, Austral Islands, Niue Island, Tonga Islands, Fiji Islands, New Hebrides, New Caledonia, Solomon Islands.

### ***Leucaena insularum* var. *guamensis* Fosberg & Stone, n. var.**

Folia pinnis 3-8 jugis, rhachidibus vix puberulis.

Leaves with 3-8 pairs of pinnae, the rachises sparsely or obscurely puberulent. The heads seem smaller than in var. *insularum*, but this may be due to their being



Fig. 1. *Leucaena insularum* var. *guamensis*. Guam (Asanite Point). Flowering specimen (Stone 4920).



Fig. 2. *Leucaena insularum* var. *guamensis*. Guam (Asanite Point). Fruiting specimen (Stone 5042).

not fully in anthesis.

Marianas Islands: Guam: Anao, *Fosberg 38640* (US, BISH); 2 miles s. of Inarajan, *Moore 342* (US); Cocos Island, *Stone 4243* (Fo, GUAM), *Fosberg 43500* (US, BISH, Fo, GUAM), *43501* (US, BISH, Fo), *43502* (US, type, BISH, Fo, NY, L). Asanite Bay, common on Asanite Point, *Stone 4920* and *5042* (BISH, GUAM, US, Fo) (Fig. 1, 2). All of these collections came from close to the shore.

The variety is closest to material seen from Niue, of all that available from the South Pacific.

Ecology and Distribution. In Guam there are several areas where this plant has been seen to be rather abundant. These are all coastal, on the eastern side of the southern half of Guam, in various areas wherever there is a relatively undisturbed area of coral limenstone or coral sand. The usual plant associates are *Scaevola sericea*, *Messerschmidia argentea*, *Callicarpa cana*, *Colubrina asiatica*, *Ischaemum longisetum*, *Pemphis acidula*, and other species typical of coastal limestone or sand vegetation in Micronesia. The *Leucaena* does not however generally occur in the forefront of the coastal association, which in the areas mentioned is frequently a virtually pure stand of dwarf *Pemphis* shrubs. Where the general aspect of the vegetation is dwarfed and windswept, the *Leucaena* is also dwarfed; but in protected gullies, behind massive boulders, or on deeper deposits of sand (as on Cocos Island) this same variety attains a height of perhaps twenty-five to thirty feet, with a trunk six to eight inches in diameter and a spreading, rounded crown. The general appearance of this plant, whether tall or dwarfed, is quite different from the more loosely branched, less compact and rounded silhouette of *L. leucocephala*.

When the site is closer to optimum conditions than on the open windswept coasts, other associated species, also trees, are found, including *Cordia subcordata*, *Premna integrifolia*, *Ximenia americana*, and *Terminalia catappa*. Near Asanite Bay, where this *Leucaena* is rather common, *Barringtonia asiatica* and *Allophylus timorensis* are also associates.

So far this variety of *Leucaena* has not been found on the northern islands of the Marianas group, i. e. Rota, Tinian, Saipan, etc. This seems curious, and it may be that further collecting will reveal it on the coasts of these limestone islands. At present, however, it appears to be known only from Guam itself, and there only in the south-east portion.

A small plant of this variety has been established on the College of Guam campus at the boundary of the parking lot. Seeds germinated freely in a student experiment.

No intermediates have yet been discovered between this variety and *L. leucocephala*. It would be interesting to attempt cross-pollinations, which could easily be accomplished in the Asanite Bay region, where both species grow. Even here, however, the restriction of *L. insularum* to less disturbed, and of *L. leucocephala* to more disturbed areas, is easily observed.