

THE PARASITISM OF *EXOCARPUS HUMIFUSA*, R. Br.

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*Exocarpus humifusa*, R. Br., is a small prostrate shrub found on Tasmanian mountain tops. Three other members of the genus are found in the State, and these extend to the mainland. The most familiar is the native cherry, which is common in the eastern states, but the Western Australian record of which is doubtful. The family *Santalaceæ*, to which *Exocarpus* belongs, is noted for the root parasitic habits of its members. In Europe and Asia the parasitism of *Thesium*, *Comandra*, *Osyris* (1), and *Santalum* (2) has been fully investigated, and in Australia the genera which have been proved to enter into this unequal partnership with other plants are *Fusanus*, *Choretrum*, *Leptomeria*, and *Exocarpus* (3, 4, 5, 6, 7). In the case of *Fusanus spicatus* (*Santalum cygnorum*), the Western Australian sandalwood, the knowledge of its parasitism is of economic importance, as it is useless to attempt to cultivate this valuable tree in the absence of a host plant.

The parasitism of the native cherry (*Exocarpus cupressiformis*) was proved in 1910 by Dr. Margaret Benson, who obtained her material from Killara, New South Wales. This plant, like other phanærogamic parasites, attaches itself to the host by means of a haustorium, which is composed of two parts—an outer cortical region and an inner conducting region, and by this means obtains water and food material.

The habits of *Exocarpus humifusa* were investigated in January, 1928, at Lake Fenton, National Park. The plant is fairly common on the rocky mountain sides in the higher altitudes where the predominant trees are *Eucalyptus gunnii*, *E. coccifera*, and *E. urnigera*. It grows with *Telopea truncata*, *Orites diversifolia*, *Hakea lissosperma*, *Olearea pinifolia*, various epacrids, and others, and examination showed that it attacked them all indiscriminately. Some plants belonging to the family *Santalaceæ* show a preference in hosts, and *Leptomeria spinosa* in Western Australia was found on *Eremæa pilosa* only. A wide range of hosts such as that possessed by this Tasmanian species is a great advantage, and increases the plant's chances of survival. It must be remembered that the death of the host means the death of its dependant, and that a one host parasite is limited in distribution to the area occupied by the victim species, and also has a restricted food supply in that area.

*Exocarpus humifusa* possesses a well-developed root system, ramifying through the soil a few inches from the surface and coming into frequent contact with the roots of other plants. Its roots are white, rather fleshy, and devoid of root hairs. These characters are common amongst root parasites. Where they come into contact with other roots—either their own or those of other species—haustoria are formed. These are minute disc-like outgrowths which are visible to the naked eye, and usually one line in diameter when fully developed. Because of their small size they do not penetrate far into large roots, the fusion being between the cortical cells of the host and the parenchymatous cells of the haustorium. The haustoria are consequently easily detached from the host root, and care has to be exercised during the digging operations in order to get them out intact.

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