

Trees 'n' Timber

MISTLETOES

I have turned some wooden eggs from Mistletoes and become interested in their growth habits and characteristics, but new very little about them. Recently I borrowed a book "Mistletoes of Southern Australia" from my library and became enchanted by the range and number of Mistletoes. I would thoroughly recommend the book as it is easily read and lacks the technical jargon often associated with botanical texts.

Mistletoe is the common name for many plants which are said to be hemi-parasitic i.e. plants which obtain their water and nutrients from a host plant but have green leaves and produce their own food (sugars) through photosynthesis as do normal trees or shrubs. Mistletoes attach to and penetrate the branches of a tree or shrub by a specialised structure called a haustorium, through which they absorb water and nutrients from the host plant. It is this botanical structure which¹ produces interesting grain patterns.

The name mistletoe originally referred to the European mistletoe (*Viscum album*), belonging to the family Santalaceae. It was the only species native to Great Britain and much of Europe. Over the centuries, the term



Mistletoe on Buloke (Naracoorte)



flowers & leaves of Grey Mistletoe



group of Mistletoes on Western Myall

has been broadened to include many other species of parasitic plants with similar habits, found in other parts of the world, which are classified in different genera. One of the greatest misconceptions of Mistletoes is that like rabbits, Salvation Jane, Soursobs etc., they were introduced to Australia by settlers from Britain and Europe. This is not true – there are only 4 species of Mistletoe native to Europe,

while there are about 90 species growing in Australia – all native to Australia.

MYTHOLOGY AND MEDICINE

As early as Roman times and in the times of the Druids, Mistletoes have formed a great part of Mythology and Medicine. In various parts of the world it has been used to treat epilepsy, the bites of mad dogs and wild animals, strained muscles, toothache, sores, itch, weakness of vision, impetigo, dandruff, regeneration of lost fingernails, common cold, ulcers, poisoning and many other afflictions. It was widely believed that the evergreen mistletoe kept the deciduous sacred host tree alive during winter while it was leafless. The mistletoe was regarded as the heart or the life of the god of the sacred tree.

GROWTH HABIT

The essential feature of the mistletoe habit is that the root system is highly modified to form the “haustorium” – which is the junction between the stem of the host plant and the mistletoe itself.

Seeds of mistletoes are generally spread by birds and the method is not normally by the bird cleaning its beak, but the ‘opposite end’ as the sticky seed usually passes through the digestive system before being wiped on the branch. The haustorium penetrates the bark of the host, probably by enzymatic breakdown, and grows to the host’s cambial layer where new xylem (water-conducting) cells are generated. The haustorium’s secretions usually cause the host’s xylem cells form a continuous connection with the xylem of the parasite’s haustorium. The mistletoe thus becomes a hemi-parasite utilizing the host’s water supply with its dissolved nutrients.

Mistletoes have attractive flowers which produce sticky edible seeds, often called snotty gobbles.

The growth of the mistletoe haustorium often restricts nutrient flow further along the host branch, and the stem or branch beyond the mistletoe dies back. It is a fallacy that mistletoes always kill trees, and only when they are in plague proportions will the tree die.

It is the haustorium which creates interesting figure. If the mistletoe is cut and machined or turned while still a living part of the tree, the fusion between the two parts can be seen with finger like intrusions showing the join. When the branch and



Mistletoe on Red Gum - Adelaide Hills (above & below)



mistletoe dies, the two parts separate, clearly showing the former union. I have seen and turned dead mistletoes from River Red Gum which were bowl size – up to 250 mm diam.

The two major genera of hemi-parasitic trees in Australia which belong to the family Santalaceae are the Native Cherry or Cherry Ballart (*Exocarpus*) and the Sandalwoods (*Santalum*) including our famous Quandong (*S. acuminatum*). In the case of Quandong, the host plant is often a grass in its early stage, but will become other shrubs and trees as they mature. In plantations, Quandongs are planted in rows alternating with host plants. Most of (but not all) the Mistletoes native to Australia belong to Santalaceae.

They differ from the hemi-parasitic trees in that they are said to be arboreal i.e. they grow from the stems of the host plants.

Mistletoes most commonly seen in the Adelaide Hills are also widespread throughout eastern Australia. They are the Box Mistletoe and the Drooping Mistletoe (*Amyema pendula* and *A. miquelii*) – they are often difficult to separate as they have pendant olive foliage. The Grey Mistletoe (*Amyema quandang*) is widespread in the outback and its common host is Western Myall. This mistletoe has bright red attractive flowers and grey broader leaves which are all upright. The haustorium forms interesting grain and colour when turned.

The largest mistletoe in the world grows in the south-west of Western Australia. It is root parasitic. It is known as Western Australian Christmas tree (*Nyctia floribunda*) and is a shrub or a tree up to 10 metres high. The many haustoria (plural) arising from the roots attach themselves to roots of many nearby plants and draw water and therefore nutrients from each of them.

References

Mistletoes of Southern Australia, David M Watson, CSIRO Publishing, 2011

Australian National Botanic Gardens web page - www.cpbr.gov.au

Gardens Wikipedia

Ron Allen

Ron's Mistletoe Eggs



Red Gem



Western Myall



Buloke