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## PARASITIC PLANTS

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### ABSTRACT

Mistletoes, dodder and broomrapes are the best known parasitic higher plants. They are mainly found in Europe and northern North America. In tropical areas, quite a number of additional species are found, and the author reports on what he observed in Costa Rica, North America and Europe, and discusses species found in Australia, New Caledonia and South America.

### OBSERVATIONS

This talk is based on a 6-week stay in Costa Rica this Spring, observations in North America and Europe, as well as a literature search.

Essentially most parasitic higher plants (which excludes fungi, bacteria and viruses) predominate in the tropics. The best known parasites are mistletoe, dodder and broomrape. As we shall see, there are quite a few lesser known genera and species. They belong to several families, and are dicotyledonous angiosperm except one conifer.

The table lists the major parasites. Prominent are the mistletoes. In Europe we find *Viscum album*. This grows on several species of trees including a few fruit trees like apple and pear. It has white berries which are disseminated by birds. Experimentally seeds were germinated without the bird passage. Having green leaves, mistletoes can photosynthesize and are therefore hemiparasites.

In Costa Rica, I have seen the mistletoe (muérdago) *Phoradendron*. It grows on many different trees. Among fruit trees guavas may carry them. Other species of *Phoradendron* grow in North America. They are similar to *Viscum album* except their flowers are much larger. In Florida and Georgia, *Phoradendron* are frequently seen on pecan

trees, as well as other dicotyledonous trees. A few members of this genus grow on conifers.

*Gaiadendron* is another Loranthacea that grows in Costa Rica. It has pretty, large yellow flowers and grow in rainforests. Hummingbirds and insects pollinate these flowers.

*Psittacanthus* is a relative, and I have only seen specimen in a herbarium at the University of Costa Rica in San José.

Other "mistletoes" include the dwarf mistletoe (*Arceuthobium*) that parasitizes several coniferous timber trees in western North America. In the literature, I found that in Australia different "mistletoes" grow on *Casuarina* which we call "Australian Pines" in Florida.

Balanophoracea contains *Corynaea crassa* that is foun in costa Rica where it can parasitize palms, bamboo etc. It is not easily found.

*Rafflesia* has huge flowers and is native to Borneo and Sumatra. One or two relatives are rare in costa Rica.

Several members of Orobanchaceae (broomrape) are parasitic on several farm crops especially of clover.

*Striga* is called witchweed and grows on sorghum and other grasses. It has been introduced to the Eastern U.S.A. from Asia.

*Cuscuta* or dodder (Kleeseide in German, Lovevine in the Bahamas) has long yellow threads and gets its nourishment from numerous shrubby and herbaceous hosts. It spreads in farm crops with impure seeds.

Strangler fig (*Ficus*) may not be considered a parasite by purists, but it certainly is detrimental to many species of tropical trees by competing for nutrient and light. Very large specimen are common in the rainforests of Costa Rica and other places.

Kudzu (*Pueraria lobata*) also is detrimental to many plants by just over-growing them. It has been introduced into the southeastern U.S.A. from Asia.

Other interesting parasites are *Myzodendron* which only grows in southern South America and called muérdagos plumosos or feathery mistletoes. Olaceae are root parasites that are found in Australia.

Most interesting is that one conifer, *Podocarpus ustus* (syn. *Parasitaxus*) has been reported as a parasite in New Caledonia.

In addition to the genera mentioned here, Kuijit, describes quite a few more in "The Biology of Parasitic Flowering Plants". I'd like to conclude in saying that just a little bit more attention should be paid to parasitic higher plants in plant pathology textbooks.

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**Table 1. Selected Parasitic Plants**

Family	Genus, species	Comments	Location
Balanophoraceae	<i>Corypaeae arvensis</i>		Java, Costa Rica, India
Cuscutaceae	<i>Cuscuta australis</i>		world-wide
Krameriaceae	<i>Krameria</i> sp.	xerophyte	Costa Rica
Lantern	<i>Cassytha</i> sp.	similar to <i>Cuscuta</i>	tropical conarts
Lauraceae	<i>Anyema Eriophyllum</i>	on <i>Casuarina obtusa</i>	Australia
	<i>Galadendron</i> sp.		Costa Rica
	<i>Lycium macrocarpi</i>	on <i>Casuarina</i> sp.	South Australia
	<i>Phoradendron</i> spp.		Costa Rica
	<i>Pithecolobium pyrifolia</i>		Costa Rica
	<i>Palicourea</i> sp.		Costa Rica
	<i>Strychnos</i> spp.	on trees	Costa Rica, etc.
	<i>Trielaris aplyllus</i>	on cactus	Chile
	<i>Yapora antarctica</i>		New Zealand
Mimnropaceae	<i>Mimnropa</i> sp.	saprophyte	N. America
Myrsinaceae	<i>Myrsinodendron</i> sp.	on <i>Nicotifagus</i> sp.	Chile, S.America
Oleaceae	<i>Olea phyllanthi</i>	root parasite	W.Australia
Orobanchaceae	<i>Bathysiphia</i> sp.		Canada, Siberia
	<i>Cuscutella americana</i>	schlorophyllous	
	<i>Orobancha</i> spp.	broom rape	Europe, N.America
Rafflesiaceae	<i>Rafflesia</i> sp.	on <i>Vitaceae</i>	Borneo, Sumatra, Costa Rica
Santalaceae	<i>Emmenopus</i> sp.		New Zealand, Patagonia
Scrophulariaceae	<i>Castilleja</i> sp.	on red oak	C.R., Montana
	<i>Pedicularis</i> sp.	root parasite	temperate zone
	<i>Rhinanthus minor</i>	root hemiparasite	
	<i>Striga hermanntholae</i>	on <i>Sorghum</i> sp., etc.	Sudan, East USA
Vincetoga	<i>Arceuthobium</i> sp.	on conifers	Mexico,
West USA	<i>Vicium album</i>		Europe
Alon Hornbui			
Conifer	<i>Parasitaxus utata</i> ( <i>Podocarpus utata</i> )	on conifers	New Caledonia
Leguminosae	<i>Puccinia lobata</i>	strangling vine or liana	Southeast USA, Asia
Moraceae	<i>Ficus pertusa</i>	straggler fig	tropical Americas