

Cinnamomum camphora

Camphor tree

Introduction

The genus *Cinnamomum*, with approximately 250 species, occurs in Australia, the Pacific islands, and in the tropics and subtropics of East Asia. In China, 46 species and one variety occur primarily in the south, with Shaanxi and southern Gansu as the northern boundary^[94].

Species of *Cinnamomum* in China



Leaves of *Cinnamomum camphora*.

Scientific Name	Scientific Name
<i>C. appelianum</i> Schewe	<i>C. micranthum</i> (Hay.) Hay.
<i>C. austro-sinense</i> H. T. Chang	<i>C. migao</i> H. W. Li
<i>C. austro-yunnanense</i> H. W. Li	<i>C. mollifolium</i> H. W. Li
<i>C. bejolghota</i> (Buch.-Ham.) Sweet	<i>C. osmophloeum</i> Kanehira
<i>C. bodinieri</i> Lévl.	<i>C. pauciflorum</i> Nees
<i>C. burmannii</i> (C. G. et Th. Nees) Bl.	<i>C. philippinense</i> (Merr.) C. E. Chang
<i>C. camphora</i> (L.) Presl	<i>C. pingbienense</i> H. W. Li
<i>C. cassia</i> Presl	<i>C. pittosporoides</i> Handl-Mazz.
<i>C. caudiferum</i> Kosterm.	<i>C. platyphyllum</i> (Diels) Allen
<i>C. chartophyllum</i> H. W. Li	<i>C. porrectum</i> (Roxb.) Kosterm.
<i>C. contractum</i> H. W. Li	<i>C. reticulatum</i> Hay.
<i>C. glanduliferum</i> (Wall.) Nees	<i>C. rigidissimum</i> H. T. Chang
<i>C. ilicioides</i> A. Chev.	<i>C. saxatile</i> H. W. Li
<i>C. iners</i> Reinw. ex Bl.	<i>C. septentrionale</i> Handl.-Mazz.
<i>C. japonicum</i> Sieb.	<i>C. subavenium</i> Miq.
<i>C. javanicum</i> Bl.	<i>C. tamala</i> (Buch.-Ham.) Nees et Eberm.
<i>C. jensenianum</i> Handl.-Mazz.	<i>C. tenuipilum</i> Kosterm.
<i>C. kotoense</i> Kanehira et Sasaki	<i>C. tonkinense</i> (Lec.) A. Chev.
<i>C. kwangtungense</i> Merr.	<i>C. tsangii</i> Merr.
<i>C. liangii</i> Allen	<i>C. tsoi</i> Allen
<i>C. longepaniculatum</i> (Gamble) N. Chao ex H. W. Li	<i>C. validinerve</i> Hance
<i>C. longipetiolatum</i> H. W. Li	<i>C. wilsonii</i> Gamble
<i>C. mairei</i> Lévl.	<i>C. zeylanicum</i> Bl.

Alternate leaves are ovate-elliptic, 6-12 cm long and 2.5-5.5 cm wide, margin entire or occasionally repand, with acute apices and broadly cuneate to subrounded base. Upper leaf surface is shiny green to yellowish green, while the underside is opaque and lighter in color. The leaves are glabrous on both surfaces or sparsely puberulent beneath only when young; triplinerved or sometimes inconspicuously five-nerved, with conspicuous midrib on both surfaces and 1-5(7)-paired lateral nerves from the midrib. The axils of lateral nerves and veins are conspicuously bullate above, dome-shaped, and always villous beneath. The axillary panicle is 3.5–7 cm long. Greenish white to yellow flowers are glabrous or downy and pale to yellowish brown, and about 3 mm in length. The perianth is glabrous or puberulent outside and densely pubescent inside. The purplish-black fruit is an ovate or subglobose drupe, 6-8 mm in diameter. The perianth-cup in fruit is cupuliform, 5 mm long, longitudinally sulcate, with truncate apex up to 4 mm wide and base 1 mm wide^[94]. Flowers appear in April to May, and fruits in August to November^{[94][95]}.

Taxonomy

Family: Lauraceae

Genus: *Cinnamomum* Trew

Description

Cinnamomum camphora is a large evergreen tree that can grow to 30 m

in height and 3 m in diameter, with a broadly ovate crown. Terminal buds are broadly ovoid or globular, and covered with sericeous scales. Bark is yellowish brown with irregular vertical splits. Branches are light brown, cylindrical, and glabrous.

Habitat

Cinnamomum camphora occurs in valleys and on mountain slopes. It is also widely cultivated^[94].

Distribution

C. camphora is found in southern and southwestern China including Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shandong, Sichuan, Yunnan, and Zhejiang provinces^[94].

Economic Importance

Roots, branches, leaves, and wood of *C. camphora* can be used for extracting camphor and camphor oil for pharmaceutical use and as a flavoring. The core of the fruit, which has both industrial and medicinal uses, is approximately 40 percent oil. The wood is used for construction, shipbuilding, and cabinet-making^[94].

Natural Enemies of Cinnamomum

The reported natural enemies found on



members of the genus *Cinnamomum* number 22 fungi and 92 arthropods covering 33 families in 7 orders. Most arthropods in the list are reported to

infest *C. camphora* and possibly other species within the genus.

Fungi

Phylum	Family	Species	H. R.	Ref.	
Ascomycota	Asterinaceae	<i>Asterina cinnamomi</i> Syd.	m	23	
	Capnodiaceae	<i>Capnodium footii</i> Berk. & Desm.	po	23	
	Erysiphaceae	<i>Erysiphe cichoracearum</i> DC.	po	22	
			po	23	
	Glomerellaceae	<i>Glomerella cingulata</i> (Stoneman) Spauld. & H. Schrenk	p	23	
	Meliolaceae		<i>Armatella formosana</i> W. Yamam.	oo	61
			<i>Armatella longispora</i> W. Yamam.	oo	23
			<i>Meliola beilschmiediae</i> var. <i>cinnamomi</i> Hansf.	oo	61
<i>Meliola neolitsea</i> W. Yamam.			oo	61	
Basidiomycota	Atheliaceae	<i>Athelia rolfsii</i> (Curzi) C.C. Tu & Kimbr.	p	23 ^I	
	Ceratobasidiaceae	<i>Thanatephorus cucumeris</i> (A.B. Frank) Donk	p	23 ^{II}	
	Hymenochaetaceae	<i>Phellinus williamsii</i> (Murrill) Pat.	p	23	
	Incertae sedis	<i>Aecidium cinnamomi</i> Racib.	mo	23	
	Pucciniaceae	<i>Puccinia cinnamomi</i> F.L. Tai	po	23	
	Pucciniaceae	<i>Puccinia cinnamomicola</i> Cummins	oo	23	
	Septobasidiaceae	<i>Septobasidium albidum</i> Pat.	p	23	
Oomycota	Pythiaceae	<i>Phytophthora cinnamomi</i> Rands	p	188	
Anamorphic Ascomycetes		<i>Elaeodema cinnamomi</i> Syd.	o	23	
		<i>Elaeodema cinnamomi</i> f. <i>brunnea</i> Keissl.	mo	23	
		<i>Elaeodema floricola</i> Keissl.	mo	23	
Anamorphic Ectolechiaceae		<i>Chlorocyphella aeruginascens</i> (Karst.) Keissl.	po	23	
Anamorphic <i>Guignardia</i>		<i>Phyllosticta nobilis</i> Thüm.	po	23	
Anamorphic <i>Mycosphaerella</i>		<i>Pseudocercospora cinnamomi</i> (Sawada & Katsuki) Goh & W.H. Hsieh	mo	23 ^{III}	
			o	110	

^I Recorded as *Corticium centrifugum* (Lév.) Bres.

^{II} Recorded as *Corticium sasakii* (Shirai) Matsum.

^{III} Recorded as *Cercospora cinnamomi* Sawada & Katsuki

Arthropods

Order	Family	Species	H. R.	Ref.
Acariformes	Eriophyidae	<i>Acerimina cinnamomi</i> Kuang	m	83
		<i>Anothopoda cinnamomi</i> Kuang et Feng	oo	83
	Tetranychidae	<i>Oligonychus punicae</i> (Hirst)	p	143
Coleoptera	Cerambycidae	<i>Eupromus ruber</i> (Dalman)	po	9
		<i>Eurypoda antennata</i> Saunders	p	124
		<i>Eurypoda batesi</i> Gahan	oo	9
		<i>Mimotheustus annulicornis</i> Pic	m	124
		<i>Monochamus bimaculatus</i> Gahan	p	9
		<i>Oberea griseopennis</i> Schwarzer	m	79
		<i>Paraglenea fortunei</i> (Saunders)	po	9
		<i>Pyrestes haematica</i> Pascoe	m	9
		<i>Uraecha angusta</i> (Pascoe)	mo	124
	Cetoniidae	<i>Oxycetonia jucunda</i> (Faldermann)	p	140
	Chrysomelidae	<i>Atysa marginata</i> (Hope)	p	158
			m	185
		<i>Clitenella fulminans</i> (Faldermann)	p	65
	Eumolpidae	<i>Aulexis cinnamoni</i> Chen et Wang	m	139
		<i>Chalcolema cinnamoni</i> Chen et Wang	m	139
	Scolytidae	<i>Cnestus maculatus</i> Browne	p	140
		<i>Coptodryas perparvus</i> (Sampson)	p	65
		<i>Hadrodemius armorphus</i> (Eggers)	p	65
		<i>Phloeosinus camphoratus</i> Tsai et Yin	m	182
		<i>Phloeosinus cinnamomi</i> Tsai et Yin	m	182
		<i>Terminalinus eggersi</i> (Besson)	p	65
		<i>Xyleborus huangi</i> Browne	p	65
	Hemiptera	Coreidae	<i>Homoeocerus walkerianus</i> Lethierry et Severin	p
Pentatomidae		<i>Dolycoris baccarum</i> (Linnaeus)	p	192
		<i>Erthesina fullo</i> (Thunberg)	po	192
Tingidae		<i>Stephanitis laudata</i> Drake et Poor	oo	193
		<i>Stephanitis macaona</i> Drake	po	192
		<i>Stephanitis mendica</i> Horvath	oo	193
Homoptera	Aphididae	<i>Aphis citricola</i> van der Goot	po	140
	Aphrophoridae	<i>Trigophora obliqua</i> (Uhler)	p	140
		<i>Yezophora flavomaculata</i> (Matsumura)	m	140
	Asterolecaniidae	<i>Asterolecanium cinnamomi</i> Borchsenius	p	65
			oo	151
	Cicadidae	<i>Mogannia hebes</i> (Walker)	p	158
	Coccidae	<i>Ceroplastes floridensis</i> Comstock	p	158
		<i>Chloropulvinaria aurantii</i> (Cockerell)	p	151
		<i>Chloropulvinaria psidii</i> (Maskell)	p	151
		<i>Coccus hesperidum</i> (Linnaeus)	po	65
			p	151
		<i>Dicyphococcus bigibbus</i> Borchsenius	p	151
		<i>Eucalymnatus tessellatus</i> (Signoret)	p	151
<i>Neoplatylecanium cinnamomi</i> Takahashi		m	151	
<i>Saissetia formicarii</i> (Green)	p	151		

	Diaspididae	<i>Aulacaspis yabunikkei</i> Kuwana	p	65
		<i>Parlatoria pergandii</i> Comstock	p	65
		<i>Pseudaonidia duplex</i> (Cockerell)	p	140
			p	158
	<i>Unaspis yanonensis</i> (Kuwana)	p	158	
	Margarodidae	<i>Icerya purchasi</i> Maskell	p	140
	Pseudococcidae	<i>Formicococcus cinnamomi</i> Takahashi	m	150
		<i>Pseudococcus comstocki</i> (Kuwana)	po	150
	Tropiduchidae	<i>Tambinia debilis</i> Stål	p	204
	Lepidoptera	Drepanidae	<i>Macrauzata ferestraria</i> (Moore)	m
<i>Macrauzata maxima chinensis</i> Inoue			m	65
<i>Tridrepana crocea</i> (Leech)			p	158
Geometridae		<i>Hypomecis punctinalis conferenda</i> (Butler)	p	158
		<i>Thalassodes quadraria</i> Guenée	p	141
			m	158
<i>Trigonoptila latimarginaria</i> Leech		m	158	
Limacodidae		<i>Latoia pastoralis</i> Butler	m	158
			p	158
		<i>Thosea sinensis</i> (Walker)	p	158
Lymantriidae		<i>Euproctis bipunctapex</i> (Hampson)	p	141
			p	198
		<i>Ivela eshanensis</i> Chao	m	199
		<i>Lymantria dispar</i> (Linnaeus)	p	141
Noctuidae		<i>Ischyja manlia</i> Cramer	p	141
			po	205
Nymphalidae		<i>Charaxes bernardus</i> (Fabricius)	p	158
			p	203
Papilionidae		<i>Chilasa agestor matsumurae</i> Fruhstorfer	p	203
		<i>Chilasa clytia dissimilis</i> (Linnaeus)	po	203
		<i>Chilasa epycides agestorides</i> Fruhstorfer	p	158
		<i>Chilasa epycides melanoleuca</i> (Ney)	p	203
		<i>Graphium sarpedon</i> (Linnaeus)	p	158
			p	203
		<i>Graphium sarpedon connecteus</i> (Fruhstorfer)	p	203
		<i>Papilio taiwanus</i> Rothschild	p	203
<i>Pazala timur</i> Ney		m	158	
Psychidae		<i>Amatissa snelleni</i> Heylaerts	po	141
		<i>Dappula tertia</i> Templeton	p	141
		<i>Clania variegata</i> Snellen	po	141 †
Saturniidae		<i>Actias selene ningpoana</i> Felder	p	141
		<i>Actias sinensis</i> Walker	p	65‡
			p	158
	<i>Antheraea frithii javanensis</i> Bouvier	p	158	
	<i>Antheraea pernyi</i> Guérin-Méneville	p	141	
		p	158	
	<i>Loepa anthera</i> Jordan	po	158	
<i>Samia cynthia</i> (Drury)	p	65		
	p	158‡		
Sphingidae	<i>Clanidopsis exusta</i> (Butler)	mo	206	
Tortricidae	<i>Homona magnanima</i> Diakonoff	p	158	

Parasitiformes	Phytoseiidae	<i>Amblyseius orientalis</i> Ehara	p	65
Thysanoptera	Phlaeothripidae	<i>Litotethrips rotundus</i> (Moulton)	m	56
	Thripidae	<i>Anisopilothrips venustulus</i> (Priesner)	po	56
		<i>Astrothrips aucubae</i> Kurosawa	p	56
		<i>Elixothrips brevisetis</i> (Bagnall)	po	56
		<i>Heliothrips aino</i> (Ishida)	p	56
		<i>Heliothrips haemorrhoidalis</i> (Bouché)	po	56
<i>Megalurothrips distalis</i> (Karny)	po	56		

† Recorded as *Eumeta variegata* Snellen

‡ Recorded as *Philosamia cynthia walkeri* Felder et Felder