

Medicinal Gesneriads. 122 species of the rain forest plant family Gesneriaceae used medicinally in the Neotropics.

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MEDICINAL GESNERIADS

122 SPECIES OF THE RAIN FOREST PLANT FAMILY GESNERIACEAE USED MEDICINALLY IN THE NEOTROPICS

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ABSTRACT: Among the angiosperm families of the New World tropics, the Gesneriaceae have a high record of ethnomedical plants. Of the ca. 1800 species of neotropical Gesneriaceae, about 7% belong to the pharmacopeia of indigenous populations, especially in Ecuador and Colombia. The number of medicinal gesneriads was probably even larger in decades and centuries past, when the Amer-Indian people prospered and the rain forests were still intact. It is remarkable that 50% (61 species) of the bioactive gesneriads listed are cited as remedies for the bite of deadly poisonous snakes, such as bushmaster, fer-de-lance and coral snake. Many of the gesneriad species recorded below have multiple curative uses. Members of the genus *Dalbergaria* (90+ species) appear to be especially preferred among some tribes. The chemistry of the Gesneriaceae is still poorly known.

KEY WORDS: Ethnobotany, Gesneriaceae, *Alloplectus*, *Dalbergaria*, *Drymonia*, Amer-Indians, Chachi, Awá, Tsatchila, Shuar, Quichua, Ecuador, Colombia, snakebite cures, contraception, analgesics, diarrhea, antihemorrhagics.

This is the first (more or less complete) listing of the species of Gesneriaceae used medicinally by indigenous people or village populations in the American tropics. Most of the data comes from Ecuador and Colombia, the center of diversity of this plant family in the New World. It has been compiled from recent publications, from files at the Gesneriad Research Foundation, from herbarium surveys, and from personal field data.

This account lists 100-some species in 27 genera of New World Gesneriaceae. This is a surprisingly high number of ethnomedical plants in a tropical plant family. According to Bennett (personal communication), the Araceae and Solanaceae have equally high numbers. Still more surprising is the high number of gesneriad species used to treat poisonous snakebites among the Amer-Indians, especially along the Pacific slope of the Andes and in the adjoining coastal areas of Ecuador and Colombia: 61 species. Kvist (1986) and Kvist & Holm-Nielsen (1987) state that the Gesneriaceae dominate the list of snakebite plants in the northern Pacific forests of Ecuador. It is still more curious that only very few gesneriads are so far reported as snakebite remedies from Amazonia: five species (*Besleria leucostoma*, *B. drymophila*, *Dalbergaria ericae*, *D. villosissima*, *Nautilocalyx sastrei*). Perhaps this reflects our lack of information. The gesneriads are there, though not as plentiful as on the middle to lower slopes of both sides of the Andes.

Many bioactive species of gesneriads have multiple use in the pharmacopeia of the Amer-Indian medicine men or shamans (*Alloplectus panamensis*, *Chrysothemis friedrichsthaliana*, *Columnnea bilabiata*, *Dalbergaria dimidiata*, *D. ericae*, *D. medicinalis*, *D. villosissima*, *Drymonia coriacea*, *D. semicordata*, *D. serrulata*, *Moussonia deppeana*, *Nautilocalyx whitei*, *Trichantha parviflora*). The most valuable medicinal gesneriad species among neotropical Indian tribes apparently are *Chrysothemis friedrichsthaliana*, *Dalbergaria ericae*, *D. picta*, *Drymonia serrulata*, *Gloxinia perennis*, *Moussonia deppeana*. Again, this may not be the whole story, for there is still a great lack of information.

Of special interest may be the use of the juice of *Dalbergaria ericae* (Fig. 1) as a permanent contraceptive by Shuar women in eastern Ecuador (Bennett, 1992). The same ethnobotanist also remarks that "*Dalbergaria* is one of the most important medicinal genera" (Bennett, in press). The Chachi people of northwestern Ecuador use any species of *Dalbergaria* they can find as medicine (Bennett, pers. comm.).

The inspiration of this article was reading the book *The Healing Forest* by R. S. Schultes & R. E. Raffauf (1990), and finding only about 18 medicinal gesneriads in their account. The style of species citation and literature citation used in their impressive book was followed in this compilation.

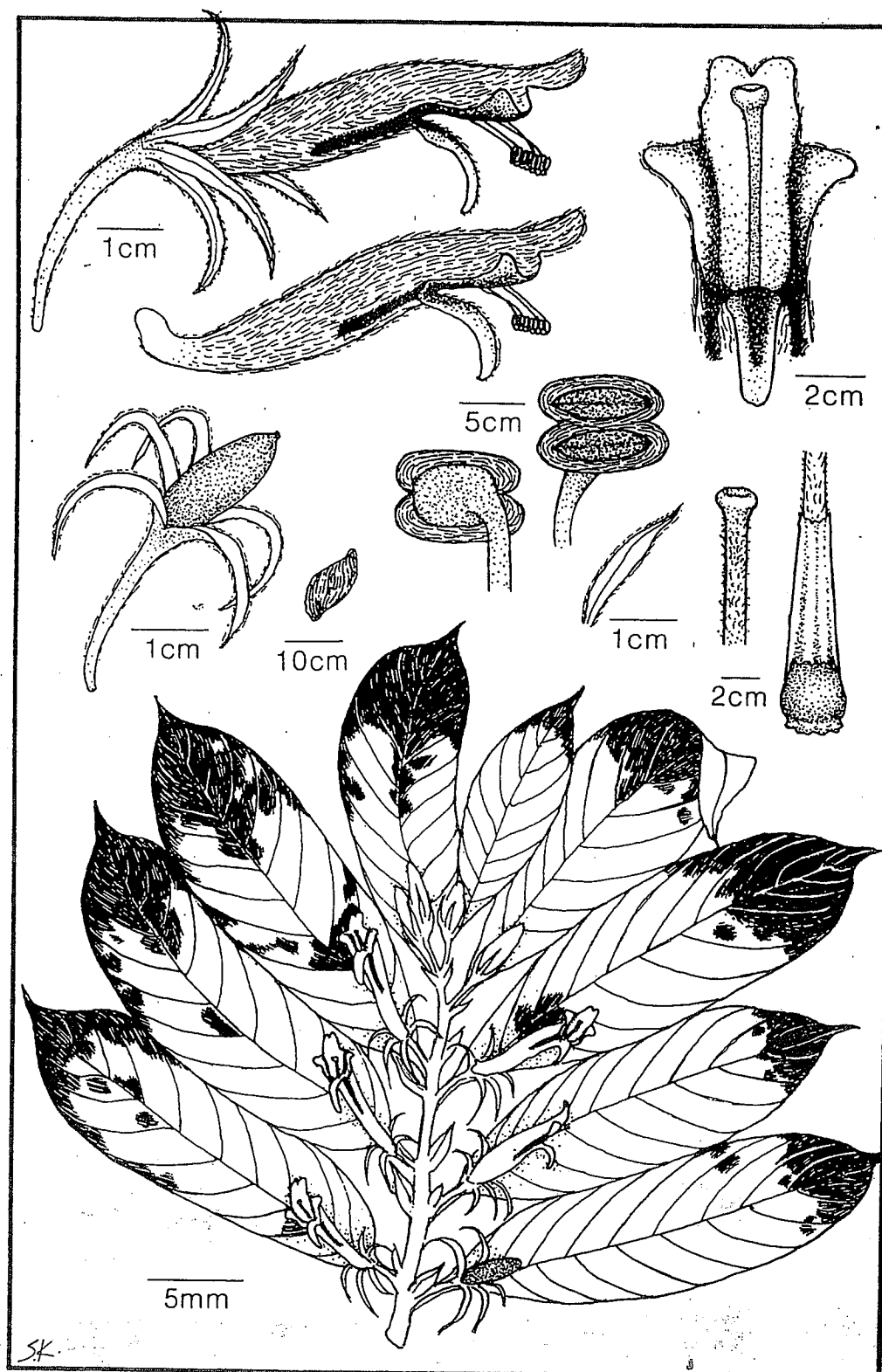


Figure 1: *Dalbergaria ericae* (Mansfeld) Wiehler
 Voucher specimen: Wiehler & GRF Expedition 8855 (GES)
 Illustrator: Sandra Koop, 1994
 Sponsor: Dr. Peter Shalit, Seattle, Washington

Ecuador

According to our current knowledge, species of the plant family Gesneriaceae are used medicinally by neotropical Amer-Indian populations in the following categories:

Classification of Medicinal Gesneriad Species in the American Tropics

Skin

Snakebites (61 species)
Insect Bites (3 species)
Burns (1 species)
Pimples & Papules (3)
Pruritus & Rash (6)
Fungal Infections (4)
Oral Cold Sores (2)
Reduce Bruises & Swellings (1)
Treat Boils (2)
"Heal Wounds" (3)

Head

Headache (3)

Dental

Toothache (2)
Warm Gargle for Mouth Ulcers (1)
Anodyne for Pain in Gums & Teeth of Children (1)

Cardiovascular

Blood Cleaner (2)
Heart Problems (1)
Vasodilatory Action (1)

Gastrointestinal

Abdominal Pain (1)
Diarrhea (5)
Kidney (2)
Liver (1)
Bloody Vomiting (2)
Stomach Ulcers (1)
Stomach Cancer (1)
Purgatives (3)

Gynecology

Abnormal Menstruation (3)
Menstrual Cramps (2)
Provoke Menstrual Flow (1)
Postpartum Hemorrhage (1)
Abortifacients (2)
Contraception (3)
Vaginal Douches (1)
Lactation, Wanting (1)

Musculoskeletal

Rheumatic Joint Pain (1)

Cramps in Legs (1)
Stabbing Muscle Pain (2)

Others

Analgesics (Pain Killer) (8)
Antipyretics (Fever Reduction) (2)
Neuralgias (1)
Antihemorrhagics (5)
Inducement of Bleeding (1)
Antimycotics (1)
Antivenereals (2)
Treat Cough (1)
Influenza (1)
Hallucinogens (1)
Component of Curare (1)
Stimulants (1)
Sedative (1)
Tonic (1)
Ritual Use (1)
Poisonous to Man (1)
Flea Killer on Dogs (1)
Poison for Catching River Crabs (1)
Unspecified Medical Use (21)

Are all of these 121 species of gesneriads effective against various afflictions of man? We do not know. Most of these species have not even been tested for the presence of alkaloids, or other biochemicals. Since some gesneriads have conspicuous translucent red spots on their leaves, or have red markings on the underside of the leaves, the association of so many gesneriads with problems of human blood (snakebite, bleeding wounds, menstrual bleeding) appears suspicious. Is there merely a mental association at work, more examples of the European "Doctrine of Signatures?" That may be the case for some gesneriad species, but the majority of gesneriads used as a snakebite remedy have plain green leaves. In the list of medicinal gesneriads below, the color of the leaf is indicated for each species. The broad spectrum of symptoms, diseases or conditions for which gesneriads are used speaks also against a case of mere mental association.

Our botanical and ethnobotanical knowledge of the vast American tropics is painfully fragmentary. It is usually haphazardly gathered (with the exception of ethnobotanical work concentrating on specific indigenous groups). This leaves large territories, plants and people, untouched. The actual number of medicinal plants in the Gesneriaceae (and in other tropical forest plant families) should be much higher. -- Accelerating

destruction of the tropical rain forests and the fast-disappearing knowledge of medicinal plants among the native populations adds to the dismal picture, and calls for greater collecting and surveying efforts in the next few years.

On its annual expeditions into the tropics, team members of the Gesneriad Research Foundation study, photograph and collect almost exclusively species of Gesneriaceae. In choice areas in the still plant-rich countries of Ecuador and Colombia, the number of novelties per expedition has varied from 18% to 52% of the total number of species collected. These high numbers are best explained by the general state of botanizing in the tropics. Many of these novelties still await description and publication in the new journal of the Foundation, *Gesneriana*.

The Foundation houses a unique gene pool of over 600 neotropical gesneriad species in its greenhouse in Sarasota, as a legacy for the future. This includes 28 of the 121 species listed below. Most of the others cited can be recollected on future expeditions.

GESNERIACEAE Dumortier

The 3700+ species and about 145 genera in this predominantly tropical family are perennial herbs, rarely shrubs, trees or small alpine rosettes. Many species are epiphytes, especially in the neotropics. Classifications of the family are based on geography, characters of the cotyledons and several floral and vegetative differences. The taxa are almost evenly divided between an Old World and a New World subfamily, with a third small group in the South Pacific, Australia, and southern Chile. The family is economically important as a source of many ornamentals, among them the African violet (*Saintpaulia*), *Sinningia*, *Streptocarpus*, *Columnea*, *Episcia* and *Achimenes*. In the evolution of earth's organisms, the Gesneriaceae are a young group and one of the most highly advanced families of the Angiosperms (Wiehler, 1983:211).

Not much is known about the chemistry of the family. Flavonoids and cinnamic acid derivatives have been reported; an unusual type of anthocyanin, the 3-deoxyanthocyanins, has been found in leaves and petals of the neotropical subfamily, causing the bright red and orange colors in some of the taxa. Aurones, chalcones and

quinones were discovered in the paleotropical subfamily (Harborne, 1966, 1967a, 1967b). The dihydric phenolics in the family were recently examined and the glycosides acteoside and/or conandroside were found widespread (Kvist & Pederson, 1986). Unnamed alkaloids have been recorded in *Besleria*, *Nautilocalyx* and *Ramonda*.

ALLOPLECTUS Martius

All 65+ species are of perennial duration and native to tropical American rain forests. Most of them are terrestrial herbs or subshrubs, a few are epiphytes. The chemistry of the genus has not been studied.

Alloplectus dodsonii Wiehler, Selbyana 1 (1977) 67, plate 19-A.

Northwestern Ecuador and adjacent Colombia. Leaves plain green. A decoction of the plant is drunk against snakebite by the Tsatchila people of Ecuador (Kvist 40053, AAU).

Alloplectus panamensis Morton, Ann. Missouri Bot. Gard. 29 (1942) 36.

Coastal Ecuador and Colombia, Panama. Leaves plain green. Crushed, cooked plants used to bathe area bitten by the poisonous fer-de-lance, *Bothrops atrox*. Chachi and Awá people of northwestern Ecuador (Kvist 48120 AAU, Tipaz et al. 1313, MO, QCNE). The Awá also cure "el chutún" (?) with this species (Tipaz et al. 1313). Used as an hallucinogen among the Waunana of the Chocó, Colombia (Forero Pinto 621, COL).

Alloplectus plicatissimus Wiehler ined.

Nariño, Colombia and adjacent Ecuador. Leaves green, corolla red. Used by the Awá people of northwestern Ecuador to treat snakebite. Local name: hoja de baño (Tipaz & Taicúz 616, MO, QCNE).

Alloplectus plicatus Wiehler ined.

Nariño, Colombia and adjacent Ecuador. Leaves green, corolla red. The Awá of northwestern Ecuador cure "guaral" (?), infections of the skin with this herb. Local name: guaral (Tipaz et al. 1700, MO, QCNE).

Alloplectus sprucei (Kuntze) Wiehler, Phytologia 27 (1973) 327.

Coastal Ecuador and Colombia. Leaves plain green. Macerated leaves applied to area bitten by

the poisonous bushmaster snake, *Lachesis muta*. Chachi of northwestern Ecuador (Kvist 40844, 41081, 48082, all at AAU). Plant also used by the Chachi to treat eczema of the skin (Kvist 40342, AAU). The Awá of the same area cure the "cuecha amarillo" (?) with it (Tipaz et al. 1707 MO, QCNE).

***Alloplectus tetragonoides* Wiehler**, ined. Ecuador and adjacent Colombia. Leaves plain green. Crushed or macerated plants or leaves applied to area bitten by the poisonous fer-de-lance, *Bothrops atrox*. Awá people of northwestern Ecuador and adjacent Colombia (Kvist 48732, 48813 AAU).

***Alloplectus teuscheri* (Raymond) Wiehler**, Bailey 18 (1972) 136. Western slope of the Andes in Ecuador and Colombia. Leaves green, sometimes reddish below, calyx bright red, corolla yellow. Plant used by the Awá people of northwestern Ecuador to cure snake bite. Local name: anga chuill (Tipaz et al. 1312, MO, QCNE).

BESLERIA Linnaeus

All 200+ terrestrial species are native to tropical America, from Bolivia to Mexico. Most of them are perennial herbs, others shrubs or small trees. The chemistry of the genus is not known except for the presence of unnamed alkaloids in *B. standleyi* Morton.

***Besleria aggregata* (Martius) Hanstein**, in Martius, Flora Brasiliensis 8(1) (1864) 400. Peru, Amazonian Brazil, Colombia, Ecuador. Including *B. ignea* Fritsch. Leaves green, corolla scarlet. Marles (1988) reports that the Lowland Quichua people of eastern Ecuador use this species against stabbing pain in the muscles. The leaves are boiled for one-half hour and then applied to the sore area, and one cup of the concoction is drunk (Marles 65, F). Schultes & Raffauf (1990) state that the Mirañas people of La Pedrera in Amazonian Colombia consider that this epiphyte (?) has strong purgative properties (Schultes 5885, ECON; Schultes, Raffauf & Soejarta 24053, ECON - this collection is alkaloid-negative).

***Besleria antisiphilitica* Urban**, ined. Brazil: Pará. Leaves plain green. Plant "has medicinal use." (Graf von Hoffmansegg, s.n., B-Wild.). No further information available.

***Besleria barbata* (Poeppig) Hanstein**, Linnaea

34 (1865) 327.

Peru and Ecuador. Leaves plain green. Crushed plants used to bathe area bitten by the poisonous coral snake, *Micrurus* sp. Awá people of northwestern Ecuador (Kvist 48734 AAU). The lowland Quichua people of eastern Ecuador use this species to treat stabbing muscle pain (Marles et al., 1988:166).

***Besleria barclayi* Skog**, Phytologia 27 (1974) 503.

Ecuador and Colombia. Leaves plain green, stems with red hairs. Crushed, cooked leaves applied to area bitten by the poisonous bushmaster snake, *Micrurus* sp., or concoction of plant drunken. Chachi people of northwestern Ecuador (Kvist 41011, 48415, AAU).

***Besleria calantha* Morton**, Contrib. US Nat. Herb. 29 (1944) 21.

Colombia: Huila. Leaves green, corolla orange. García-Barriga (1975:155) reports that this species has unspecified medicinal use (Uribe-Uribe 1650, COL).

***Besleria drymophila* Morton**, Contr. U.S. Nat. Herb. 29 (1944) 27.

Colombia. Leaves plain green. The Makuna people in the Vaupés employ the leaves as an antidote for the bite of poisonous snakes (García-Barriga 15012, ECON).

***Besleria eriocalyx* Morton**, Contrib. US Nat. Herb. 29 (1944) 22.

Huila, Colombia. Leaves green, corolla orange. García-Barriga (1975:156) cites this species as possessing unspecified medicinal properties (Cuatrecasas 8611, COL).

***Besleria fecunda* Morton**, Contrib. US Nat. Herb. 26 (1939) 430.

Colombia: Antioquia, Santander, Magdalena. Stems with red trichomes, leaves green, corolla yellow. García-Barriga (1975:156) attributes unspecified medicinal qualities to this species (Uribe-Uribe 4710, COL).

***Besleria leucostoma* (Hooker) Hanstein**, Linnaea 34 (1866) 326.

Colombia. Leaves plain green. The Tikuna of the Río Loretoyacu, Amazonian Colombia, crush the leaves and place them on ant bites for relief. They also value a poultice of the leaves as an agent to lessen the effects of snake bites. This indigenous use has been adopted by the population of the

nearby town of Leticia (*García-Barriga* 249, ECON).

***Besleria nitens* Fritsch**, Notizbl. Bot. Gart.

Berlin 11 (1934) 964.

Colombia: Tolima, Santander. Leaves green, corolla orange. *García-Barriga* (1975:157) reports that this species has unspecified medicinal value (*García-Barriga* 8338, COL).

Besleria reticulata* Fritsch var. *venosa

Morton, Contrib. US Nat. Herb. 26 (1939) 434.

Colombia: Cundinamarca, Huila, Caquetá, Putomayo. Leaves green, corolla orange-yellow. *García-Barriga* (1975:157) states that this species has unspecified medicinal use (*García-Barriga* 10776, COL).

***Besleria solanoides* Kunth, var. *dentata* Morton**, Contrib. US Nat. Herb. 29 (1944) 27.

Colombia: Chocó. Small tree, leaves green, corolla yellow. The Cholos of the Chocó employ this species as a snakebite remedy. A poultice of crushed stems and leaves is applied to the affected part, and a tea of the leaves is drunk (*Killip & García-Barriga* 33556, COL. US).

***Besleria* sp. indet.**

According to von Reis & Lipp, Jr. (1982:227), this species is used as a purgative in Peru (*McCarroll* 8, NY).

BUCINELLINA Wiehler

The two epiphytic species of this genus occur in Ecuador and Colombia. The chemistry of this taxon is unknown.

***Bucinellina nariniana* (Wiehler) Wiehler**, *Selbyana* 5 (1981) 381; 2 (1977) 91.

Plate: *Selbyana* 2 (1977) 90.

Northwestern Ecuador and adjacent Colombia. Leaves plain green. The Awá people of northwestern Ecuador and adjacent Colombia use crushed plants or a decoction of them for treatment against the bite of the deadly coral snake, *Micrurus* sp. (*Kvist* 48815, AAU).

CHRYSOTHEMIS Decaisne

The seven tuberous and terrestrial species are found throughout tropical America. The chemistry of this genus has not been studied.

***Chrysothemis friedrichsthaliana* (Hanstein)**

H.E. Moore, *Baileya* 2 (1945) 87.

Figure 2

Ecuador to Guatemala. Leaves plain green. This species is "one of the more important elements in the pharmacopeia" of indigenous of the Chocó, Colombia and the Cuna of Panama (*Duke*, 1970: 351). "Respected by most ethnic groups as a snakebite remedy" (*Duke*, 1975:293). The Chocó populations also use the plant against diarrhea and to reduce bruises and swellings (*Duke* 11393, COL; *Duke* 13629, 14327, 14547, 14957, all at MO). The Chachi people of northwestern Ecuador apply macerated, often cooked leaves to area of bite by poisonous bushmaster snake, *Lachesis muta* (*Kvist* 48080, AAU).

CODONANTHE (Martius) Hanstein

The about 20 species of this epiphytic genus associated with arboreal antnests occur throughout the American tropics. All species have succulent leaves. The chemistry of this genus is unknown.

***Codonanthe calcarata* (Miquel) Hanstein**, *Linnaea* 34 (1865) 416.

Venezuela, Guianas, northern Brazil, Bolivia, Ecuador. The Waika people of the Venezuelan Orinoco value the root of this white-flowered species to cure wounds (*Aristeguieta & Lizot* 7424, VEN; von Reis & Lipp, 1982).

***Codonanthe crassifolia* (Focke) Morton**

Fieldiana Bot. 18 (1938) 1159.

Bolivia to Mexico, Guianas. In Central America this ant-garden epiphyte is used to cure colds and whooping cough (*Morton*, 1881).

***Codonanthe uleana* Fritsch**, *Bot. Jahrb. Syst.* 37 (1906) 492.

Amazon basin, western Ecuador, Central America. The Ticuna people of Amazonian Colombia employ a poultice of the leaves of this epiphyte to treat recalcitrant wounds and infections (*Schultes* 6861, ECON). According to J.M. Schunke (in von Reis Altschul 1973:276), Peruvian Indians use this species medicinally, under the synonym *C. formicarum* (*Schunke* 125, GH).

CODONANTHOPSIS Mansfeld

The 4 species of this epiphytic genus associated with arboreal antnests are native to the Amazon and Orinoco basins, and western Ecuador. The leaves are succulent. There is no chemical

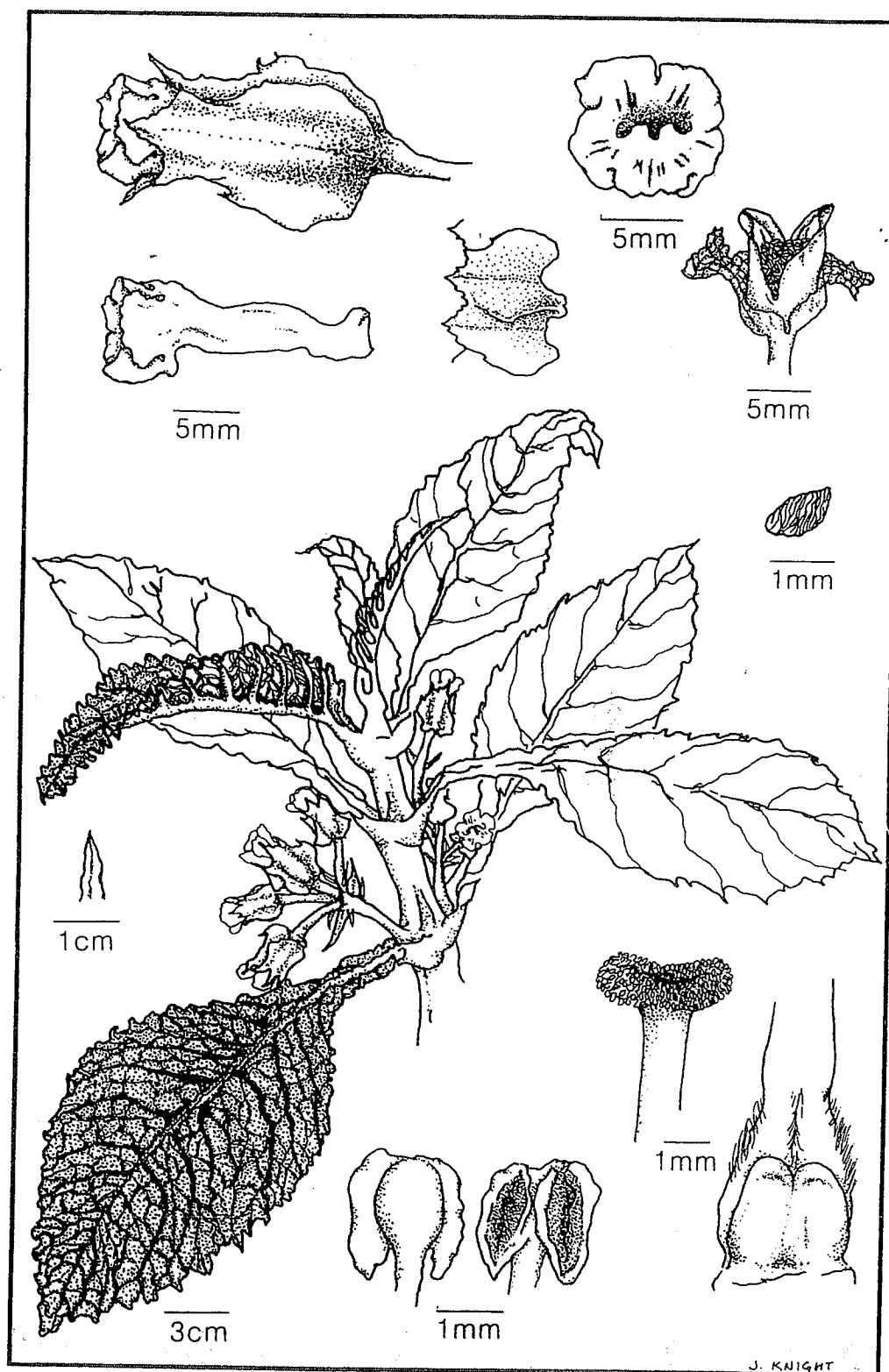


Figure 2: *Chrysothemis friedrichsthaliana* (Hanstein) H.E. Moore Ecuador
 Voucher specimen: Dodson s.n. (from Los Ríos, GES; G-2141)

Illustrator: Julie Knight, 1955

Sponsor: Puget Sound Gesneriad Society, Tacoma, Washington,
 in memory of Philip J. Aaron

data for the genus.

Codonanthopsis dissimulata (H.E. Moore)
Wiehler, *Selbyana* 5 (1978) 61.

Peru, Colombia, Ecuador, Venezuela. The Kofán people of northern Ecuador and adjacent Colombia employ this fleshy plant to relieve toothache (Cerón, 1993) and headache (Vickers & Plowman, 1984). The leaves are pounded and boiled in water. For treating toothache, the infusion is held in the mouth; for headache, the liquid is taken through the nose. The nearby Siona people of Colombia apparently employ the plant against ant stings; it is also used as a remedy for toothache and headache. An infusion of the leaves is held in the mouth for the former and taken up through the nostrils for the latter (Cerón 179, QCNE; Vickers 161, 256, F).

COLUMNNEA Linnaeus

The 75+ species of this epiphytic genus occur primarily in Central America and on the Caribbean islands; 3 are native to Colombia and Venezuela, 2 to Ecuador. The showy red flowers are pollinated by hummingbirds, and the white berry-fruit is eaten by birds, bats and monkeys. The chemistry of this genus is not well known. The flavonoids Columnnin, Diosmetin and Luteolin have been isolated (Harborne, 1966).

Columnnea bilabiata Seemann, Bot. Voy. Herald (1854) 186.

Pacific coast of Colombia and adjacent Ecuador. Leaves green. The Chachi people of coastal Ecuador use this epiphyte to treat bites of the poisonous bushmaster snake (*Lachesis muta*) and the deadly coral snake (*Micrurus* sp.). Macerated leaves are applied to the afflicted area (Kvist 40519, 40600, 40814, 48416, all at AAU). Used for stomach pain by the Waunana people of the Chocó, Colombia, who macerate the leaves in cold water and drink the infusion at intervals until the stomach is settled (Forero Pinto 660, COL). García-Barriga (1975: 161) reports an unspecified medicinal use for this species, under the synonym of *C. silvatica* Morton.

Columnnea schiedeana Schlechtendal, Linnaea 8 (1833) 249.

In the states of Veracruz, Puebla, Oaxaca and Chiapas in Mexico. Leaves green or flushed with red below. Local indigenous populations use decoctions of the whole plant orally to treat menorrhagia (excessive menstrual flow; G.Martin

058E, UC; as seen in Browner, 1985:497). Information supplied by NAPRALERT.

Columnnea sulfurea Donnell-Smith, Bot. Gaz. 31 (1901) 117.

Belize to southern Mexico, Brazil (Bahia). Leaves often red below. This epiphyte is used as a treatment for diarrhea and vomiting by natives of Belize ("Medicinal plants of the R'kkchi"). "The leaves are wrung in cold water and the water is drunk cold." (James Boster, s.n., ECON).

CREMOSPERMA Benth

The 25+ species of this terrestrial genus of small, humidity-loving, perennial herbs has its center of distribution in Ecuador and Colombia, with a few species in Peru and Panama. There is no chemical data for the genus.

Cremosperma hirsutissimum Benth, var. *glabrum*, Kvist & Skog, Nord. J. Bot. 8 (1988) 263.

Northwestern Ecuador. Leaves plain green. The Awá people of northwestern Ecuador use this plant to treat bites of the poisonous coral snake, *Micrurus* sp. The plants are crushed, cooked, and used to bathe the afflicted area, or the macerated leaves are applied to the wound (Barfod 41422, Kvist et al. 48737, both AAU).

Cremosperma nobile Morton, J. Wash. Acad. Sci. 25 (1935) 290.

Pacific slopes of Colombia and adjacent Ecuador. Leaves green. The Awá people of northwestern Ecuador apply macerated leaves of this gesneriad to the wounds caused by the bite of the poisonous coral snake, *Micrurus* sp. (Kvist et al. 48976, AAU).

Cremosperma reldioides Kvist & Skog, Nord. J. Bot. 8 (1988) 267, figure 4.

Northwestern Ecuador. Leaves green. The Awá people of the area place macerated leaves of this species on the wound caused by the bite of the poisonous coral snake, *Micrurus* sp. (Kvist, Barfod & Nissen 48980, AAU).

Cremosperma sp.

Chocó, Colombia. Leaves green. The Waunana people of the Chocó, Colombia, use this plant to treat the bite of the snake marked with an 'X' ("la culebra equis"). The roots and leaves are boiled for some time, the wound is then immedi-

ately washed with the decoction, and a portion equal to a small inkwell is drunk repeatedly (Forero Pinto 729, COL).

***DALBERGARIA* Tussac**

The 65+ species of this medicinally important, epiphytic genus with a fern-frond habit have their center of diversity in Ecuador and Colombia, and occur from Bolivia to southern Mexico, the Caribbean islands and the Guianas. The underside of the leaves of many species are blotched or speckled red. The flowers are hummingbird-pollinated and the colored berries eaten by birds and monkeys. The chemistry of the genus has not been studied.

***Dalbergaria asteroloma* Wiehler, Selbyana 2 (1970) 77, plate 20-B.**

Coastal slopes of the province of Pichincha, Ecuador. Underside of leaves spotted with red. The Chachi people of coastal Ecuador apply macerated leaves against the bite wounds of the deadly fer-de-lance snake, *Lachesis muta* and the equally poisonous bushmaster snake, a species of *Micrurus*. Sometimes a decoction of the plant is drunk (Kvist 40872, 40880, AAU).

***Dalbergaria aureonitens* (Hooker) Wiehler, Phytologia 27 (1973) 316.**

Northern Colombia and Venezuela. Leaves green, sometimes with abaxial red spots, orange trichomes; corolla orange-yellow or red. García-Barriga (1975:159) attributes unspecified medicinal properties to this species. Vernacular name: ataja-sangre (Uribe-Uribe 2143, COL).

***Dalbergaria consanguinea* (Hanstein) Wiehler, Phytologia 27 (1973) 317.**

Colombia, Panama, Costa Rica. Leaves red-spotted below, but spots absent in Darien populations. People in Colombia use this plant to treat snake bites ("contracubebra," "víbora"). Chocó, Colombia (Killip & Hernando-Garcia 33260, US),

***Dalbergaria crassa* (Morton) Wiehler, Phytologia 27 (1973) 317.**

Pacific slope of Colombia, Panama. Each leaf has two red spots on the underside. The indigenous populations around Buenaventura, Colombia, designate this species as "contracubebra," against snake bite. Valle, Colombia (Cook 138, US).

***Dalbergaria difficilis* Wiehler, ined.**

Ecuador, Colombia. The underside of the leaves

varies from completely green to completely red to spotted with red. The natives in the area of Buenaventura, Colombia, regard this plant as "contracubebra" and as a "blood cleaner" (Cook 137, US; Killip & Hernando-Garcia 35628 US).

***Dalbergaria dimidiata* (Benth) Wiehler, Phytologia 27 (1973) 317.**

Colombia. The leaves have two conspicuous translucent red spots. In Caldas the plant is used as a hemorrhagenic (Fosberg 20466, US). The Waunana people of the Chocó, Colombia use an infusion of macerated leaves in cold water to treat headaches ("bañándola mínimo 2 veces al día," Forero Pinto 810, COL).

***Dalbergaria eburnea* Wiehler, Selbyana 5 (1981) 378, plate 1-A.**

Pacific slope of the Andes, Ecuador, Colombia. The tips of the underside of the leaves are red. The Chachi people of Ecuador use the macerated leaves or a decoction of the plant against the bite of the poisonous snakes *Lachesis muta* (bushmaster) and *Micrurus* sp. (coral snake) (Kvist 40870, 40218, AAU).

***Dalbergaria ericae* (Mansfeld) Wiehler, Phytologia 27 (1973) 317.**

Figure 1

Amazon slope of Andes of Peru, Ecuador, Colombia. Leaves with red tips on the underside, often also with additional red spots, or completely red below. This is one gesneriad with multiple medicinal use among the Amer-Indians and the general population of the region. In Vaupés, Colombia, this species is used against snake bite (Schultes 5361, ECON). In the Río Pastaza area of Ecuador, the leaves are used in a tea (together with the ericad *Psammisia pauciflora* Grisebach ex A.C. Smith) as a contraceptive and to reduce menstrual flow (one cup each morning during the menstrual period; Shemlock & Nees 152, ECON, SEL, US). 20 km further north, in same area, this species is "used locally to stop prolonged menstruation" (Oellgaard & Balslev 9092, AAU). In the nearby province Napo: "infusion said to be a powerful abortive," (Mexia 7079, US; also Mexia 6874, US). In the Puyó area: "Abkochung der Blätter innerlich bei Krankheiten der weiblichen Unterleibsorgane genommen" (Hertha Schultze-Rhonhof 1843, B). Schultes & Raffauf (1990:199) write: Among the Shuar people of Ecuador, the boiled leaves yield a liquid that is given half a teaspoon at a time to women suffering from excessive vaginal bleeding to reduce the flow of blood. The mestizo population of

Ecuador "consider it effective in treating 'heart problems' and reducing menstrual flow." (*van Asdall* 82-32). In addition to using the leaves of *Dalbergaria ericae* to treat boils, the Secoya people of eastern Ecuador use the leaves as a stimulant by smoking them rolled up like tobacco (*Vickers* 72, F, US). The Lowland Quichua of eastern Ecuador boil about 20 leaves, with a handful of rhizome fibers of the fern *Lomariopsis japorensis* (Polypodiaceae, *Marles* 51, F) to make a decoction of which one cupful is drunk for menorrhagia or postpartem hemorrhage. This remedy also relieves menstrual cramps (*Marles* 51, F).

Dalbergaria eubracteata (*Mansfeld*) *Wiehler*,
Phytologia 27 (1973) 317.

Western slopes of Andes of Ecuador. The leaf tips are red on the underside. In the province of El Oro this plant is used as a flea-killer by rubbing it over the bodies of dogs (*Steyermark* 54184, F, US).

Dalbergaria kalbreyeriana (*Masters*) *Wiehler*,
Phytologia 27 (1973) 318.

Western Colombia to Costa Rica. Leaves with two translucent red spots. In the Chocó and other areas of Colombia a decoction of the leaves is used against internal bleeding; the medicine men employ the juice of the leaves against snake bite "los curanderos emplean el zumo de las hoyas para la mordedura de culebra cuando sobreviene, luego de la mordedura, una fuerte hemorragia" (*García-Barriga*, 1975:159, as seen in *Forero Pinto*, 1980:183).

Dalbergaria lanata (*Seemann*) *Wiehler*,
Phytologia 27 (1973) 318.

Chocó, Colombia. Leaves with two blood-red spots below. This plant is used in Urabá, Chocó, to poison (river) crabs (*Archer* 1957, US).

Dalbergaria medicinalis *Wiehler*, Phytologia
73 (1992): 226.

Northwestern Ecuador and adjacent Colombia. The underside of the leaves always have red tips; in addition, the underside may be spotted red, have red margins, or be completely red. Around Altaquer and Junín in the province of Nariño, Colombia, "the Indians of this region cook a tea from the leaves of this plant against coral snake bite" (*Wiehler & Williams* 72194, GES). The women in the village of San Miguel de los Bancos in Pichincha state that an infusion of the leaves of this plant is well-known remedy in that area against menstrual cramps (*Wiehler et al.* 90107,

GES). In the province of Esmeraldas, Ecuador, the plant is "used medicinally" (*Mexia* 8412, BH, GH, US).

Dalbergaria parviflora *Wiehler*, ined.

Pacific slope of Andes of Colombia. The underside of the leaves spotted with red or completely red. The herbarium label annotation "Vibora" (= viper) may indicate that this plant is used against snake bite (*Killip & Hernando-Garcia* 33244, US).

Dalbergaria picta (*Karsten*) *Wiehler*, Phytologia
27 (1973) 318.

Figure 3

Peru, Ecuador, Colombia. Leaves with very showy translucent red tips. This plant is generally used against snake bite (crushed, cooked leaves applied as a wash) by the Tsatchila people in western Ecuador. The Chachi people in the same area use a wash of crushed, cooked leaves (or macerated leaves directly) against the bite of the poisonous fer-de-lance, *Bothrops atrox*, and the deadly coral snake, *Micrurus* sp. The Awá people of the same area drink an infusion against the bite of the same fer-de-lance snake (*Kvist* 40230, 40760, 40871, 48086, 48730, all at AAU). This is one of the valuable plants in the Amer-Indian pharmacopeia.

Dalbergaria pulcherrima (*Morton*) *Wiehler*,
Phytologia 27 (1973) 318.

Northwestern Colombia. The underside of the leaves bordered in red, corolla yellow. *García-Barriga* (1975: 161) attributes unspecified medicinal properties to this plant.

Dalbergaria rubriacuta *Wiehler*, *Selbyana* 2
(1977) 72, plate 20-D.

Pacific slope of the Andes of Ecuador. Leaves with small, dull, red tips on the underside. This plant is used by the Tsatchila against snake bite (the wound bathed with crushed, cooked leaves, or a decoction of the plant drunk). The Chachi people of the same area drink an infusion to cure the bite of the fer-de-lance, *Bothrops atrox*. (*Kvist* 40074, 40359, 48088, 48128, all at AAU). Plant also used by the Chachi to treat eczema of the skin (*Kvist* 40359, AAU).

Dalbergaria villosissima (*Mansfeld*) *Wiehler*,
Phytologia 27 (1973) 319.

Eastern slope of the Andes in Peru and Ecuador. The underside of the leaves with red tips. Plants in the province of Pastaza, Ecuador are used to reduce menstrual flow (*Mexia* 7068, US). The inhabitants of Mocoa, province Putumayo,

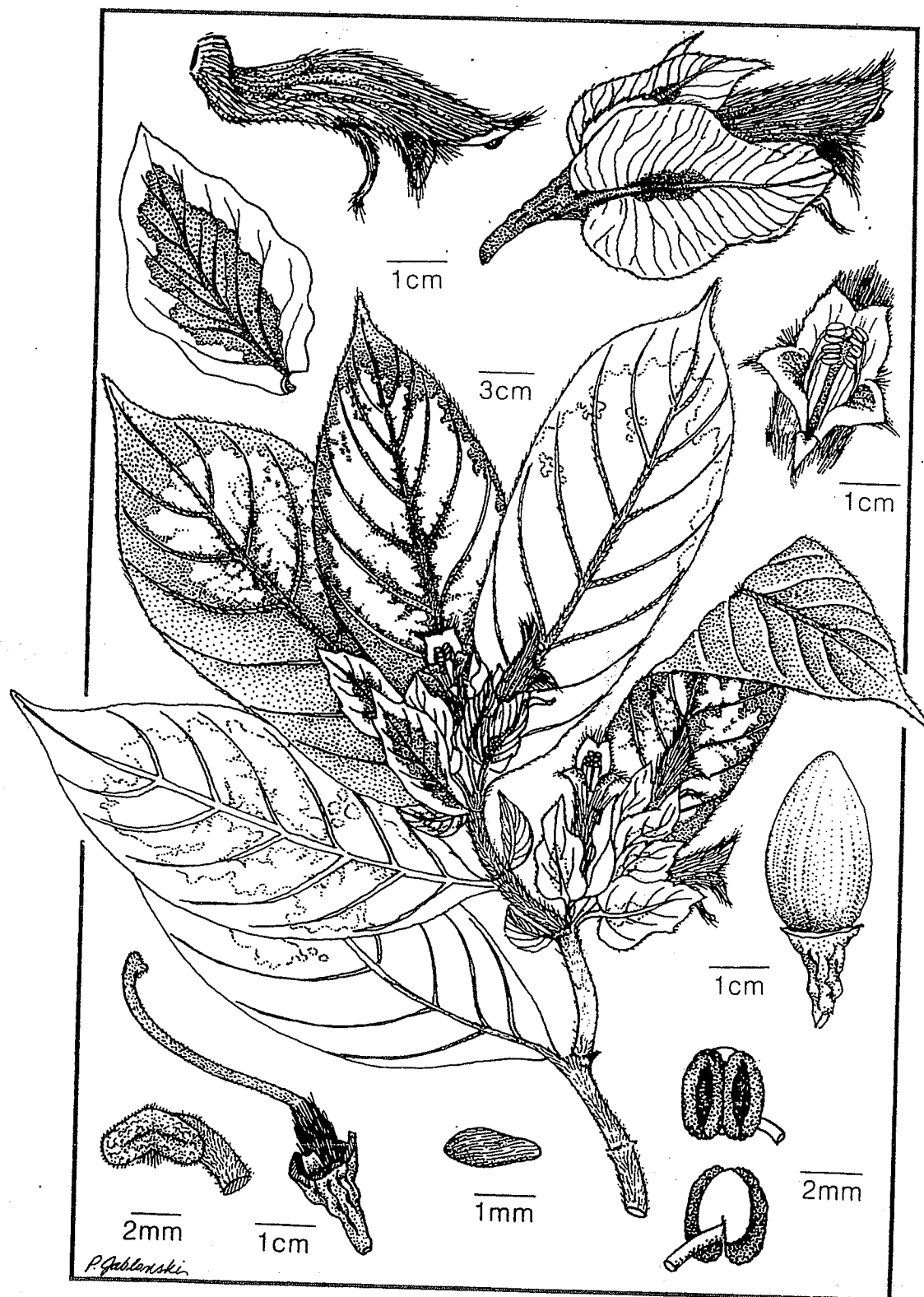


Figure 3: *Dalbergaria picta* (Karsten) Wiehler
 Voucher specimen: *Madison s.n.* (Maldonado, SEL, G-2608)
 Illustrator: *Pamela Jablonski*, 1995
 Sponsor: *Beth Weissman*, New York City, New York

Ecuador

Colombia, value the plaster of the fresh leaves applied to the bite of the bushmaster snake as a "sure cure" (Schultes & Smith 2063, ECON).

Dalbergaria sp.

Province of Antioquia, Colombia. Plant considered poisonous for man (Archer 64, US).

Dalbergaria sp.

Marles (1988) reports that the Lowland Quichua people of eastern Ecuador use dried and powdered leaves of this unidentified species, applied with a piece of cotton on the fungal infections on a child's mouth (Marles 68, F).

Dalbergaria sp.

Province of Morona-Santiago, Ecuador. Vine in disturbed sites. The Untsuri Shuars around Centro Yukutais use this species medicinally, together with another gesneriad (Bennett 3597), for an undisclosed ailment. Bennett 3598, NY, QCNE). Information from Bennett et al., (1993).

Dalbergaria sp. (probably *D. ericae*)

Province of Morona-Santiago, Ecuador. Bennett (1992) reports that the Untsuri Shuar people around Centro Yukutais place macerated leaves of this species on the skin of babies blemished with pimples and papules. The same plant (250 ml of its juice) is also used as a permanent contraceptive (Bennett 4082, NY, QCNE).

DIASTEMA Benth

The 20+ species of this terrestrial genus of small, humidity-loving perennial herbs are found from Bolivia to Mexico, with the center of diversity in Ecuador. There is no chemical data for the genus.

Diastema bracteosum (Oersted) Hanstein, Linnaea 34 (1865) 438.

Ecuador to Costa Rica. Leaves green. The Awá people of northwestern Ecuador and adjacent Colombia apply macerated leaves of this herb to the bite wound of the fer-de-lance snake, *Bothrops atrox* (Kvist 48990, AAU).

DRYMONIA Martius

The 140+ species of this mostly epiphytic genus of vines and suffrutescent shrubs are found throughout the neotropics, with a center of diversity in Ecuador, Colombia and Panama. The typically funnel-shaped white flowers are

pollinated by Euglossine bees in search of nectar, and the soft capsular fruit is eaten by birds, bats and monkeys. The chemistry of the genus is unknown.

Drymonia alloplectoides Hanstein, Linnaea 34 (1865) 358.

Peru to Guatemala. Leaves green. The Chachi people of coastal Ecuador apply the macerated, cooked leaves of this epiphytic vine to the wounds caused by the fer-de-lance snake, *Bothrops atrox*, (Kvist 48212, AAU).

Drymonia coccinea (Aublet) Wiehler, Phytologia 27 (1973) 324.

The central and western Amazon basin from Bolivia to the Guianas. Leaves usually green, sometimes with a reddish flush below. The Mayna Jivaro people in Amazonian Peru use the plant as an anodyne to treat pain of the gums and teeth in children (Lewis et al. 10433, ECON). The same species is also a medicine plant (no specific use reported) for the Untsuri Shuars around Centro Yukutais in Morona-Santiago, Ecuador (Bennett 3701, NY, QCNE), as seen in Bennett et al., (1993).

Drymonia coriacea (Oersted) Wiehler, Phytologia 27 (1973) 325.

Peru to Costa Rica. Leaves green. The Kofán people of Amazonian Ecuador prepare a decoction of the crushed and boiled leaves as a warm gargle for toothache and mouth ulcers. The preparation may be kept in mouth for five minutes (Vickers 120, F). Cerón (1993) reports that the Kofán use this species also to combat coughing by drinking a tea of the entire plant (Cerón 248, QCNE). The Chachi people of coastal Ecuador eat the floral sepals like candy (Kvist 40550, AAU). In the same area, crushed leaves of this plant are used by the Tsatchila as a remedy against snake bite (Kvist 40673, AAU).

Drymonia hoppii (Mansfeld) Wiehler, Phytologia 27 (1973) 325.

Eastern Andean Ecuador and adjacent Colombia. Vine with green leaves and conspicuous red or orange bracts covering the flowers. Cerón (1993) reports that the Kofán people place the ashes of leaves of this species on cold sores of the mouth (Cerón 136, QCNE).

Drymonia laciniosa Wiehler, Selbyana 2 (1977) 76, plate 22B.

Ecuador: Pichincha, Carchi. Leaves green, corolla cream-white. The Awá people of northwestern

cream-white. The Awá people of northwestern Ecuador use this epiphyte as a cure for snakebite (camda), (Tipaz et al. 1535, QCNE, MO).

***Drymonia macrophylla* (Oersted) H.E. Moore,**
Baileya 3 (1955) 109, figure 43.

Peru to Costa Rica. Leaves green. In western Ecuador, the Tsatchila people use crushed, cooked leaves to bathe snake bite wounds (Kvist 40167, AAU).

***Drymonia pendula* (Poeppig) Wiehler,**
Phytologia 27 (1973) 325.

Amazon basin in Peru and western Brazil. Leaves green. The medicine men of the Tikuna people of the Peruvian Amazon formerly employed a decoction of the leaves and stems "to cure pain," according to collectors (Garcia-Barriga? 250, ECON, as seen in Schultes & Raffauf, 1990:197).

***Drymonia rhodoloma* Wiehler, Selbyana 2**
(1977) 77, plate 22-D.

Coastal slope of the Andes of Ecuador. The Tsachila people of the area use crushed, cooked leaves to bathe snake bite wounds. They also drink a concoction of the plant for the same purpose (Kvist 40108, AAU).

***Drymonia semicordata* (Poeppig) Wiehler,**
Phytologia 27 (1973) 326.

Western Amazon basin from Peru to Colombia. Leaves green. In La Pedrera, (Amazonas, Colombia), a decoction of the whole plant is ingested to correct "vomiting with blood." Among the Tikuna people of the same area, juice from the crushed leaves is rubbed on rheumatic joints. (Glenboski 1; Schultes 5872; Schultes, Raffauf & Soejarto 24225, all at ECON). In the Mocoa area of Putomayo, Colombia, this plant is used as a remedy for fever (Schultes & Smith 3035, GH).

***Drymonia serrulata* (Jacquin) Martius, Nov.**
Gen. & Sp. Pl. 3 (1829) 59, 192.

Neotropics. The most widely distributed species of the genus. Epiphytic liana with large flowers. Leaves usually green, in some populations the underside flushed red. Among the Tsatchila people of western Ecuador, the plant is known to be a remedy against snake bites, in general. The Awá and Chachi people of the same coastal area use this plant to treat the bite of the poisonous fer-de-lance snake, *Bothrops atrox*. Macerated, cooked leaves are applied to the wound, or the bite is bathed with the juice of crushed leaves, or a decoction of the plant is drunk (Kvist 40080, 48087,

48393, 48773, 48991, all at AAU). The Chachi use this vine also to treat eczema of the skin (Kvist 48728, AAU). This is one of the more important species in the Amer-Indian pharmacopeia.

***Drymonia turrialvae* Hanstein, Linnaea 34**
(1865) 359.

Ecuador to Costa Rica. Terrestrial perennial with succulent stems and petioles, leaves green. In Panama, this plant is used medicinally by the Guarmi people (Kirkbride & Duke 684, NY), as reported by von Reis & Lipp, Jr. (1982:277).

***Drymonia umecta* Wiehler, ined.**

Western Amazon basin from Peru to Venezuela. Leaves usually green on both surfaces, the underside sometimes flushed with red. Epiphytic liana with slime-dripping inflorescence clusters. In the Río Pastaza area, the inflorescence is applied to the nipple of breast to increase flow of milk. Since the inflorescence is rich in mucilage, this may have a "Doctrine of Signatures" type of application. Shemluck & Nees 151, ECON.

***Drymonia warszewicziana* Hanstein, Linnaea**
34 (1865) 352.

Peru to Costa Rica, Venezuela. Terrestrial or epiphytic shrub. Leaves green. The Chachi people of western Ecuador treat the bite of the poisonous fer-de-lance viper with this plant. The wound is bathed with the juice of crushed and cooked leaves, or the macerated, cooked leaves are applied directly (Kvist 48311, 48419, AAU).

***Drymonia* sp. nov.**

Northwestern Ecuador. Leaves large, green, corolla rose-red. The Awá people of the region use this plant to cure the bite of the camda snake (Tipaz et al. 1535, MO, QCNE).

***EPISCIA* Martius**

The 9 species of genus are terrestrials with stolons, often rock plants, distributed throughout the neotropics. The chemistry of the genus is barely known. The flavonoids Columnin and Petunidin-3-Rutinoside have been isolated (Harborne, 1966).

***Episcia cupreata* (Hooker) Hanstein, Linnaea**
34 (1865) 340.

Colombia, Venezuela, Brazil (Amapá). Leaves green or multicolored, corolla red. In Andean Venezuela, around Merida, the local population use

the boiled roots to still fever (*Steyermark 56347*, F). Weak antimycobacterial activity against *Mycobacterium tuberculosis* was discovered in a hot water extract of fresh leaves and stems poured on an Agar plate, reported by Frisbey et al., 1952, as seen in NAPRALERT.

Episcia reptans Martius, Nov. Gen. & Sp. Pl. 3 (1829) 41, plate 217.

Amazon basin from Peru to Colombia, Venezuela (Bolivar) and the Guianas, Brazil (Minas Gerais). Leaves green or coppery, corolla bright red. The natives along the Río Caquetá in Amazonian Colombia rub the leaves on the bite of insect stings to lessen the itch (*Vogel 59*, US).

GASTERANTHUS Bentham

This is a genus of over 40 species of terrestrial, perennial herbs of the moist, shady tropical forest. They occur along the Western Cordillera from Peru to Guatemala, most frequently in Ecuador. The leaves are green. Nothing is known about the chemical constituents of this group allied to *Besleria* and *Cremosperma*.

Gasteranthus corallinus (Fritsch) Wiehler, Selbyana 1 (1975) 154.

Ecuador and Colombia. Including synonym *G. corallinoides* (Fritsch) Wiehler. Leaves green, corolla coral red. García-Barriga (1975:155) reports unspecified medicinal use for this species (*Cuatrecasas 11088*, COL).

Gasteranthus crispus (Mansfeld) Wiehler, Selbyana 1 (1975) 154. (Plate: Selbyana 2:81).

Endemic to the province of Pichincha, Ecuador, and found only in the vicinity of Santo Domingo. The Tsatchila people of the area use this plant as a snake bite cure, by either bathing the wounds with the juice of the crushed leaves or drinking a decoction of the plant (*Kvist 40701*, AAU).

Gasteranthus ecuadorensis (Fritsch) Wiehler, Selbyana 1 (1975) 154.

Ecuador and adjacent Colombia. Leaves green, large, pouched corolla orange-red. García-Barriga (1975:156) lists unspecified medicinal use for this species (*Cuatrecasas 11474*, COL).

Gasteranthus oncogastrus (Hanstein) Wiehler, Selbyana 1 (1975) 155. (Plate: Selbyana 2:81).

Western Ecuador, from El Oro to Pichincha. The

Tsatchila people in Pichincha use an infusion of this plant against snake bite (*Kvist 40233*, AAU).

Gasteranthus sp.

Western Ecuador. The Chachi people use this species to treat the bite of the poisonous fer-de-lance snake, *Bothrops atrox*. The juice of crushed, cooked leaves are used to bathe the wound, or macerated, cooked leaves are applied to the wound directly (*Kvist 48094, 48121*, AAU).

GESNERIA Linnaeus

The over 70 species of this genus of perennial, terrestrial herbs and shrubs are almost exclusively endemic to Caribbean islands. The chemistry of this group is not well known. The flavonoides Gesnerin, Luteolidin-5-Glucoside and Pelargonidin-3-Rutinoside have been isolated (Harborne, 1966).

Gesneria auriculata (Hooker) Kuntze, Revisio Genera Plantarum 2 (1891) 473.

Shrub endemic to Hispaniola and Puerto Rico. Leaves green. In Haiti, dried leaves are used as an abortive, as a hot water extract taken orally (Weninger et al., 1982, as seen in NAPRALERT, under *Rhytidophyllum*).

Gesneria tomentosa Linnaeus, Species Plantarum (1753) 612.

Shrub native to Jamaica. Leaves green. The leaves and stems of this medicinally used plant underwent pharmacological screening and were found to have spasmogenic and vasodilator activity in the intestines and hind quarters of laboratory animals. Toxicity levels were established (Feng et al. 1962, as seen in NAPRALERT, under *Rhytidophyllum*).

GLOXINIA L'Heritier

The 15 species of terrestrial, perennial herbs with underground rhizomes are found in damp areas, usually at the edge of rain forests. The genus is distributed from northern Andean Argentina to Costa Rica, and from central Brazil to the Guianas and Venezuela. No chemistry is known for this group.

Gloxinia dodsonii Wiehler, Selbyana 2 (1977) 80, plate 24-D.

Endemic to western Ecuador, in the provinces of Los Rios, Pichincha, Esmeraldas. Leaves of the small plants green or purple on the underside.

Flowers pollinated by male Euglossine bees. The Chachi people of western Ecuador employ this plant as a remedy against the bite of the poisonous fer-de-lance, *Bothrops atrox*. The macerated, cooked leaves are applied to the wound, and a decoction of the plant is drunk (Kvist 41462, 48279, AAU).

Gloxinia perennis (Linnaeus) Fritsch, Engler & Prantl, Die Natürlichen Pflanzenfamilien 4(3b) (1894) 174.

Figure 4

Bolivia to Costa Rica, Venezuela, Trinidad, Guianas, Brazil (Amazonas, Acre, Mato Grosso). Most widely distributed species in the genus. Cultivated elsewhere. Underside of leaves pale green or flushed rose. Pollinated by male Euglossine bees. The Siona people of northeastern Amazonian Ecuador cultivate this species in house gardens as a remedy for boils. The plant is cooked in hot water and the afflicted part is bathed with the infusion (Vickers 249, F).

KOHLERIA Regel

The about 20 species of the genus are perennial terrestrials with underground rhizomes. They inhabit moist areas in the rain forest or grow at the edge, fully exposed to the sun. The genus is distributed from Peru to Mexico, Venezuela, the Guianas. All but four of the species can be found in Colombia. The chemistry for the genus is not well known. The flavonoids Apigenin, Columnin, Gesnerin, Luteolin, Luteolinidin-5-Glycoside, Malvidin-5-Glucoside-3-Rutinoside, and Pelargonidin-3-Rutinoside have been discovered (Harborne, 1966).

Kohleria bogotensis (Nicholson) Fritsch, Engler & Prantl, Nat. Pflanzenfam. 4(3b) (1894) 178.

Native of Colombia. Leaves green above, mottled with silver-gray. Corolla showy, orange-red and yellow. Traded in village and city markets from Ecuador to Panama, West Indies. Grown in tin cans nailed to people's houses, or cultivated in potted collections or in the ground around houses. On the island of Martinique it is used as a remedy against poison or venom (Duss 1937, NY), as seen in von Reis & Lipp, Jr. (1982:227).

Kohleria hirsuta (Kunth) Regel, Flora 31 (1848) 250.

Native to Colombia, Venezuela, Ecuador. Leaves green, but with intensely red trichomes in some

collections. The scaly underground rhizomes are boiled and the resulting tea drunk as treatment for kidney and liver afflictions, Steyermark & Huber 1978:435, Pérez-Arbeláez (1947), Londoño & Kvist 72, 81 (AAU, COL, US).

Kohleria inaequalis (Bentham) Wiehler, Selbyana 5 (1978) 62

Western Ecuador and Colombia. Leaves green, corollas red. The Awá population in the province of Carchi, Ecuador, use the plant to provoke menstrual flow (Boeke 838), as seen in Kvist & Skog (1992:30).

Kohleria spicata (Kunth) Oersted, Centralameric Gesneraceae (1858) 27.

Peru to Mexico. Herbs growing in full sun, often in disturbed places. Leaves green, often verticillate (finger-like), flowers bright orange red. Medicinal use attributed in El Salvador ("digital montes," Calderón 174, GH, under *K. longifolia*), as seen in von Reis Altschul (1972:276). In Guatemala (Ruana 393, US) and in Colombia, this species is used as an astringent to stop wounds from bleeding, García-Barriga (1975:162). As in *K. hirsuta*, a tea of the underground scaly rhizomes is drunk in the Department of Valle, Colombia, to treat kidney trouble and venereal disease (Herrera 975), as seen in Kvist & Skog (1992:20). Also used as medicine (without specifics) at Centro Yukutais, Morona-Santiago, Ecuador (Bennett 3355, NY, QCNA), as seen in Bennett et al., (1993).

Kohleria tubiflora (Cavanilles) Hanstein, Linnaea 34 (1865) 442.

Colombia to Costa Rica. Leaves green or reddish. In the Santa Marta area of northern Colombia, the inhabitants make a decoction of the plant as a remedy for dysentery (Purdy s.n., K, fide Seemann, Bot. Voy. Herald (1852-57) 184.

Kohleria hybrid, involving *K. bogotensis*

Western Ecuador. The Tsachila and the Chachi of the same area value this plant against snake bites, via a wash with crushed leaves, macerated leaves applied directly to the wound, or a decoction of the plant drunk (Kvist 40576, 40723, AAU). This species is also cultivated and traded by the same Indians.

MITRARIA Cavanilles

Monotypic, epiphytic and terrestrial, perennial creeper in cool rain forests of Chile. The only taxon in this account outside the neotropics.

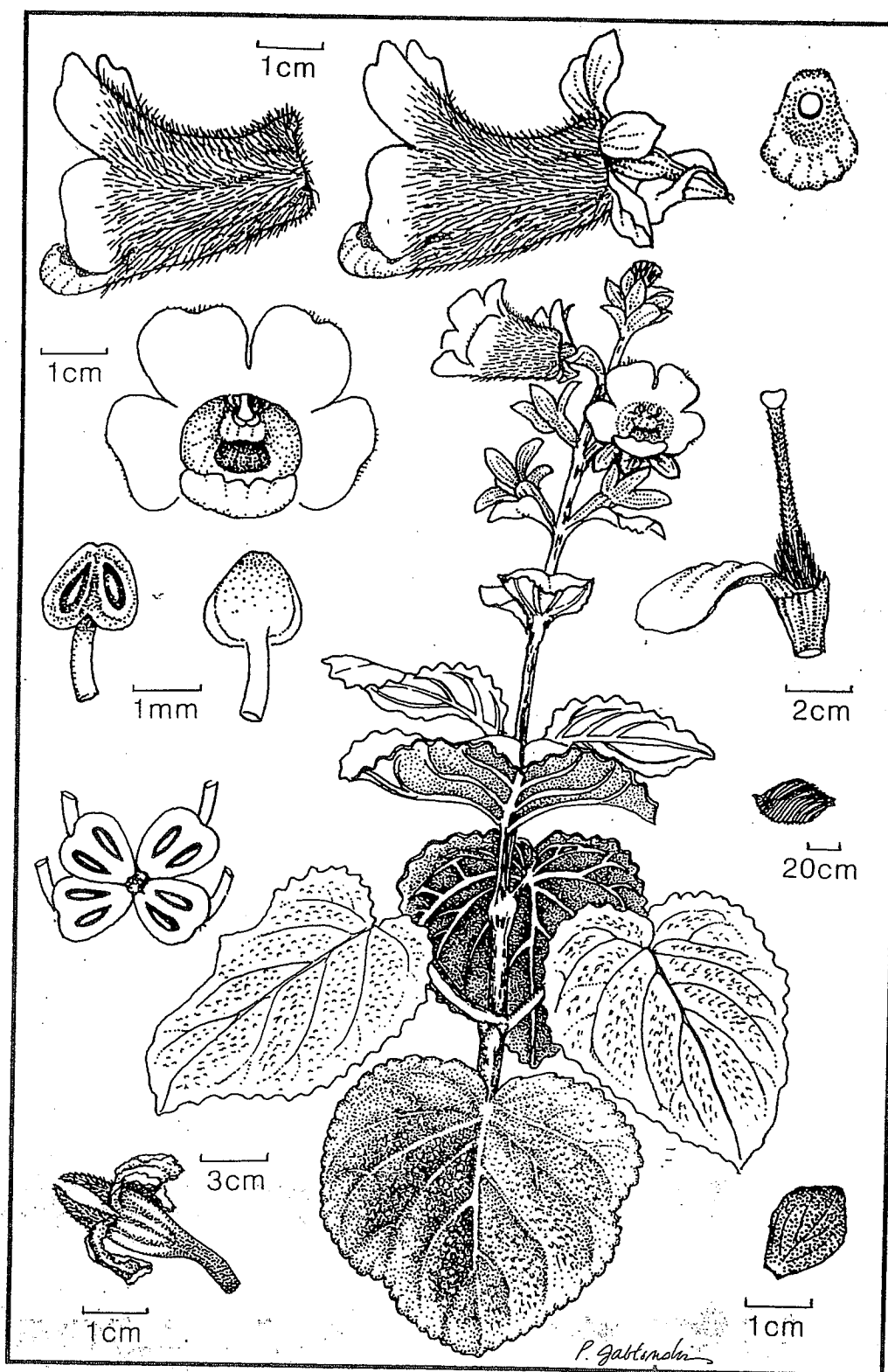


Figure 4: *Gloxinia perennis* (L.) Fritsch

Voucher specimen: Wiehler & GRF Expedition 86203 (GES; G-3131)

Illustrator: Pamela Jablonski, 1994

Sponsor: Jeanne Katzenstein, Rockaway, New Jersey,
in honor of Frances N. Batcheller, Durham, New Hampshire

Ecuador

The glycosides Mitrarioside, Calceolarioside and Verbascoside have been identified (Silva et al., 1992).

Mitraria coccinea Cavanilles, *Anales Ciencias Naturales* 3 (1801) 231, t. 31.

Leaves green. A decoction of dried leaves is taken orally as an analgesic (pain killer). Reported by Cardenas et al., 1992, as seen in NAPRALERT.

MONOPYLE *Benth*

The 25 species of this genus of terrestrial, perennial plants with a weak development of underground rhizomes prefer moist riverbanks in the tropical rain forests. The genus ranges from Bolivia, Venezuela and Guatemala. The center of diversity is Ecuador. All species possess osmophores and are pollinated by male Euglossine bees. The chemistry of the genus has not been studied.

Monopyle macrocarpa *Benth*, in Hooker, *Icones Plantarum* 12 (1876) 85.

Peru to Guatemala, Venezuela. Leaves green or reddish, corolla whitish, lobes with purple spots. The Awá people of northwestern Ecuador use this species to cure the bite of the poisonous camda and pasmo snakes (*Tipaz et al.* 1406, QCNE, MO)

Monopyle sodiroana *Fritsch*, *Bot. Jahrb. Syst.* 50 (1913) 394.

Western Ecuador: Pichincha, Los Rios. Leaves green. The Chachi people of the same region apply a maceration of the leaves on the bite wounds of the poisonous fer-de-lance viper, *Bothrops atrox*, and the deadly coral snake, *Micrurus* sp. (*Kvist* 40515, 41005, 48427, AAU).

MOUSSONIA *Regel*

The 11 species of this terrestrial, perennial and herbaceous or suffrutescent genus thrive in open sunny areas or at the edge of rain forests. Underground rhizomes absent. Most of the species occur in Mexico and Guatemala, a few are found as far south as Chiriqui, Panama. Formerly allied to *Kohleria*. The chemistry of the genus has not been studied.

Moussonia deppeana (*Schlechtendahl & Chamisso*) *Hanstein*, *Linnaea* 34 (1865) 284.

Mexico, Guatemala, Honduras. Leaves green, reddish in some populations. Bundles of dried

plants are very commonly sold in Mexican and Cuban markets. The flowers and leaves are used in a tea to cure gastro-intestinal ailments, especially early gastric ulcers, and some kind of chronic diarrhea. They are also used to wash wounds and sores and in vaginal douches in cases of leucorrhea and for other secretions. In the markets of Mexico City, this herb is sold as "tlalchichinole. Its medicinal effects may be mainly due to the abundance of tannins and resins (*O'Gorman*, 1961:160). More recently, this species has been in demand in Mexico and Cuba as a cure for stomach cancer (*Wiehler*, personal communication).

NAPEANTHUS *Gardner*

The 30+ species of this terrestrial genus of small, rosette-forming herbs growing in deep shade and high humidity are found throughout the neotropical rain forests, from southeastern Brazil and Bolivia to Trinidad and Guatemala. There is no chemical data for this genus.

Napeanthus robustus *Fritsch*, *Akad. Wiss. Wien Sitzungsber., Math.-Naturwiss. Kl., Abt.1* (1925) 122.

Western Ecuador, province Pichincha. Leaves green. The local Tsatchila people use this plant for pain relief (*Kvist* 40671, 48108, AAU).

NAUTILocalyx *Linden ex Hanstein*.

A genus of 70+ species of terrestrial, perennial herbs, usually with succulent stems and white, funnel-shaped flowers. Found in moist areas of the lowland rain forests, from Bolivia to Mexico, the Lesser Antilles, and the total Amazon basin. The chemistry of the genus is not known. One species tested alkaloid-positive (*N. whitei*). The flavonoid Columnnin was found by Harborne (1966).

Nautilocalyx melittifolius (*Linnaeus*) *Wiehler* *Phytologia* 27 (1973) 307.

Lesser Antilles. Leaves green, corolla magenta. Adjanooun et al. (1985) reports that an infusion of leaves and flowers of this herb is used for the treatment of influenza (grippe).

Nautilocalyx sastrei *Wiehler*, *Selbyana* 7 (1984) 334, plate 2-C.

Colombia: Amazonas. Leaves green. The Witoto people along the Río Igara-Parana use this plant as a cure for poisonous snakes (*Gasche & Desplats*

1023, P).

Nautilocalyx whitei Rusby, Mem. New York Bot. Gard. 7 (1927) 358.

Amazon basin in Bolivia, Peru, Colombia (Vaupés). Leaves dark green above, maroon below. Around Tumupasa, Bolivia, a tea made from the roots of this plant is given pregnant women to ease the pain of childbirth (O.E. White 1830, type coll., NY, K). In San Rafael Chapare, Dept. Cochabamba, Bolivia, an infusion of the flowers of this species is used to cure headaches and neuralgias (Steinbach 511, NY). The Cubeo people in Vaupés, Colombia, use a warm bath of the leaves to relieve persistent cramps, an especially bothersome problem with the aged. The whole plant was formerly used as a component of one of their curares (Schultes et al. 24211, ECON). This same collection was tested alkaloid-positive.

NEMATANTHUS Schrader

A genus of 29 epiphytic, suffrutescent species from southeastern Brazil. A few of the species have bright red markings on the underside of the leaves. The chemistry of the genus is unknown.

Nematanthus villosus (Hanstein) Wiehler, Phytologia 27 (1973) 326.

Coastal region of the state of Sao Paulo, Brazil. Leaves completely green, corolla deep red. A herbarium label at BM (fide Chautems, personal communication, 1993) states that this plant is used against snake bite.

NEOMORTONIA Wiehler

This small genus of thin-stemmed, small-leaved creepers contains three species. They grow terrestrially on rocks and logs, but also as epiphytes. Distribution: Ecuador to Mexico. The chemistry of the genus has not been studied.

Neomortonia rosea Wiehler, Selbyana 1 (1975) 17, figures 1-8.

Coastal Ecuador to Costa Rica. Leaves green. The Awá people of northwestern Ecuador use this plant as a snakebite remedy by bathing the wounds with crushed, cooked leaves (Kvist 41477, AAU).

PARADRYMONIA Hanstein

Most of the 52+ species of this genus have the habit of tank bromeliads, but some are lianas.

They occur from Bolivia and Brazil to Mexico and the Guianas, but their center of diversity is Colombia (28 species). They grow both terrestrially and as epiphytes in moist rain forests. The chemistry of the genus is unknown.

Paradrymonia binata Wiehler, Phytologia 73 (1992) 231.

Northwestern Ecuador. Leaves red on the underside. The Awá people of the area use this plant as a cure for the bite of the poisonous fer-de-lance viper, *Bothrops atrox*. Macerated, cooked leaves are applied to the wound (Kvist 48963, AAU).

PARAKOHLERIA Wiehler

The ca. 20 species of this genus of terrestrial herbs with underground scaly rhizomes usually have flowers with red corollas. They occur on the eastern slope of the Andes from Bolivia to southern Colombia, most frequently in Ecuador. The chemistry of the genus is unknown.

Parakohleria abunda Wiehler, Selbyana 5 (1978) 5.

Eastern slope of the Andes of Ecuador. Leaves green or reddish, corolla orange-red. Cerón (1993) reports that the Kofán people treat cold sores of the mouth by applying ashes of the leaves to the affected parts (Cerón 344, QCNE).

PENTADENIA (Planchon) Hanstein

The 32+ species of the genus are epiphytic herbs, scrambling lianas, or scandent, pendent, thin-stemmed trailers. They are native from Bolivia to Mexico and Venezuela, with at least 17 species occurring in Ecuador. No chemistry is known for the genus.

Pentadenia ecuadorana Wiehler, Selbyana 2 (1977) 82, plate 25-D.

Ecuador, both sides of the Andes. Leaves green. The Tsatchila people of western Ecuador use this species as a snakebite cure, either by washing the wound with the crushed, cooked leaves, or by drinking a decoction of the plant (Kvist 40709, 49109, AAU).

Pentadenia spathulata (Mansfeld) Wiehler, Phytologia 27 (1973) 315.

Western Ecuador. The Chachi people of this area drink a decoction of this plant to cure the bites of the deadly snake, fer-de-lance, *Bothrops atrox* and

the coral snake, *Micrurus* sp. (Kvist 40797, 38344, AAU).

***Pentadenia strigosa* (Benth.) Wiehler,**
Phytologia 27 (1973) 315.

Andes of Ecuador, Colombia, Venezuela. Leaves green or reddish, corolla orange, seldom red. García-Barriga (1975:160) reports an unspecified medicinal use for this rambling vine (*Uribe-Uribe* 4240, COL, as *Columnea campanulata* Benth.).

SANANGO Bunting & Duke

A monotypic genus from the Amazonian slopes of the Andes of Ecuador and Peru. The chemistry of this taxon was examined by Jensen (1993) who found in it the compounds verbascoside, conandroside and a new composite which he named sanangoside.

***Sanango racemosum* (Ruiz & Pavon)**

Barringer, Phytologia 59 (1986) 363-364.

Shrub or tree to 12 m tall, with hard wood, evergreen leaves and small, white flowers. Marles (1988) reports that the Lowland Quichua people around Tena, Ecuador use a decoction of leaves as a tonic bath before going hunting (*Marles EE 106*, F, MO). The vernacular name is urcu chiri caspi (= hill cold tree), or cocaina de la montaña (= mountain coca).

SINNINGIA Nees

A genus of over 60 tuberous, terrestrial species, occurring throughout the neotropics, from northern Argentina to southern Mexico, with the center of diversity in southeastern Brazil. The chemistry of the genus is unknown.

***Sinningia allagophylla* (Martius) Wiehler,**
Selbyana 1 (1975) 32.

Southeastern and southern Brazil, Paraguay, Uruguay, northern Argentina. In conjunction with the corm of a local species of *Gladiolus*, the tuber of this gesneriad is used against snake bite "and other applications." Information found by Dr. A. Chautems (personal comm.) on a herbarium label in Sao Paulo (*Menezes & Vincent, CFSC 11054* SPF).

***Sinningia incarnata* (Aublet) Denham, Bailey**
19 (1974) 126.

Northern Argentina to southern Mexico. Leaves green, corolla orange-red. Heinrich (1989) states

that this tuberous species is used by the indigenous population in the state of Oaxaca, Mexico, as a contraceptive and against diarrhea.

***Sinningia tubiflora* (Hooker) Fritsch, in Engler & Prantl, Natürl. Pflanzenfam. 4,3b (1893-94) 182.**

Paraguay and adjacent Argentina. According to Toursarkissian (1980:56), the tuber is used as a purgative in Argentina.

***Sinningia warmingii* (Hiern) Chautems,**
Candollea 45 (1990) 386.

Southern Brazil, Paraguay, and adjacent Argentina. Leaves green, corolla magenta or red. Arenas (1981) reports that the tubers of this species are used in the feminine initiation rites of the Lengua-Maskoy people in the Chaco of Paraguay.

TRICHANTHA Hooker

This is a genus of 70+ species of vining, spreading or scandent epiphytes, distributed from Bolivia to Guatemala, the Greater Antilles and Venezuela. The center of diversity is in Ecuador, Colombia and Panama. There is no data on the chemistry of the genus.

***Trichantha acuminata* (Benth.) Wiehler,**
Selbyana 5 (1981) 384.

Western Colombia. Leaves green. The Waunana people employ this plant as a hemostatic, and also against the poison of snakes by applying a poultice to the wound and drinking a decoction (García-Barriga 1975:158; Forero Pinto, 1980:183).

***Trichantha dictyophylla* (Donnell-Smith)**
Wiehler, Selbyana 1 (1975) 34.

Northwestern Colombia. Leaves green, corolla orange-red. García-Barriga (1975:160) reports an unspecified medicinal use of this epiphyte (*Killip & García-Barriga 33895*, COL).

***Trichantha laevis* (Kvist & Skog) Wiehler,**
Gesneriana 1 (1993).

Northwestern Ecuador. Leaves green, often reddish below, calyx red, corolla yellow. The Awá people use this epiphyte to cure infections of the skin (*Tipaz et al. 1472*, MO, QCNE).

***Trichantha lehmannii* (Mansfeld) Wiehler,**
Selbyana 1 (1975) 35.

Northwestern Ecuador, Colombia (Nariño, Cauca, Valle, Chocó). Leaves usually reddish below. The

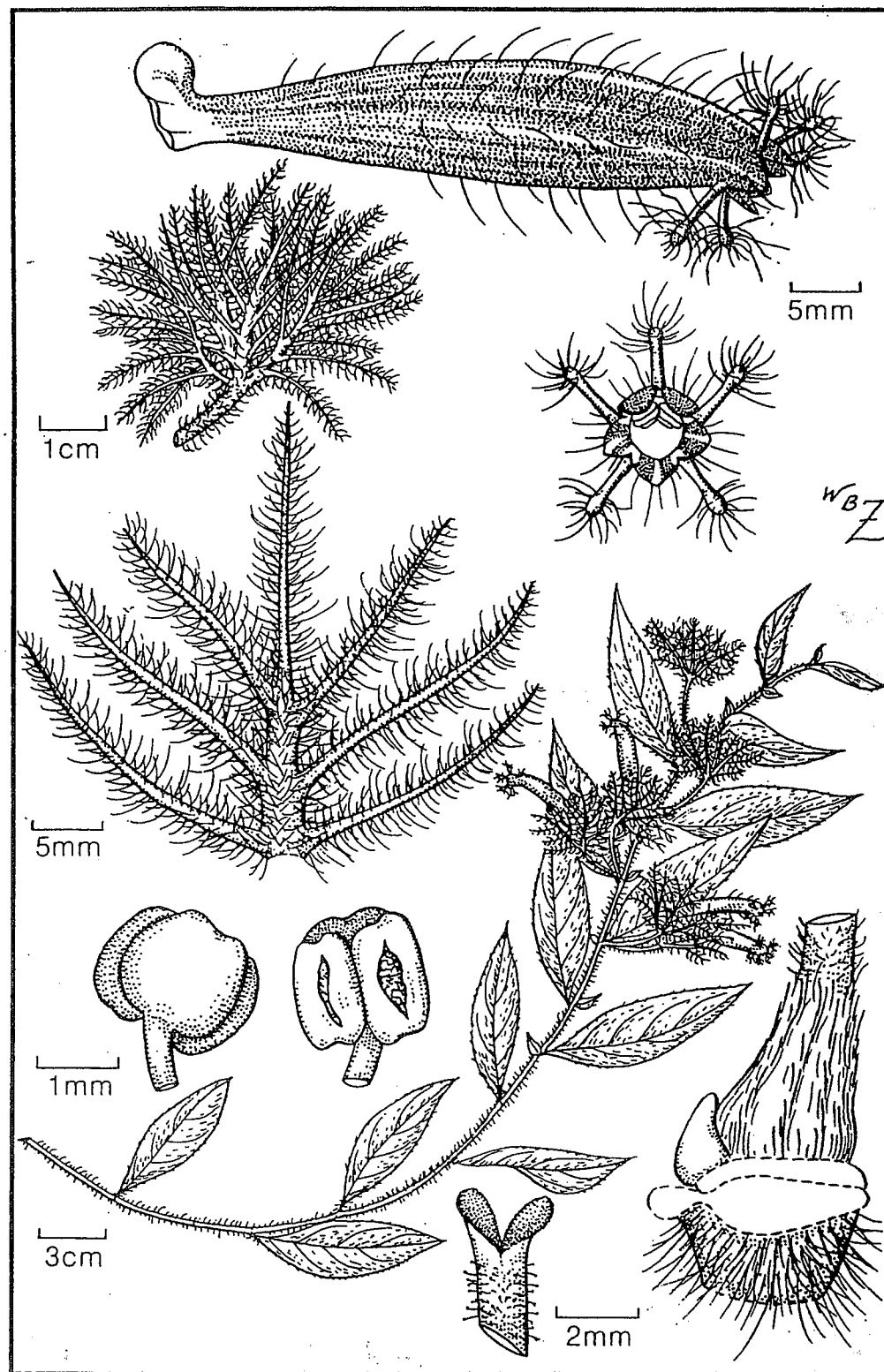


Figure 5: *Trichantha minor* Hooker
Voucher specimen: Dodson s.n. (SEL; G-2464)
Illustrator: Wendy Zomlefer, 1977

Ecuador

Chachi people of northwestern Ecuador use a decoction of this plant as a cure for snakebite of the poisonous fer-de-lance, *Bothrops atrox*, and the coral snake, *Micrurus* sp. (Kvist 48178, AAU).

Trichantha minor Hooker, *Icones Plantarum* 7 (1844) t. 666. **Figure 5**

Andean. Ecuador and Colombia. Leaves green or reddish, flowers bright red. The Awá people of northwestern Ecuador use this epiphyte to cure infections of the skin (Tipaz et al. 1701, MO, QCNE).

Trichantha parviflora (Morton) Wiehler, *Selbyana* 1 (1975) 35.

Coastal Ecuador to Panama. Underside of leaves green or flushed with red. The Awá people of northwestern Ecuador bathe the wound caused by the bite of the deadly coral snake, *Micrurus* sp., with the crushed and boiled leaves of this species (Kvist 48937, AAU). The Awá use this epiphyte also to treat eczema of the scalp (Kvist 48741, AAU). García-Barriga (1975:161) reports an unspecified medicinal use of this species in Cauca, Colombia (Killip & García-Barriga 33331, COL).

Trichantha tenella Wiehler ined.

Northwestern Ecuador. Leaves green, calyx rose-red, corolla yellow. The Awá of this area use this epiphyte to heal pimples and scabies (Tipaz & Taicúz 538, MO, QCNE).

DALBERGARIA ALLIANCE

On the following six species cited by Kvist (1986), there is presently only insufficient taxonomic information available. All of these are used by the Amer-Indians of western Ecuador as a cure against poisonous snake bites:

Species A

Among the Chachi people of northwestern Ecuador, this is a cure for the bite of the fer-de-lance viper, *Bothrops atrox*. Macerated, cooked leaves are applied to the wound, or a decoction of the plant is drunk (Kvist 48420, AAU).

Species B

The Awá people of northwestern Ecuador use macerated leaves of this plant applied to the wound as a remedy against the bite of the deadly fer-de-lance, *Bothrops atrox* (Kvist 48084, AAU).

Species C

The Awá bathe the wounds caused by the

fer-de-lance, *Bothrops atrox*, with crushed and boiled leaves, or they prepare a decoction of the plant to be drunk (Kvist 48997, AAU).

Species D

The Awá people apply macerated, boiled leaves of this plant to the bite of the fer-de-lance viper, *Bothrops atrox* (Kvist 48738, AAU). The same plant is also used by the same tribe to treat burn wounds (Kvist 48794, AAU).

Species E

The Chachi people use a decoction of this plant as a cure against the bite of the deadly fer-de-lance *Bothrops atrox* (Kvist 48085, AAU).

Other medicinal gesneriads, genus and species still to be determined, have been recently reported by Bennett et al., (1993).

Genus and species indet.

The Untsuri Shuar people around Centro Yukatais, in the vicinity of Sucua, Morona-Santiago, Ecuador, use this rare vine found along Río Yukatais for an undisclosed ailment, together with another gesneriad, (*Dalbergaria*, Bennett 3598). (Bennett 3597, NY, QCNA)

Genus and species indet.

Climbing vine with red bracts. The Untsuri Shuars around Sucua, Morona-Santiago, Ecuador, place the juice from macerated leaves and stems of this plant on pimples and small skin abrasions (Bennett 4149, NY, QCNA).

Genus and species indet.

The Untsuri Shuar people east of Macas (Centro Kankaim), Morona-Santiago, Ecuador, mix the leaves of this species with the juices of cane sugar and lemon as a sedative. After each meal, 400 ml of liquid are taken (Shiki 147, NY, QCNA).

Genus and species indet.

The Untsuri Shuars along Río Morano (Centro Pampants), Morona-Santiago, Ecuador, use the leaves of this common forest herb in a ritual/mythical way: the leaves are used to clean the eyes after one dreams of the death of someone familiar (Warush 87, NY, QCNA).

Genus and species indet.

According to a legend of the Shuar of Amazonian Ecuador, if you touch the flowers of this gesneriad, your ears will fall off (Bennett, 1992: 102).

More medicinally used gesneriad species will be reported after the herbarium collections of Cayón Armella and Aristizábal Giraldo (1982) from Caldas, Colombia can be located and determined.

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