

## 8. PELLIONIA Gaudichaud-Beaupré, Voy. Uranie, Bot. 494. 1830, nom. cons.

赤车属 *chi che shu*

Lin Qi (林祁); Ib Friis, C. Melanie Wilmot-Dear

*Polychroa* Loureiro, nom. rej.

Herbs or subshrubs, without stinging hairs. Leaves apparently alternate, distichous; nanophylls present or absent, opposite to normal leaves; stipules 2; leaf blade 3-veined, one major lateral vein sometimes inserted above the base, or pinnately veined, base asymmetric, margin entire or serrate; cystoliths mostly present, linear or fusiform. Inflorescences axillary, cymes of unisexual flowers (plants monoecious or dioecious); male ones usually pedunculate; female ones pedunculate or sessile, bracteose, rarely with discoid receptacle and involucre. Male flowers: perianth lobes 4 or 5, elliptic, connate 1/2 of length, slightly valvate, apex usually corniculate; stamens as many as and opposite to perianth lobes; filaments inflexed in bud; rudimentary pistil small. Female flowers: perianth lobes 4 or 5, distinct, longer than or as long as ovary, usually unequal, apex usually corniculate; staminodes as many as and opposite to perianth, scale-like. Ovary straight, ellipsoid; style absent; stigma penicillate; ovule orthotropous. Achenes ovoid or ellipsoid, slightly flattened, usually tuberculate.

About 60 species: tropical and subtropical Asia, Pacific islands; 20 species (nine endemic) in China.

- 1a. Leaf blade margin entire.
  - 2a. Petioles 0.5–2 cm ..... 1. *P. heyneana*
  - 2b. Petioles 4–19 cm ..... 2. *P. latifolia*
- 1b. Leaf blade margin denticulate, dentate, crenate, serrate or nearly undulate.
  - 3a. Plants with nanophylls.
    - 4a. Stems prostrate, terete ..... 3. *P. repens*
    - 4b. Stems erect, winged or sharply, longitudinally angled ..... 16. *P. caulialata*
  - 3b. Plants without nanophyll.
    - 5a. Achenes smooth or striolate; leaf blade pinnately veined, without distinct major lateral veins.
      - 6a. Herbs monoecious ..... 20. *P. brachyceras*
      - 6b. Herbs dioecious.
        - 7a. Leaf blade 14–25 cm ..... 17. *P. macrophylla*
        - 7b. Leaf blade 4–10 cm ..... 18. *P. incisoserrata*
    - 5b. Achenes tuberculate; leaf blade with one or both major lateral veins inserted above base or pinnately veined, without distinct major lateral veins.
      - 8a. Leaf blade peltate at base ..... 15. *P. viridis*
      - 8b. Leaf blade not peltate at base.
        - 9a. Leaf blade pinnately veined, without distinct major lateral veins.
          - 10a. Leaf blade with cystoliths ..... 13. *P. grijsii*
          - 10b. Leaf blade without cystolith ..... 14. *P. yunnanensis*
        - 9b. Leaf blade with major lateral veins asymmetric, one inserted above base.
          - 11a. Subshrubs ..... 6. *P. scabra*
          - 11b. Herbs.
            - 12a. Most leaf axils with a single leaf much smaller than the subtending leaf.
              - 13a. Stems ascending, unbranched, hairy; achene tuberculate ..... 8. *P. veronicoides*
              - 13b. Stems erect, branched, glabrous; achene smooth ..... 19. *P. leiocarpa*
            - 12b. Leaf axils without such leaves.
              - 14a. Male peduncles 11–13 cm ..... 4. *P. longipedunculata*
              - 14b. Male peduncles 0–6(–9) cm.
                - 15a. Leaf blade up to 15 cm, petiole up to 7 mm.
                  - 16a. Leaf blade nearly undulate or undulate-crenate; cuneate at base ..... 11. *P. paucidentata*
                  - 16b. Leaf blade crenate; obtuse or auriculate at base ..... 12. *P. heteroloba*
                - 15b. Leaf blade 0.5–8 cm, petiole 0–4 mm.
                  - 17a. Leaf apex rounded or obtuse ..... 10. *P. brevifolia*
                  - 17b. Leaf apex acute, caudate or acuminate.
                    - 18a. Stipules triangular, 1–1.8 mm wide ..... 5. *P. retrohispidata*
                    - 18b. Stipules subulate, 0.1–0.2 mm wide.
                      - 19a. Stems densely retrorse-strigose ..... 7. *P. acutidentata*
                      - 19b. Stems glabrous or puberulent ..... 9. *P. radicans*

全缘赤车 *quan yuan chi che*

*Elatostema heyneanum* (Weddell) A. Haller.

Herbs perennial or subshrubs, monoecious or dioecious. Stems ascending or erect, branched or simple, strigose. Leaves alternate; stipules triangular, ca.  $10 \times 3.5$  mm; petiole 0.5–2.0 cm; leaf blade papery, obliquely elliptic, elliptic-ovate, or obovate,  $5-13(-15) \times 3-6.8(-7.4)$  cm, major lateral veins symmetric, both basal, broader outer half auriculate, margin entire, apex acuminate or cuspidate; cystoliths slightly conspicuous, dense; nanophylls narrowly ovate, 3–4 mm. Staminate inflorescences 1.5–3.5 cm in diam., peduncle 5.5–12 cm; staminate flowers: tepals 5, elliptic; stamens 5; rudimentary pistil subulate. Pistillate inflorescences 6–8 mm in diam., peduncle 2–5 mm; pistillate flowers: tepals 5. Achenes ovoid or narrowly ovoid, tuberculate. Fl. May–Aug.

Mountain forests, along streams, streamsides, damp places; 900–1000 m. N Guangxi, Yunnan [Cambodia, India, Indonesia, Sri Lanka, Thailand].

**2. *Pellionia latifolia*** (Blume) Boerlage, Handl. Fl. Ned. Ind. 3: 375. 1900.

长柄赤车 *chang bing chi che*

*Procris latifolia* Blume, Bijdr. Fl. Ned. Ind. 509. 1826; *Elatostema javanicum* (Weddell) A. Haller; *E. latifolium* Blume ex H. Schroeter; *E. latifolium* (Blume) Boerl. var. *acaule* (Hook. f.) H. Schroeter; *E. latifolium* var. *eulatifolium* H. Schroeter; *E. tsoongii* (Merrill) H. Schroeter; *Pellionia acaulis* J. D. Hooker; *P. balansae* Gagnepain; *P. helferiana* Weddell; *P. javanica* (Weddell) Weddell; *P. javanica* (Weddell) Weddell var. *acaulis* Ridley; *P. javanica* (Weddell) Weddell var. *minor* Ridley; *P. pierrei* Gagnepain; *P. tsoongii* (Merrill) Merrill; *Pilea javanica* Weddell; *Polychroa tsoongii* Merrill.

Herbs perennial or subshrubs, usually dioecious. Stems ascending or erect, branched or simple, glabrous or pubescent. Leaves alternate; stipules triangular,  $12-18 \times 3-6$  mm; petiole 4–19 cm; leaf blade papery, obliquely elliptic or oblong-obovate,  $12.5-20 \times 5.8-11$  cm, major lateral veins symmetric, both basal, broader outer half auriculate, margin entire, apex acuminate; cystoliths conspicuous, dense; nanophylls ovate or narrowly ovate, 3–4 mm. Staminate inflorescences 2–4 cm in diam., peduncle 3.2–10 cm; staminate flowers: tepals 5, nearly elliptic; stamens 5; rudimentary pistil conic. Pistillate inflorescences 2–3 cm in diam., peduncle 2–10 cm; pistillate flowers: tepals 5. Achenes ovoid, tuberculate. Fl. Dec–Jul.

Valley forests, dark damp places on precipices; 1100–1300 m. S Guangxi, Hainan, S Yunnan [Cambodia, Indonesia, Laos, Malaysia, Myanmar, Thailand, Vietnam].

**3. *Pellionia repens*** (Loureiro) Merrill, Lingnan Sci. J. 6(4): 326. 1928.

吐烟花 *tu yan hua*

*Polychroa repens* Loureiro, Fl. Cochinch. 2: 559. 1790; *Elatostema daveauanum* (N. E. Brown) A. Haller; *E. gibbosum* Kurz; *E. pulchrum* A. Haller; *E. repens* (Loureiro) A. Haller; *E.*

*repens* var. *pulchrum* (N. E. Brown) H. Schroeter; *E. repens* var. *viride* (N. E. Brown) H. Schroeter; *Pellionia annamica* Gagnepain; *P. daveauana* N. E. Brown; *P. daveauana* var. *viridis* N. E. Brown; *P. pulchra* N. E. Brown; *Procris gibbosa* Wallich.

Herbs perennial, monoecious or dioecious. Stems prostrate, usually branched, terete, pubescent or glabrescent. Leaves alternate; stipules triangular,  $4-10 \times 2-5$  mm; petiole 1.5–5 mm; leaf blade papery, obliquely elliptic or obovate,  $1.8-11 \times 1.2-4.0$  cm, major lateral veins asymmetric, one basal, the other arising above base, broader outer half auriculate, margin undulate, undulate-crenate or nearly entire, apex obtuse, rounded or hebetate; cystoliths conspicuous, dense; nanophylls ovate or nearly linear, ca. 1 mm. Staminate inflorescences 0.6–3 cm in diam., peduncle 2–14 cm; staminate flowers: tepals 5, broadly elliptic or elliptic; stamens 5; rudimentary pistil subulate. Pistillate inflorescences ca. 3 mm in diam., sessile; pistillate flowers: tepals 5. Achenes ovoid or ellipsoidal, tuberculate. Fl. May–Oct.

Valley forests, dark damp places on rocks; 800–1100 m. Hainan, Yunnan [Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam].

**4. *Pellionia longipedunculata*** W. T. Wang, Bull. Bot. Res., Harbin 2(1): 1. 1982.

长梗赤车 *chang geng chi che*

*Pellionia subundulata* W. T. Wang var. *angustifolia* W. T. Wang.

Herbs perennial, dioecious or monoecious. Stems erect, simple, crispatly strigose. Leaves alternate; stipules broadly lanceolate,  $6-11 \times 2.5-4$  mm; petiole 1–2.5 mm; leaf blade herbaceous, obliquely elliptic or linear-lanceolate,  $6-13 \times 2.8-4.5$  cm, major lateral veins asymmetric, one basal, the other arising above base, broader outer half auriculate, margin obscurely denticulate, apex caudate-acuminate; cystoliths obscure, sparse; nanophyll absent. Staminate inflorescences 1.4–2 cm in diam., peduncle 5–13 cm; staminate flowers: tepals 5, broadly elliptic; stamens 5; rudimentary pistil nearly triangular. Pistillate inflorescences 2–3 mm in diam., sessile; pistillate flowers: tepals 5. Achenes nearly ellipsoidal, tuberculate. Fl. Dec–Jul.

Dense forests along streams, streamside rocks; 600–1000 m. S Guangxi [N Vietnam].

**5. *Pellionia retrohispida*** W. T. Wang, Bull. Bot. Lab. N. E. Forest. Inst., Harbin 6: 54. 1980.

曲毛赤车 *qu mao chi che*

*Elatostema hirticaule* W. T. Wang; *E. hunanense* W. T. Wang.

Herbs perennial, dioecious. Stems ascending, branched, densely retrorse-strigose. Leaves alternate; stipules triangular,  $3.2-6.5 \times 1-1.8$  mm; petiole 1–3 mm; leaf blade herbaceous, obliquely elliptic,  $3.5-7.5 \times 1.1-3.3$  cm, major lateral veins asymmetric, one basal, the other arising above base, broader outer half auriculate, margin denticulate, apex acuminate; cys-

toliths obscure, dense; nanophyll absent. Staminate inflorescences 0.8–1.5 cm in diam., peduncle 1–5.5 cm; staminate flowers: tepals 5, elliptic; stamens 5; rudimentary pistil small. Pistillate inflorescences 3–14 mm in diam., peduncle 0.5–2.5 cm; pistillate flowers: tepals 4–5. Achenes narrowly ellipsoidal, tuberculate. Fl. Jan–Jun.

• Valley forests; 300–1600 m. W Fujian, SW Hubei, Hunan, N Guizhou, NW Jiangxi, Sichuan, SW Zhejiang.

**6. Pellionia scabra** Benth. Fl. Hongk. 330. 1861.

蔓赤车 wan chi che

*Elatostema pellioniifolium* W. T. Wang; *E. scabrum* (Benth.) A. Haller; *Pellionia cephaloidea* W. T. Wang; *P. scabra* subvar. *pedunculata* Yamamoto; *Polychroa scabra* (Benth.) Hu.

Subshrubs, usually dioecious. Stems ascending or erect, usually branched, strigose. Leaves alternate; stipules subulate, 1.5–3 × 0.1–0.2 mm; petiole 0.5–2 mm; leaf blade herbaceous, obliquely rhombic-oblongate or oblong, 3.2–8.5(–10) × (0.7–)1.3–3.2(–4) cm, major lateral veins asymmetric to almost absent, broader outer half broadly cuneate, rounded or auriculate, margin denticulate, apex acuminate or caudate; cystoliths obscure or conspicuous, dense; nanophyll absent. Staminate inflorescences 0.8–1.5 cm in diam., peduncle 0.5–3.5 cm; staminate flowers: tepals 5, elliptic; stamens 5; rudimentary pistil subulate. Pistillate inflorescences 2–8(–14) mm in diam., peduncle 1–4 mm; pistillate flowers: tepals 4–5. Achenes nearly ellipsoidal, tuberculate. Fl. Mar–Jul.

Valley streamsides or forests; 300–1200 m. S Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Sichuan, Taiwan, SE Yunnan, Zhejiang [Japan, Vietnam].

**7. Pellionia acutidentata** W. T. Wang, Bull. Bot. Lab. N. E. Forest. Inst., Harbin 6: 53. 1980.

尖齿赤车 jian chi che

Herbs perennial, monoecious. Stems ascending, branched, densely retrorse-strigose. Leaves alternate; stipules subulate, 1–2 × 0.1–0.2 mm; petiole 1–3 mm; leaf blade herbaceous, obliquely elliptic, 1.5–4.4 × 0.9–2 cm, major lateral veins asymmetric, one basal, the other arising above base, broader outer half auriculate, margin dentate, apex acuminate, acute or acutate; cystoliths obscure; nanophyll absent. Staminate inflorescences 0.5–1.2 cm in diam., peduncle 1–2.5 cm; staminate flowers: tepals 5, narrowly elliptic; stamens 5; rudimentary pistil triangular. Pistillate inflorescences to 3 mm in diam., peduncle to 1 mm or absent; pistillate flowers: tepals 5. Achenes ellipsoidal, tuberculate. Fl. Dec.

Mountain forests; ca. 1300 m. SE Yunnan [N Vietnam].

**8. Pellionia veronicoides** Gagnepain, Bull. Soc. Bot. France 75: 927. 1928.

硬毛赤车 ying mao chi che

*Pellionia crispulihirtella* W. T. Wang.

Herbs perennial, dioecious. Stems ascending, simple,

densely crispate-hirtellous. Leaves alternate; stipules subulate, 5–10 × 0.2–0.3 mm; petiole 1–3 mm; leaf blade papery, obliquely ovate, elliptic, or obovate, 1.5–4.5 × 1–3.4 cm, unequal, axils with reduced shoot leaves small, 2.5–7 × 2.5–5 mm, major lateral veins asymmetric, one basal, the other arising above base, broader outer half auriculate, margin crenate, apex acute, obtuse or acutate; cystoliths obscure; nanophyll absent, 2.5–7 × 2.5–5 mm. Staminate inflorescences sessile, with 3–7 flowers; staminate flowers: tepals 4 or 5, oblong-obovate; stamens 4–5; rudimentary pistil small. Pistillate inflorescences 4–6 mm in diam., sessile; pistillate flowers: tepals 4–5. Achenes ellipsoidal, tuberculate. Fl. Oct–Nov.

Forest margins in mountains, streamsides; 1200–1500 m. SE Yunnan [N Vietnam].

**9. Pellionia radicans** (Siebold & Zuccarini) Weddell in Candolle, Prodr. 16(1): 167. 1869.

赤车 chi che

*Procris radicans* Siebold & Zuccarini, Fl. Jap. 218. 1846; *Elatostema radicans* (Siebold & Zuccarini) Weddell; *E. radicans* var. *grande* (Gagnepain) H. Schroeter; *Pellionia arisanensis* Hayata; *P. chikushiensis* Yamamoto; *P. radicans* f. *grandis* Gagnepain; *P. radicans* var. *grandis* (Gagnepain) W. T. Wang.

Herbs perennial, usually dioecious. Stems ascending or repent, usually branched, glabrous or puberulent. Leaves alternate; stipules subulate, 1–4 × 0.1–0.2 mm; petiole 1–4 mm; leaf blade herbaceous, obliquely rhombic-ovate or lanceolate, (1.2–)2.4–5(–9) × (0.8–)1–2.5(–4.5) cm, major lateral veins asymmetric, one basal, the other arising above base, broader outer half auriculate, margin dentate, apex acuminate; cystoliths obscure or conspicuous; nanophyll absent. Staminate inflorescences 1–1.5 cm in diam., peduncle 0.5–3.5(–7) cm; staminate flowers: tepals 5, elliptic; stamens 5; rudimentary pistil conic. Pistillate inflorescences 3–5 mm in diam., peduncle 0.3–3(–25) mm; pistillate flowers: tepals 5. Achenes nearly ellipsoidal, tuberculate. Fl. May–Dec.

Valley forests, thickets in shady damp places, streamsides; 200–1500 m. S Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, SW Hubei, Hunan, Jiangxi, Sichuan, Taiwan, SE Yunnan, Zhejiang [Japan, Korea, N Vietnam].

This species is used medicinally.

**10. Pellionia brevifolia** Benth. Fl. Hongk. 330. 1861.

短叶赤车 duan ye chi che

*Elatostema brevifolium* (Benth.) A. Haller; *E. radicans* var. *minimum* (Makino) H. Schroeter; *Pellionia minima* Makino.

Herbs perennial, monoecious or dioecious. Stems prostrate, branched, pubescent or strigose. Leaves alternate; stipules subulate, 1–2 × 0.1–0.2 mm; petiole 0.5–2 mm; leaf blade herbaceous, obliquely elliptic or obovate, 0.5–3.2 × 0.4–2 cm, major lateral veins asymmetric, one basal, the other arising above base, broader outer half auriculate, margin undulate-crenate or crenate, apex rounded or obtuse; cystoliths obscure; nanophyll absent. Staminate inflorescences 0.8–1.5 cm in

diam., peduncle 1–4 cm; staminate flowers: tepals 5, elliptic; stamens 5; rudimentary pistil obscure. Pistillate inflorescences 2.5–4 mm in diam., peduncle to 3(–10) mm; pistillate flowers: tepals 5. Achenes ellipsoidal or narrowly ovoid, tuberculate. Fl. May–Oct.

Mountain forests, valley streamsides, damp rocks; 300–1600 m. S Anhui, Fujian, Guangdong, Guangxi, SW Hubei, Hunan, Jiangxi, Zhejiang [Japan].

**11. *Pellionia paucidentata*** (H. Schroeter) Chien, Acta Phytotax. Sin. 8: 354. 1963.

滇南赤车 dian nan chi che

*Elatostema paucidentatum* H. Schroeter, Repert. Spec. Nov. Regni Veg. Beih. 83(2): 80. 1936; *E. henryanum* var. *oligodontum* Handel-Mazzetti; *Pellionia longgangensis* W. T. Wang; *P. paucidentata* var. *hainanica* Chien & S. H. Wu; *P. subundulata* W. T. Wang.

Herbs perennial, monoecious or dioecious. Stems erect or ascending, usually simple, glabrous or pubescent. Leaves alternate; stipules subulate, 2–7 × 0.1–0.3 mm; petiole 1.5–7 mm; leaf blade papery, obliquely elliptic or oblanceolate, 2–15.5 × 1.5–6.5 cm, major lateral veins asymmetric, one basal, the other arising above base, base obliquely cuneate, margin nearly undulate or undulate-crenate, apex cuspidate or acuminate; cystoliths conspicuous, dense or sparse; nanophyll absent. Staminate inflorescences 0.5–4.5 cm in diam., peduncle 2–7 cm; staminate flowers: tepals 4 or 5, elliptic; stamens 4–5; rudimentary pistil obscure. Pistillate inflorescences 0.4–2 cm in diam., peduncle 0.2–5.5 cm; pistillate flowers: tepals 5. Achenes ellipsoidal, tuberculate. Fl. Apr–Dec.

Valley streamsides, dark damp places; 200–2000 m. Guangxi, S Guizhou, Hainan, S Yunnan [N Vietnam].

**12. *Pellionia heteroloba*** Weddell, Arch. Mus. Hist. Nat. 9: 283. 1856.

异被赤车 yi bei chi che

*Elatostema griffithianum* (Weddell) H. Hallier; *E. henryanum* Handel-Mazzetti; *Pellionia griffithiana* Weddell; *P. heteroloba* var. *minor* W. T. Wang; *P. keitaensis* Yamamoto; *P. menglianensis* Y. Y. Qian.

Herbs perennial, dioecious. Stems erect or ascending, usually simple, glabrous or pubescent. Leaves alternate; stipules subulate, 2–8 × 0.1–0.3 mm; petiole 3–8 mm; leaf blade herbaceous or papery, obliquely oblong, obliquely lanceolate, or oblanceolate, (4–)8–15 × (1.5–)2.5–5.7 cm, major lateral veins asymmetric to almost absent, broader outer half auriculate, margin crenate or serrate, apex cuspidate, acuminate; cystoliths obscure or conspicuous; nanophyll absent. Staminate inflorescences 1–4.5 cm in diam., peduncle 1–9 cm; staminate flowers: tepals 5, elliptic; stamens 5; rudimentary pistil obscure. Pistillate inflorescences 5–9 mm in diam., peduncle 1–15 mm; pistillate flowers: tepals 4–5. Achenes narrowly ellipsoidal, tuberculate. Fl. Oct–Feb.

Mountain forests, streamsides, wet rocks, dark damp places; 600–

2700 m. Fujian, Guangdong, Guangxi, N Guizhou, SE Sichuan, Taiwan, Yunnan [Bhutan, India, Laos, Myanmar, Sikkim, N Vietnam].

**13. *Pellionia grijsii*** Hance, J. Bot. 6: 49. 1868.

华南赤车 hua nan chi che

*Pellionia funingensis* W. T. Wang.

Herbs perennial, monoecious or dioecious. Stems erect or ascending, usually simple, densely strigose. Leaves alternate; stipules subulate, 2–4 × 0.1–0.2 mm; petiole 1–4 mm; leaf blade herbaceous, obliquely elliptic or oblong-oblanceolate, (3–)6–14(–18) × (1.2–)2–5(–6) cm, major lateral veins asymmetric to almost absent, broader outer half auriculate, margin crenate or denticulate, apex acuminate or caudate-acuminate; cystoliths sparse, conspicuous or obscure; nanophyll absent. Staminate inflorescences 0.5–5.5 cm in diam., peduncle 1–8 cm; staminate flowers: tepals 5, elliptic; stamens 5; rudimentary pistil small. Pistillate inflorescences 2–10 mm in diam., peduncle (absent to)1.5–7(–22) mm; pistillate flowers: tepals 5. Achenes ellipsoidal, tuberculate. Fl. Oct–May.

• Valley forests, streamsides, wet rocks; 200–1400 m. S Fujian, Guangdong, Guangxi, Hainan, S Hunan, W Jiangxi, SE Yunnan.

**14. *Pellionia yunnanensis*** (H. Schroeter) W. T. Wang, Bull. Bot. Lab. N. E. Forest. Inst., Harbin 6: 61. 1980.

云南赤车 yun nan chi che

*Elatostema yunnanense* H. Schroeter, Repert. Spec. Nov. Regni Veg. Beih. 83(2): 79. 1936.

Herbs perennial, dioecious. Stems erect, branched or simple, glabrous or pilose. Leaves alternate; stipules linear or subulate, 4–6 × 0.2–0.3 mm; petiole 1–2 mm; leaf blade herbaceous, obliquely oblong or oblanceolate, 5.5–12.5 × 1.8–3.5 cm, penninerved, broader outer half cordate, margin crenate, apex cuspidate; cystolith absent; nanophyll absent. Staminate inflorescences 1–2.5 cm in diam., peduncle 1–2.5 cm; staminate flowers: tepals 5, oblong; stamens 5; rudimentary pistil nearly terete. Pistillate inflorescences ca. 5 mm in diam., peduncle 0–1 mm. Fl. Feb–Jul.

• Valley forests; 1000–1200 m. SE Yunnan.

**15. *Pellionia viridis*** C. H. Wright, J. Linn. Soc., Bot. 23: 481. 1899.

绿赤车 lü chi che

Herbs perennial or subshrubs, monoecious or dioecious. Stems erect, branched, glabrous. Leaves alternate; stipules subulate, 2–3.5 × 0.1–0.2 mm; petiole 0.4–1.6 cm; leaf blade herbaceous, narrowly oblong or lanceolate, 5–15 × 1.6–5 cm, major lateral veins symmetric, both arising above base, base peltate, obtuse or rounded, margin undulate-crenate or nearly entire, apex acuminate; cystoliths conspicuous, dense; nanophyll absent. Staminate inflorescences 0.5–1 cm in diam., peduncle 0.5–1.8 cm; staminate flowers: tepals 5, elliptic; stamens 5; rudimentary pistil very small. Pistillate inflorescences 3–5 mm in diam., peduncle 1.5–5 mm; pistillate flowers: tepals 5. Achenes narrowly ovoid, tuberculate. Fl. Jun–Sep.

• Mountain or hill forests, streamsides, dark damp places; 500–1200 m. W Hubei, Sichuan, NE Yunnan.

- 1a. Leaf blades nearly equal at base, basiscopic half rounded ..... 15a. var. *viridis*  
1b. Leaf blades very unequal at base, basiscopic narrow-half obtuse and broad-half auriculate ..... 15b. var. *basinaequalis*

**15a. Pellionia viridis** var. **viridis**

绿赤车(原变种) lü chi che (yuan bian zhong)

*Elatostema viride* (C. H. Wright) Handel-Mazzetti.

Leaf blade base symmetric. Fl. Jun–Aug.

• Mountain or hill forests, streamsides, dark damp places; 600–1200 m. W Hubei, Sichuan, NE Yunnan.

**15b. Pellionia viridis** var. **basinaequalis** W. T. Wang, Bull. Bot. Lab. N. E. Forest. Inst., Harbin 6: 62. 1980.

斜基绿赤车 xie ji lü chi che

Leaf blade base very asymmetric, basiscopic narrower side obtuse, broader side auriculate. Fl. Jun–Sep.

• Hill forests, dark damp places; 500–1000 m. S Sichuan.

**16. Pellionia caulialata** S. Y. Liou, Guihaia 3: 317. 1983.

翅茎赤车 chi jing chi che

Herbs perennial, dioecious. Stems erect, simple, winged or sharply, longitudinally angled, glabrous. Leaves alternate; stipules narrowly triangular or narrowly lanceolate, 6–9 × 1.5–2 mm; petiole 3–10 mm; leaf blade herbaceous, obliquely obovate or elliptic, 8–18 × 4.4–8.3 cm, venation pinnate, major lateral veins ill-defined, broader outer half rounded or auriculate, margin undulate-crenate, apex acuminate or caudate-acuminate; cystoliths obscure, sparse; nanophylls 2–15 mm. Staminate inflorescences 2.5–3.5 cm in diam., peduncle 3.5–5.0 cm, pubescent; staminate flowers: tepals 5, elliptic; stamens 5; rudimentary pistil very small. Pistillate inflorescences ca. 1.1 cm in diam., peduncle 0.6–1.2 cm; pistillate flowers: tepals 5. Achenes ellipsoidal, tuberculate. Fl. Sep–Dec.

• Valley forests, streamsides; 400–600 m. Guangxi.

**17. Pellionia macrophylla** W. T. Wang, Acta Bot. Yunnan. 5: 271. 1983.

大叶赤车 da ye chi che

Herbs perennial, dioecious. Stems erect, usually simple, glabrous or pilose. Leaves alternate; stipules linear or subulate, 6–9 × 0.5–0.6 mm; petiole 1–7 mm; leaf blade herbaceous, oblanceolate-oblong or obliquely elliptic, 14–25 × 5–8.5 cm, penninerved, broader outer half auriculate, margin crenate, apex acuminate; cystoliths conspicuous; nanophyll absent. Staminate inflorescences 1.5–3 cm in diam., peduncle 2.8–8 cm; staminate flowers: tepals 5, elliptic; stamens 5; rudimentary pistil small. Pistillate inflorescences 0.8–2 cm in diam., peduncle 3–7 mm; pistillate flowers: tepals 5. Achenes ellipsoidal, smooth or striolate. Fl. Sep–Oct.

• Evergreen broad-leaved forests, along streams, thickets; 1700–2000 m. W Guangxi, S Yunnan.

**18. Pellionia incisoserrata** (H. Schroeter) W. T. Wang, Bull. Bot. Lab. N. E. Forest. Inst., Harbin 6: 63. 1980.

羽脉赤车 yu mai chi che

*Elatostema incisoserratum* H. Schroeter, Repert. Spec. Nov. Regni Veg. Beih. 83(2): 90. 1936.

Herbs perennial, dioecious. Stems erect, simple, glabrous. Leaves alternate; stipules subulate, ca. 2 × 0.1 mm; petiole 2–4 mm; leaf blade herbaceous, obliquely elliptic, 4–10 × 1.6–3.2 cm, venation pinnate, major lateral veins ill-defined, broader outer half broadly cuneate or rounded, margin dentate, apex acuminate; cystoliths conspicuous, dense; nanophyll absent. Staminate inflorescences 1.6–2.8 cm in diam., peduncle 1.5–2.5

cm; staminate flowers: tepals 5, elliptic; stamens 5; rudimentary pistil small. Pistillate inflorescences ca. 5 mm in diam., sessile; pistillate flowers: tepals 5. Achenes ovoid, striolate. Fl. May–Jun.

• Dark damp places in limestone hills. N Guangdong, NE Guangxi.

**19. *Pellionia leiocarpa*** W. T. Wang, *Guihaia* 2: 115. 1982.

光果赤车 *guang guo chi che*

Herbs perennial, monoecious. Stems erect, branched, glabrous. Leaves alternate; stipules linear or subulate, 1.8–2.8 × 0.2–0.3 mm; petiole 0–1 mm; leaf blade papery, obliquely oblong or obliquely elliptic, 2.4–8 × 1–2 cm, unequal, reduced shoot leaves small, venation pinnate, major lateral veins ill-defined, base obliquely cuneate, margin denticulate, apex caudate-acuminate, or rhombic to rhombic-obovate, 0.6–1.5 × 0.3–0.7 cm, apex apiculate or obtuse; cystoliths conspicuous, dense; nanophyll absent. Staminate inflorescences 2–5 mm in diam., peduncle ca. 1 cm. Pistillate inflorescences 3–5 mm in diam., peduncle 1–4 mm; pistillate flowers: tepals 5. Achenes ellipsoidal, smooth. Fl. Apr–May.

• Limestone hillsides, rocks in forests; ca. 1000 m. Guangxi (Napo).

**20. *Pellionia brachyceras*** W. T. Wang, *Bull. Bot. Res.*, Harbin 3(3): 60. 1983.

短角赤车 *duan jiao chi che*

Herbs perennial, monoecious. Stems erect, branched, pubescent. Leaves alternate; stipules subulate or linear, 2.5–3.5 × 0.3–0.6 mm; petiole 0.5–1 mm; leaf blade papery, obliquely oblong or narrowly elliptic, 2–5 × 0.8–1.8 cm, venation pinnate, major lateral veins ill-defined, broader outer half cuneate, margin denticulate, apex acuminate or caudate-acuminate; cystoliths conspicuous, dense; nanophyll absent. Staminate inflorescences 3–8 mm in diam., peduncle 0.7–1.2 cm; staminate flowers: tepals 5, elliptic; stamens 5; rudimentary pistil small. Pistillate inflorescences ca. 2.5 mm in diam., sessile; pistillate flowers: tepals 5. Achenes ellipsoidal, smooth. Fl. Nov.

• Limestone valleys, rocks in forests; ca. 1400 m. Guangxi (Longlin).

