

***Parkia lutea* (Leguminosae, Mimosoideae), a new species from Amazonian Brazil**

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ABSTRACT

Parkia lutea is a small tree from low forest and white-sand campina in central Amazonian Brazil. It has large, oblong leaflets and the bright yellow, biglob-ose capitula are pendent from elongated inflorescence axes that project above the foliage. It belongs to the neotropical "nitida group" of *Parkia* sect. *Parkia*, most of whose members are known to be pollinated by bats.

RÉSUMÉ

Parkia lutea (Leguminosae, Mimosoideae), une nouvelle espèce d'Amazonie brésilienne.

MOTS CLÉS

Amazonie,
Brésil,
Leguminosae,
Mimosoideae,
Parkia.

Parkia lutea est un petit arbre de forêt basse ou de milieu ouvert sur sables blancs du centre de l'Amazonie brésilienne. Cette espèce possède des grandes folioles oblongues et des capitules biglobuleux, jaune vif, qui pendent à la partie supérieure des longs axes inflorescentiels émergeant au-dessus du feuillage. Elle appartient au groupe néotropical « nitida » de *Parkia* sect. *Parkia* dont la plupart des espèces sont pollinisées par les chauves-souris.

In my revision of neotropical *Parkia*, I identified four collections from the region of Rio Apoquitaua and Rio Abacaxis in central Amazonian Brazil, that have especially large, oblong leaflets, as the yellow-flowered form of *Parkia igneiflora* Ducke, despite noting a difference in the dimensions of the leaflets and pods (HOPKINS 1986: 72). After reviewing the material, I consider that it is worthy of specific status.

***Parkia lutea* H.C. Hopkins, sp. nov.**

Parkia igneiflorae Ducke *arcte affinis, sed oblongis majoribus (folii maximo foliolo 4.5-5.1 × 2-2.2 cm, non 2.7-4 × 0.55-1.2 cm) foliolis, paucipinnatis (2-3 non 3-7[-10]) et paucijugatis (8-11 non 17-26) foliis, praecipue differt.*

TYPUS. — *Zarucchi et al.* 3219, Brazil, Amazonas (AM), Mun. de Maués, along Rio Apoquitaua above confluence of Rio Pacoval, 3°54'S, 57°53'W, fl., 27 July 1983 (holo-, INPA [no. 154473]; iso-, K!, NY!, US!, perhaps others?).

Small tree 5-10 m high, 15-25 cm dbh, the crown spreading or umbrella-shaped. Leaves bipinnate, alternate, sometimes widely spaced on stems, up to 24 cm apart. Leaf rachis 10.5-15.5 cm long, including petiole of 3.3-6 cm, with some minute indumentum, glabrescent; gland on adaxial surface of petiole ca. 1-2 cm above pulvinus, elliptical; glands on leaf rachis between points of attachment of opposite pinnae, round. Pinnae 2-3 pairs per leaf, up to 16.5 cm long; rachis of pinna with some minute indumentum, glabrescent. Leaflets 8-11 pairs per pinna, opposite or the most proximal pair sometimes subopposite, oblong, the base truncate, the apex rounded, broadly obtuse to truncate or emarginate, sides of leaflets parallel or leaflet sometimes slightly wider at the base; largest leaflet per leaf 4.5-5.1 × 2-2.2 cm; central vein placed somewhat towards distal margin, straight at apex and curved towards proximal side at base; secondary veins arising from point of attachment of leaflet to rachis of pinna; tertiary venation scarcely visible above but minutely prominent below; leaflets drying dark brown and shiny above, dull chestnut-brown below, glabrous, without exfoliating waxy layer.

Inflorescence axis woody, ascending, more than 26 cm long, bearing several alternate peduncles ca. 3-16.5 cm apart; inflorescence axis and peduncles bearing short, red-brown indumentum, glabrescent. Peduncles somewhat woody, 4-5 (-6 in fruit) cm long, 2 (-5 in fruit) mm diameter, pendent. Capitula in bud brown, velutinous from indumentum on apices of imbricate floral bracts and calyx lobes. Capitula at anthesis biglobose, when dry ca. 6.2 cm long, the basal staminodial fringe 4.5 (or more) cm diameter, the constricted ring above fringe ca. 2.2 cm diameter, the apical ball of fertile flowers ellipsoid, ca. 3 cm diameter; staminodial fringe and fertile flowers egg-yolk yellow. Flowers small, tubular, very numerous and densely packed, inserted on a swollen, central axis, each subtended by a small bract, of several functional types in each capitulum. Floral bracts up to 6.6 mm long, narrowly triangular, 0.3 mm wide at base and up to 2.1 mm wide at thickened, pubescent distal end. Fertile flowers forming a distal ball; calyx ca. 5.8 mm long including pseudopedicel ca. 0.5 mm long, tubular below with 5 unequal minutely pubescent lobes at distal end; corolla membranous, tubular with 5 short apical lobes ca. 0.6 mm long, tending to split at base into 5 segments (see LUCKOW & HOPKINS 1995, fig. 2b); filaments 10, united into a tube to approximately the level of the mouth of the calyx then free above for 4 mm; above pseudopedicel, corolla and filament tube united at base for ca. 3 mm, then free above; anthers ca. 1 mm long; gynoecium rudimentary. Staminodial flowers around base of capitulum: calyx 6-6.4 mm long including pseudopedicel, 0.5-0.8 mm diameter at the base, united below into a tube with 5 unequal, minutely pubescent lobes at distal end; corolla membranous, tubular, with 5 apical lobes exerted ca. 0.6-1.5 mm beyond mouth of calyx; filaments 10, exerted 14-20 mm beyond mouth of calyx, at least sometimes irregularly united into a tube towards the base, free above, somewhat crispate.

Fruit a flattened, indehiscent pod, several (ca. 7) together arising from swollen axis of capitulum, pendent; stipe ca. 4.5-5 cm long, valves 12-19.5 × 4.2-4.4 cm, oblong or falcate, surface dark brown, minutely cracked, without indumentum, the base attenuate into stipe and the apex rounded;

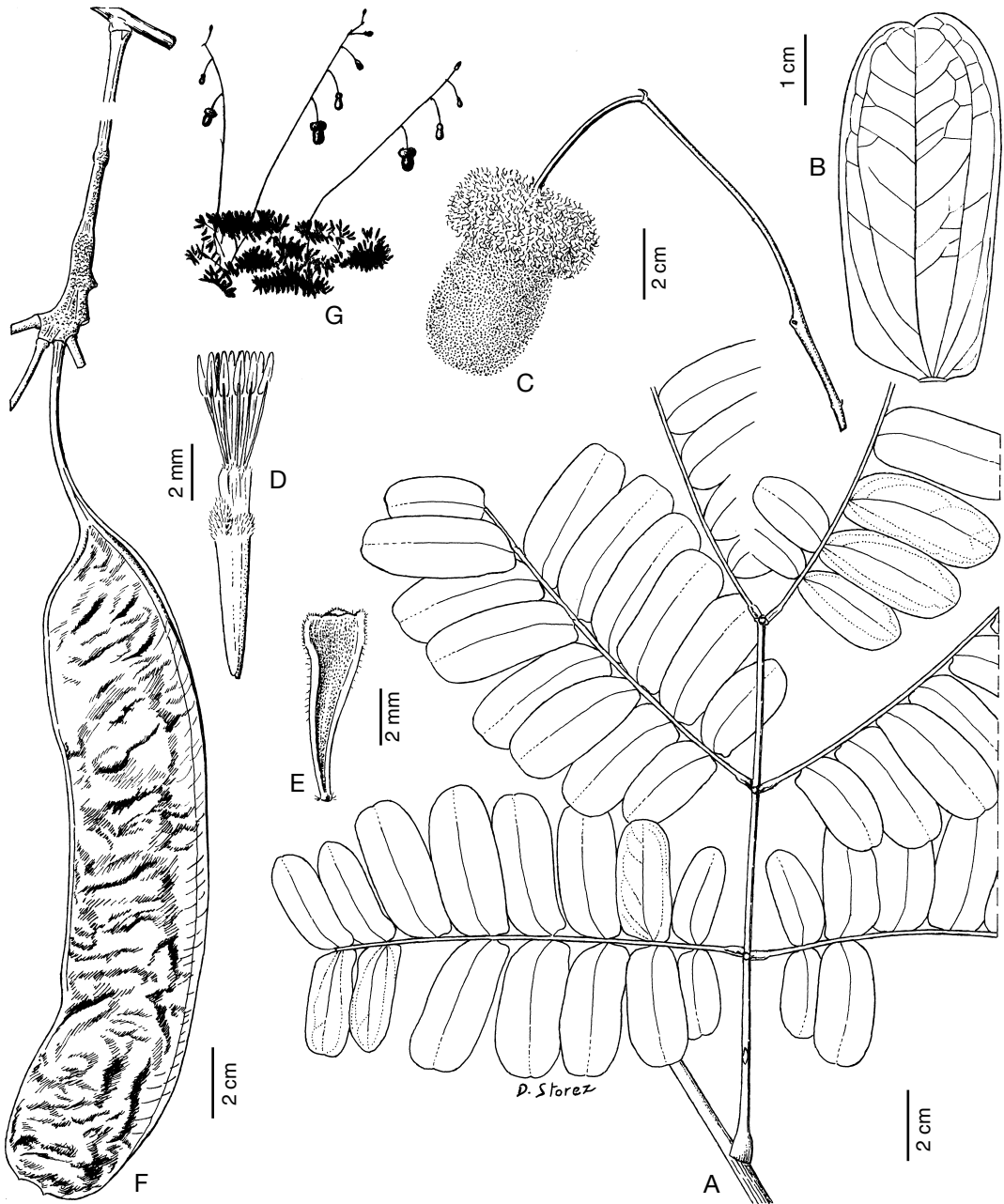


Fig. 1. — *Parkia lutea*: **A**, leaf; **B**, leaflet; **C**, biglobose capitulum on pendent peduncle; **D**, fertile flower; **E**, bract of fertile flower; **F**, infructescence showing a single pod and the bases of 3 other stipes arising from the swollen, pendent axis of the capitulum; **G**, silhouette of part of crown showing inflorescences exerted beyond the foliage. **A**, **C**, **D**, **E**, Zarucchi 3219; **B**, Zarucchi 2930; **F**, Froés 33631; **G**, from photograph by J. ZARUCCHI. Drawn by D. STOREZ.



Fig. 2. — *Parkia lutea*: **A**, crown of tree with erect compound inflorescences exerted beyond the foliage; **B**, capitula at anthesis bright yellow and biglobose; **C**, distal part of a compound inflorescence axis bearing a series of capitula in bud, the most proximal one starting to open; **D**, single capitulum, the basal staminodial flowers starting to open before the distal fertile ones. Photographs by J. ZARUCCHI.

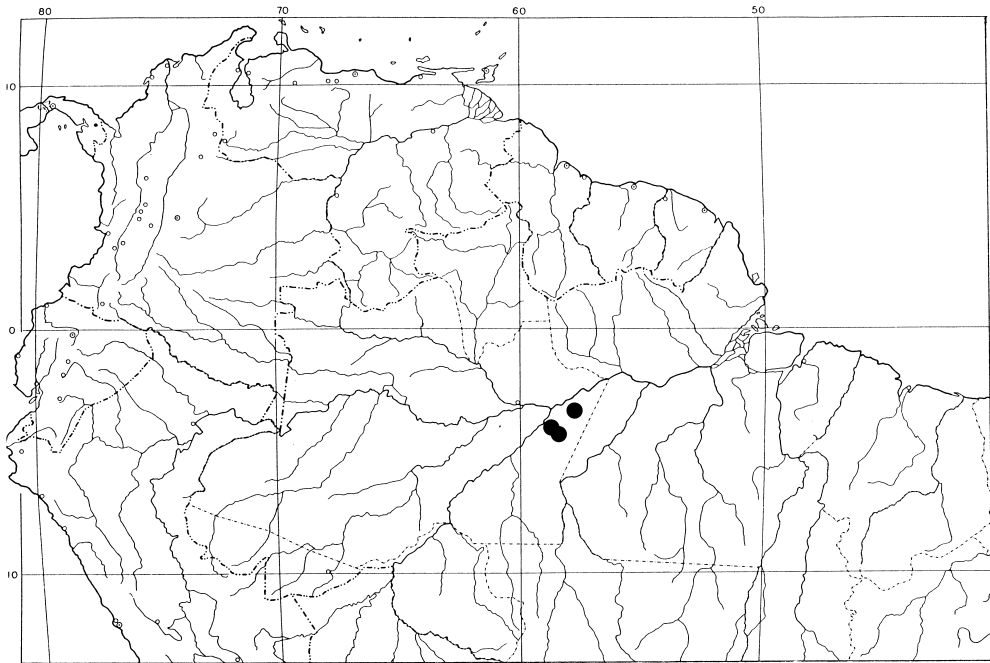


Fig. 3. — Distribution of *Parkia lutea*.

suture to which funicles attached narrow, the opposite suture flattened, ca. 6 mm wide; endocarp yellow, papery; seeds black, ca. 13-15 per pod. — Figs. 1, 2.

ECOLOGY AND DISTRIBUTION. — Occurs in low forest with *ajuru* palms (name not traced) (Froés 33631) and in open white-sand campina, sometimes at the high water mark along the edge of *igarapés* (Zarucchi 3219). Flowering is recorded in July and fruits were collected in July and October. Known from a small area near the Rio Abacaxis and Rio Apoquitaua in Amazonas, Brazil (Fig. 3).

PARATYPES. — BRAZIL: Froés 33631, AM, região de Rio Abacaxis, Rio Marimarí, fr., 21 Oct. 1957 (IAN! \times 2); Zarucchi *et al.* 2930, AM, Mun. de Axinim, basin of Rio Abacaxis, lower Rio Paca ca. 1 km from its confluence with the Rio Marimarí, 4°07'S, 58°58'W, fr., 1 July 1983 (INPA [no. 154183], K!, NY!, US!); Zarucchi *et al.* 2945, AM, Mun. de Axinim, basin of Rio Abacaxis, ca. 4 km from mouth of Igarapé Surubim, 4°31'S, 58°34'W, fl., 4 July 1983 (INPA [no. 154199], K!, NY!, US!).

DISCUSSION. — The description is based primarily on the type collection with the characters of the pods taken from Froés 33631 and Zarucchi 2930. The specific epithet refers to the colour of the capitula.

The shape and structure of the capitula (bilobose, with a well developed staminodial fringe at the base and a distal ball of fertile flowers) and the pods (indehiscent with a broad, flattened suture on the opposite side to the funicular attachment) indicate that this species belongs to the neotropical “nitida group” of *Parkia* sect. *Parkia* (LUCKOW & HOPKINS 1995). Most members of this group are known to be pollinated by phyllostomid bats (DE CARVALHO 1960; HOPKINS 1984; VOGEL 1968) and the structure of the inflorescence and capitula suggest that *P. lutea* is also chiropterophilous.

The rather distinctive inflorescence, in which a somewhat woody, erect axis projects above the foliage and bears several pendent capitula, each on a long, flexible peduncle (Figs. 1G, 2A-C), occurs in several species of this group, and is especially similar to the inflorescence in *P. igneiflora*

(HOPKINS 1986, figs. 3A, 20A). As in other species of *Parkia* sect. *Parkia*, the basal staminodial flowers start to open before the fertile ones, which are in a distal ball (Figs. 2C-D). In *P. lutea* the staminodial and fertile flowers are of the same colour and shade while in some other neotropical species of *Parkia* sect. *Parkia* with yellow fertile flowers and a well-developed fringe, the staminodia are red (*P. panurensis* Benth. ex H.C. Hopkins) or white to cream (e.g. *P. nitida* Miq., *P. truncata* Cowan) (HOPKINS 1984, 1986).

The only capitulum on the sheets to hand with flowers at anthesis has fertile flowers that are functionally male, since each has a small, rudimentary gynoecium. When considering the sexual expression of the flowers in the distal, fertile ball only, and discounting the specialised nectariferous and staminodial flowers, andromonoecy is common in *Parkia* and probably also occurs here.

It was not possible to verify the presence of nectariferous flowers in the narrow zone between the ball of fertile flowers and the staminodial fringe without destroying the entire capitulum, but such flowers are present in all other species of sect. *Parkia*. They differ from the fertile flowers in having a much thickened base, the filaments are not exerted, and the gynoecium is usually absent. Diagnoses for the three sections of *Parkia* are given in HOPKINS (1986).

Parkia lutea is closely related to *P. igneiflora* but differs in having leaves with fewer pairs of pinnae and fewer, larger leaflets, and pods which are generally smaller and rather similar to those of *P. discolor* Spruce ex Benth.; however, there is no discontinuity in dimensions between the pods of *P. igneiflora* and *P. lutea*. Most collections of *P. igneiflora* have reddish or purplish flower-heads (HOPKINS 1986), although in some collections they are golden yellow and thus similar to *P. lutea*. These latter collections of *P. igneiflora* were treated by DUCKE (1938) as a distinct vari-

ety, var. *aurea*, but their leaves cannot be distinguished from those of the red- and purple-flowered "varieties" of *P. igneiflora*. *Parkia igneiflora* and *P. lutea* both occur in low forest on sandy soil.

The only other species of neotropical *Parkia* with leaflets of a similar size is *P. gigantocarpa* Ducke. However, this is a large to very large forest tree with much larger capitula (15-21.5 cm long), longer pods (ca. 52-62 cm including the stipe), and the leaflets are acute at the apex with a white waxy deposit on the underside (HOPKINS 1986).

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