Celastrus yuloensis (Celastraceae), a new species from China

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Celastrus yuloensis X.Y. Mu, a new species of Celastraceae from the seasonal rainforest of southern Yunnan Province, China, is described and illustrated. The new species is morphologically similar to C. hirsutus, but differs in the prominent spine-like bud scales, elliptic-oblong leaves pubescent only on the veins, axillary long panicle inflorescences, and upper half articulation on stalks.

Celastrus is the type genus of Celastraceae and contains about 35 species distributed in eastern Asia, both Americas, Oceania and Madagascar. The diversity centers are in Yunnan (China), Burma, eastern India and Central America (Hou 1955, Zhang & Funston 2008, Mu et al. 2012a). Because of the extreme variability in morphology, definitions of many species given in the literature are conflicting (Wang 1936, Wang & Tang 1951, Hou 1955, Di 1978, Cheng & Gao 1999, Zhang & Funston 2008). Various subgeneric systems (subgenera, sections and series) were proposed based on different morphological characters (Maximowicz 1881, Rehder & Wilson 1916, Hou 1955, Di 1978, Cheng & Gao 1999). Because the single existing infrageneric phylogenetic analysis sampled just few species in the genus (Simmons et al. 2008), the intraspecific as well as interspecific relationships remain poorly understood.

When performing a field investigation in the dense woods of southern Yunnan Province in China for the revision of Celastrus, an additional, previously unrecorded species was discovered. It is described and illustrated and compared morphologically with its congeners here.

Celastrus yuloensis X.Y. Mu, sp. nova (Figs. 1 and 2A, C, E, G)


ETYMOLOGY: The species is named after the type locality, Yulo Mountain in Yunnan Province.

Scandent shrubs up to 15 m long; branches terete, sulcate on old branches, scarcely brownish-pubescent or glabrescent, densely lenticellate, lenticels distinct, elliptic to orbicular; axil-
lary bud ovoid, 2 mm long, protected by two prominent, broadly accrescent bud scales with erect or slightly falcate acuminate apex, about 5 mm long. Leaves elliptic-oblong, both apex and base acute, margins serrate, 8.9–15.5 cm long, 4.5–6.7 cm wide, membranous, obviously pubescent on veins; primary lateral veins 5–7 pairs, elevated below, veinlets distinct below, immersed to obscure above; stipules laciniate, about 2 mm long; petioles glabrous, 1.5–1.9 cm long. Inflorescence axillary, long panicle, peduncles hirsute; flowers unisexual, pale green or white, pedicles 3–6 mm long, articulation at upper half of stalk. Male flowers unseen. Female flowers: calyx lobes valvate, semicircle, margins slightly erose, ca. 1 mm long; petals oblong, ca. 2 mm long, margins strongly erose; discs membranous, lobes arcuate or semicircle, entire; sterile stamens arising between disc lobes, ca. 0.8 mm long, anthers deltoid, 0.3 mm long, filaments oblong, ca. 0.5 mm long; pistil ca. 3 mm long, style columnar, stigma 3-lobed, each slightly 2-lobed again. Fruits subglobose, valves broadly elliptic, about 5–7 mm long and 4–6 mm wide, 3- to 6-seeded; seeds lunate, attenuate at both ends, ca. 3.5 mm long and 2.1 mm wide,
blackish-brown, red arils fleshy, distinct. Flowers from January to March and fruits in October.

So far, *Celastrus yuloensis* is only known from the seasonal rainforest in the far south of Yunnan Province in China. The type population was found climbing on *Choerospondias axillaria*, growing with *Ficus*, *Oreocnide*, *Tetrasigma*, etc.

Four previously described species of *Celastrus* have lunate or semi-annular (vs. elliptic) seeds: *C. aculeatus*, *C. hirsutus*, *C. kusanoi* and *C. stylosus* (Hou 1955). These four species are grouped in a maximally supported clade in a comprehensive phylogenetic analysis of *Celastrus* inferred from two nuclear and three plastid markers, implying that the lunate seed shape is an important synapomorphy in the clade (Mu *et al.* 2012b).

*Celastrus yuloensis* becomes the fifth species with lunate seeds, implying a close relationship with the four species named above. It is more similar to *C. hirsutus* than *C. stylosus* based on the dense lenticels on the branches and the distinct pubescence on the leaf veins. However, several morphological differences do exist between *C. yuloensis* and *C. hirsutus* (Table 1 and Fig. 2).
Table 1. Comparison of *Celastrus yuloensis* and four morphologically close species.

<table>
<thead>
<tr>
<th>Characters</th>
<th><em>C. aculeatus</em></th>
<th><em>C. hirsutus</em></th>
<th><em>C. yuloensis</em></th>
<th><em>C. kusanoi</em></th>
<th><em>C. stylosus</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lenticels on branch</td>
<td>dense normally deciduous, depressed</td>
<td>dense normally deciduous, depressed</td>
<td>dense two outmost bud scales persistent, broadly opened, spine-like, accrescent elliptic-oblong</td>
<td>sparse normally deciduous, depressed</td>
<td>sparse normally deciduous, depressed</td>
</tr>
<tr>
<td>Bud scale</td>
<td>normally deciduous, depressed</td>
<td>normally deciduous, depressed</td>
<td>normally deciduous, depressed</td>
<td>normally deciduous, depressed</td>
<td>normally deciduous, depressed</td>
</tr>
<tr>
<td>Leaf shape</td>
<td>elliptic to oblong-elliptic</td>
<td>suborbicular to orbicular</td>
<td>suborbicular to orbicular</td>
<td>suborbicular to orbicular</td>
<td>elliptic-oblong, ovate to ovate-oblanceolate</td>
</tr>
<tr>
<td>Pubescence on leaf</td>
<td>scarce</td>
<td>dense</td>
<td>on veins</td>
<td>on veins</td>
<td>on veins</td>
</tr>
<tr>
<td>Inflorescence</td>
<td>long axillary dicaisia or raceme</td>
<td>short axillary dicaisia, caulemine upper or basal part</td>
<td>long axillary dicaisia or raceme</td>
<td>short axillary dicaisia, caulemine upper or basal part</td>
<td>short axillary dicaisia, caulemine upper or basal part</td>
</tr>
<tr>
<td>Articulation on stalk</td>
<td>dichasia, caulemine upper half</td>
<td>dichasia, caulemine lower or basal part</td>
<td>dichasia, caulemine upper half</td>
<td>dichasia, caulemine lower or basal part</td>
<td>dichasia, caulemine lower or basal part</td>
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</tbody>
</table>

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References


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