

Notes on the genus *Uncaria* (Rubiaceae) in Singapore

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ABSTRACT. Records for the presence of three hitherto overlooked species of *Uncaria* Schreb., *U. borneensis* Havil., *U. canescens* Korth. and *U. elliptica* R.Br. ex G.Don, in Singapore are presented. Recent collections of three other species, *Uncaria acida* (W.Hunter) Roxb., *U. callophylla* Blume ex Korth. and *U. roxburghiana* Korth., provide evidence of the continued existence of these species in Singapore that were thought to be extinct locally.

Keywords. Conservation status, extinction, herbarium specimen, new record

Introduction

Uncaria Schreb. is a genus of 34 species (Ridsdale, 1978) distributed across the World's tropical belt, with the bulk of the diversity in the Asian region. The species are lianas or scandent shrubs that climb by means of hooks that occur in pairs at the stem nodes. The inflorescences consist of many tubular flowers arranged in a ball, disclosing the close alliance of *Uncaria* with genera such as *Nauclea* and *Neolamarckia* (Löfstrand et al., 2014). Species of *Uncaria* have been found to exhibit a diverse and complex secondary chemistry (Phillipson et al., 1978; Heitzman et al., 2005), particularly in terms of alkaloids and tannins. Many species have found use in systems of traditional medicine, and there has been considerable interest in their pharmacological potential. One Asian species, *Uncaria gambir* (W.Hunter) Roxb., has long been cultivated, largely for the production of getah gambir, a brown paste included in the mixture of ingredients that traditionally accompanied the chewing of betel nut. Gambir can also be used for tanning and dyeing, and has had brief periods of economic importance. In Singapore, it was the cultivation of gambir that led to the clearance of much of Singapore Island's forest in the early Nineteenth Century (Jackson, 1965; Corlett, 1992).

In Southeast Asia, the climbing habit, paired hooks, round flower heads and capsular fruits releasing many tiny winged seeds make *Uncaria* relatively easy to distinguish. But it is more difficult to identify plants to species. Characters such as the size and shape of the calyx (which generally persists on the fruits) and the nature of the tomentum require close attention to identify specimens with certainty.

The latest summary of the status of the genus in Singapore is provided by Chong et al. (2009). They list eight taxa, *Uncaria acida* (W.Hunter) Roxb., *U. attenuata* Korth., *U. callophylla* Blume ex Korth., *U. cordata* (Lour.) Merr., *U. gambir* (W.Hunter) Roxb., *U. lanosa* Wall. var. *glabrata* (Blume) Ridsdale, *U. longiflora* (Poir.) Merr. var. *pteropoda* (Miq.) Risdale and *U. roxburghiana* Korth., as native or naturalised in Singapore. Of these, Chong et al. (2009) considered four, *Uncaria acida*, *U. attenuata*, *U. callophylla* and *U. roxburghiana*, to be extinct in Singapore.

In working on the account of *Uncaria* for the Flora of Singapore, it was necessary to review all the material available. In doing so, it became clear that the Singapore list requires to be updated as several new records have come to light and some purportedly extinct taxa have been recently collected.

New records

1. *Uncaria borneensis* Havil.

This is a fairly distinctive species of *Uncaria* with a ferruginous tomentum of woolly hairs and a distinct intramarginal nerve to the leaves. It is represented in Singapore by collections from Bukit Mandai Road, Seletar Reservoir and Nee Soon Range. The last collection was made in 2013, so the species is likely to remain extant in Singapore.

Specimens examined: SINGAPORE: 188?, *Cantley s.n.* (SING [SING0030689]); Bukit Mandai Road, 1893, *Ridley s.n.* (SING [SING0030695]); Seletar Reservoir, 5 Mar 1981, *Mohd. Shah & Sidek MS 4070* (SING[SING0030702]); Nee Soon Range II, 23 Mar 2013, *Lim et al. SING 2013-048* (SING [SING0194950]).

2. *Uncaria canescens* Korth.

This species is recognised by the lower lamina of the leaf appearing whitish or silvery due to tiny white adpressed hairs in random directions on the nerves and lamina surface. The Singapore specimens referred to the species are all sterile, but they generally appear a good match to fertile specimens from Peninsular Malaysia. The earliest collection is one from the Botanic Gardens. More recently it has been collected from the Chestnut Area.

Specimens examined: SINGAPORE: Botanic Gardens, Lawn O, 17 Apr 1929, *Nur SFN 26144* (K [K001129452]); Chestnut Area, 9 Mar 2010, *Gwee SING 2010-505* (SING [SING0144688]).

3. *Uncaria elliptica* R.Br. ex G.Don

This widespread species with few-nerved leaves and inflorescences borne on stalks generally shorter than the petioles is only known from Singapore by two specimens collected by Lobb in 1846. Unfortunately Thomas Lobb is well known for confusing

the collecting localities of his specimens (Van Steenis-Kruseman, 1950). However, the species has been recorded from Johore, so it might be expected in Singapore but is, in all probability, now extinct locally.

Specimens examined: SINGAPORE: 1846, *Lobb 331* (K [K001129449]); s.dat., *Lobb s.n.* (K [K001129451]).

Rediscoveries

1. *Uncaria acida* (W.Hunter) Roxb.

This species was reported as extinct, but it has been collected twice in recent years from Neo Tiew Lane 3, near Singapore Zoo.

Specimens examined: SINGAPORE: Neo Tiew Lane 3, 12 Aug 2010, *Hassan et al. SING 2010-819* (SING [SING0146721]); 25 Jul 2013, *Lua et al. SING 2013-175* (SING [SING0201437]).

2. *Uncaria callophylla* Blume ex Korth.

This species was reported as extinct when it actually appears to be the most frequently collected and widespread small-leaved species of *Uncaria* in Singapore. Some recent collections are listed below.

Specimens examined: SINGAPORE: Western Catchment Live Firing Range, 1 Feb 2011, *Lua et al. SING 2011-020* (SING [SING0153734]); Pasir Laba Camp, 14 Aug 2007, *Gwee et al. SING 2007-465* (SING [SING0093691]); Admiralty Park Forest, 16 Apr 2012, *Lua et al. SING 2012-122* (SING [SING0173592]); Upper Seletar, 7 Mar 2012, *Lua & Hassan SING 2012-062* (SING [SING0174260]).

3. *Uncaria roxburghiana* Korth.

This species with its leaves made scabrous by stiff curved hairs is highly distinctive. Though reported extinct, it continues to be collected from the Nee Soon area and Mandai Track.

Specimens examined: SINGAPORE: Nee Soon Firing Range, 23 Apr 2012, *Yeo et al. SING 2012-139* (SING [SING0179558]); 13 Feb 2013, *O'Dempsey SING 2013-020* (SING [SING0194943]); Nee Soon Pipeline, 9 Sep 2011, *Lua et al. SING 2011-370* (SING [SING0166674]); Mandai Track 7, 18 Jun 2012, *Ang SING 2012-279* (SING [SING0185450])

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