



Revisiting the lectotype of *Rhamnus micranthus* (Rhamnaceae)

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The lectotypes of *Rhamnus micranthus*, the basionym of *Trema micrantha*, proposed by Wijnands (1983), Howard (1988) and Jarvis (2007) are incomplete or incorrect. The source of the problem is discussed and a new lectotype is here designated.

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Rhamnus micranthus Linnaeus (1759: 937) is the basionym of the Neotropical species *Trema micrantha* (L.) Blume (1856: 58). While working on the phylogenetics of *Trema* Loureiro (1790: 562), Cannabaceae, I have found errors in several proposed lectotypes for this taxon. A molecular phylogenetic analysis of *Trema* (Yesson *et al.* 2004) and further unpublished work with A. M. Humphreys, K. Jerrå, K. Jordan, and K. M. Neubig that includes many samples of *Trema micrantha* from throughout the Neotropics, has found that this taxon is not monophyletic and will require considerable revisionary work in the future to establish species boundaries. Clarifying the lectotype is an important first step.

Wijnands (1983: 199) first proposed a lectotype for *Rhamnus micranthus* Linnaeus (1759: 937) as: "... Table 12 in P. Browne's Civil and natural history of Jamaica (1756), as no specimen of this taxon marked 'Br' is present in the Linnean herbarium."

Howard (1988: 46), apparently unaware of the typification by Wijnands (1983), also proposed a lectotype for *Rhamnus micranthus* as: "Lectotype: P. Browne, *Civ. Nat. Hist. Jamaica*, t. 12. 1756."

Jarvis (2007: 791) accepted and expanded the Wijnands' lectotypification as: "Lectotype (Wijnands, *Bot. Commelins*: 199. 1983): [icon] "*Rhamnus foliis ovatis glabris fructibus bilocularibus subcaliptratis*" in Browne, *Civ. Nat. Hist. Jamaica*, 172, t. 12, f. 1, 1756." No further changes in typification have been reported (Linnaean Plant Name Typification Project, 2003–present).

The proposed lectotype of these three authors is an illustration in Table 12 of Patrick Browne's *Civil and Natural History of Jamaica* (1756), but there are problems with the typifications. First, neither Wijnands (1983:199) nor Howard (1988: 46) specified which of the three figures in Browne's Table 12 (1756) they intended as the designated icon for *Rhamnus micranthus*, causing the typification to be incomplete. Second, Jarvis (2007: 791) cited Wijnands's proposed lectotype and added a necessary figure citation, as well as a Browne polynomial. But Jarvis incorrectly cited Fig. 1 and the polynomial for "*Rhamnus* 3", not Fig. 2 and the polynomial for "*Rhamnus? An Ziziphus*". He failed to note that Linnaeus (1759: 937) initially erred in describing the species by citing Fig. 1 from Browne's Table 12, rather than Fig. 2, but later corrected this error (1762: 280).

Browne's original Table 12 (1756) depicted three different species (none with binomials as Browne had not yet adopted the binomial system), which are labeled Figs. 1–3. In Browne's revised edition (1789), the updated Table 12 included two Linnaean binomials and page numbers to the text (which was unchanged from the first edition): Fig. 1, entire-leaved, is identified only as "*Rhamnus* Br. 172. 3" (the third *Rhamnus* species described on p. 172); Fig. 2, serrate-leaved and clearly a *Trema*, is identified as "*Rhamnus micranthus*. 173" (the only *Rhamnus* described on p. 173); and Fig. 3, an herb of no further concern here, is "*Sauvagesia erecta*. 170" (*S. erecta* Linnaeus (1753: 203), Ochnaceae). Browne (1756: 172 & 173, respectively) described the two *Rhamnus* species as follows:

Rhamnus 3. *Foliis ovatis glabris fructibus bilocularibus subcaliptratis*. Tab. 12. f. 1.

Rhamnus? An Ziziphus. *Arborescens foliis oblongo-ovatis hirsutis & leniter serratis, floribus minimis, racemis alaribus*. Tab. 12. f. 2.

Linnaeus first described *Rhamnus micranthus* in May–June 1759 in the *Systema Naturae* (1759: 937) as follows: "*Micranthus*. B. R. *inermis, fol. ovato-lanceolatis obliquis pubescentibus, stipul. lanceolatis acuminatis deciduis*. *Brown. jam. t. 12. f. 1.*"

Linnaeus (1759: 937) may simply have erred in citing Fig. 1 instead of Fig. 2 for *R. micranthus* or he may have intended the name *micranthus* to apply to Browne's "*Rhamnus* 3" illustrated in Fig. 1. But, as Linnaeus's description does not agree with Browne's description of "*Rhamnus* 3" the latter error can be eliminated. In *Species Plantarum* (1762: 280), Linnaeus corrected his citation to "*Brown jam. 173. t. 12. f. 2.*"

Before that correction in 1762, Linnaeus' descriptions of *Rhamnus micranthus* varied considerably among publications. In November 1759, it was included in a list of plants Browne presented to Linnaeus, the *Plantarum Jamaicensium Pugillus* (Linnaeus & Elmgren 1759: 10): "28. *Rhamnus micranthus*. Plum. ic. 206. f. 1. Folia alterna, petiolata, palmaria."

In December of that same year, it was also included in an annotated list of Jamaican species based primarily on the Browne and Sloane collections, the *Flora Jamaicensis* (Linnaeus & Sandmar 1759: 14): "*Rhamnus 5 Micranth. 173. E.28.*"

In the first, Linnaeus & Elmgren (1759) cited an illustration by Plumier rather than Browne's illustration for *R. micranthus* and provided a description very different from that in the earlier *Systema Naturae* (1759: 937). In the second, Linnaeus & Sandbar (1759) brought the two citations together for the first time, indicating that the fifth *Rhamnus* in Browne, on p. 173, and species 28 in Linnaeus & Elmgren (1759: 10), which cites Plumier's icon 206. f. 1, was *micranthus*.

The association of both the Browne and Plumier illustrations with *R. micranthus* probably arose through correspondence between Linnaeus and Burman. In March of that year, Burman published the description for Plumier's Tab. 206, f. 1 (Plumier & Burman 1759: 200–201) as:

Muntingia folio corni, fructu minore. Plum. nov. gen. p. 41.

Rhamnus inermis, foliis ovato-lanceolatus, obliquis, pubescentibus, stipulis lanceolatis, acuminatis, deciduis. Linn. Syst. Natur. edit. decim.

Rhamnus, an Zizyphus arborescens, foliis oblongo-acutis, hirsutis, & leviter serratis, floribus minimis, racemis alaribus. Brown. Hist. Jam. p. 173. ubi character & icon.

In the second of the above couplets, Burman included the description of *Rhamnus micranthus* that would be published later that year in the *Systema Naturae* (1759: 937), but without the binominal or page citation. This suggests that Linnaeus had not yet chosen the binominal or made Burman aware of it when this volume of *Plantarum Americanarum* was published in March 1759. Linnaeus did not cite the Plumier illustration in *Systema Naturae* (1759: 937), which was published in May–June, but included it in a work published later that year (Linnaeus & Elmgren 1759: 10; Linnaeus & Sandmar 1759: 14) as noted above.

The fuller treatment of *Rhamnus micranthus* in *Species Plantarum* (1762: 280) finally clarified Linnaeus's sources in Browne and Plumier, as noted by Wijnands (1983: 199). Linnaeus also corrected his initial error in citing Browne's figure for *micranthus*:

micranthus 7. Rhamnus inermis, foliis ovato-lanceolatis obliquis pubescentibus, stipulis lanceolatis deciduis. Amoen. acad. 5. p. 395. Rhamnus an ziyiphus arborescens, foliis oblong-ovatis hirsutis & leniter serrates. Brown jam. 173. t. 12. f. 2. Muntingia folio corni, fructu minore. Plum. gen. 41, ic. 206. f.1. Habitat in America.

Confusingly, Linnaeus (1762: 280) cited *Amoenitates Academici* (Linnaeus & Elmgren 1760: 395) in the account above as the source of his description, although the text was actually that from his *Systema Naturae* (1759: 937). It is clearly not the very different short text referenced as "*Amoen. acad.*" (Linnaeus & Elmgren 1760: 395), itself a reprint of the earlier work (Linnaeus & Elmgren 1759: 10) and quoted above. Linnaeus's longer descriptions of *Rhamnus micranthus* in *Systema Naturae* (1759: 937) and *Species Plantarum* (1762: 280) match the illustrations in both Browne (Tab. 12, Fig. 2) and Plumier (Tab. 206, Fig. 1) very well. The brief description in Linnaeus & Elmgren (1759:10; 1760: 395) was very general and may have referred to a different Browne specimen (Herb. Linn. No. 262.13, LINN) later recognized as a different species (as discussed below).

Thus, the lectotype information for *Rhamnus micranthus* Linnaeus (1759: 937), basionym of *Trema micrantha* (L.) Blume (1856: 58), should be corrected to:

Lectotype (here designated): [icon] "*Rhamnus? An Ziziphus. Arborescens foliis oblong-ovatis hirsutis & leniter serratis, floribus minimis, racemis alaribus*" in Browne, *Civ. Nat. Hist. Jamaica*, 173, t. 12, f. 2, 1756.

Wijnands (1983: 199) correctly chose an illustration for the lectotype because there are no extant Browne specimens of *Rhamnus micranthus* in the Linnaean herbarium, which would be marked 'Br'. It is surprising, however, that Wijnands did not comment on the Linnaean Herbarium specimen No. 262.13 (LINN: <http://linnean-online.org/2735/>), which has 'Br' at the base of the stem and was originally identified as *R. micranthus*. Although it is not a *Trema*, it may explain some discrepancies in the early Linnean descriptions of *R. micranthus*. According to Savage (1945: 39), this specimen was initially annotated as "*Rhamnus micranthus*" by Linnaeus, then annotated as "*Caturus ramiflorus*" by Planchon. A later annotation as "*Boehmeria ramiflora* Jacquin" (1760: 31), a synonym of *C. ramiflorus* Linnaeus (1767: 127), appears to be correct. Both names were published after the publication of *R. micranthus* in 1759. That this specimen may be the source of the conflicting descriptions of *R. micranthus* in Linnaeus & Elmgren (1759: 10; 1760: 395) versus Linnaeus in *Systema Naturae* (1759: 937) and *Species Plantarum* (1762: 280) was perhaps first suggested by Dryander (1794: 226). The specimen is decidedly longer petioled and more strongly 3-veined than the *Trema* illustrated in Browne and Plumier and is in agreement with "*Folia alterna, petiolata, palmaria*" in Linnaeus & Elmgren (1759: 10; 1760: 395).

According to Savage (1945: 40), another Browne specimen in the Linnean Herbarium (No. 262.38, LINN; <http://>

linnean-online.org/2760/) was annotated as “*an Zizyphus. Br.*” by Linnaeus, with Solander later adding “*Rhamnus*” and “*Br. p. 173. t 12. f. 2.*” The on-line metadata associated with the specimen confirms only that Linnaeus wrote “Br.” (<http://linnean-online.org/2760/>; accessed 17 Nov., 2015). If Solander were correct, this would be the hoped for specimen matching the description and illustration of “*Rhamnus?, an Zizyphus*” of Browne (1756: 173, Tab. 12, Fig. 2) and might replace the illustration chosen as the lectotype of *R. micranthus* by Wijnands (1983), Howard (1988) and Jarvis (2007). This specimen has very acute leaf bases, strictly pinnate venation, and comparatively large flowers, and therefore little resembles Browne’s illustration. In addition, the species is not a species of *Trema*, leaving only the illustration as a possible lectotype.

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