



Arabis columnalis, a new synonym of *Turritis glabra* L. (Brassicaceae), and lectotypification

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Arabis columnalis Nakai (1914: 271) was described by Nakai (1914) as endemic to Korea, based on a single gathering (*T. Nakai 401*) collected in Jirisan (Mt.) in South Korea (Fig. 1). In the protologue, Nakai (1914) mentioned that *A. columnalis* is different from *A. perfoliata* Lamarck (1783: 219) in having perennial roots of cylindrical shape. The latter binominal is a superfluous illegitimate name for *Turritis glabra* Linnaeus (1753: 666) (ICN Art. 11.3; McNeill *et al.* 2012) and hence is necessarily conspecific with *T. glabra* (Zhou *et al.* 2001, Warwick *et al.* 2006, Chang *et al.* 2014).

Even now, taxonomists accept *A. columnalis* as a taxon in the genus *Arabis* (Warwick *et al.* 2006, Oh 2007, Suh *et al.* 2009, Chang *et al.* 2014, Chung *et al.* 2017, Kim 2017). Nevertheless, the delimitation and taxonomic status of the aforementioned taxa are still unclear due to the lack of keys for identification of relevant taxa.



FIGURE 1. Type specimens of *Arabis columnalis* Nakai (*T. Nakai 401*). A. Lectotype (TI). B. Isolectotype (SKK).

In this study, we observed adventitious buds on the roots of some individuals in *T. glabra* populations located in the type locality of *A. columnalis* (Fig. 2) and some other regions with similar environments. This character is known as one of the major identification features confirming perennial roots. Moreover, we found that the variation range of all other

characters (leaf shape and size, trichome structure and distribution of indumentum throughout the plant, morphology of flowers, siliques, seeds, etc.) coincides in *A. columnalis* and *T. glabra*. Thus, the single diagnostic character of *A. columnalis* represents a deviation of a life cycle of *T. glabra* which is apparently a reaction to specific ecological conditions. Therefore, we propose reducing the former to synonymy of the latter.

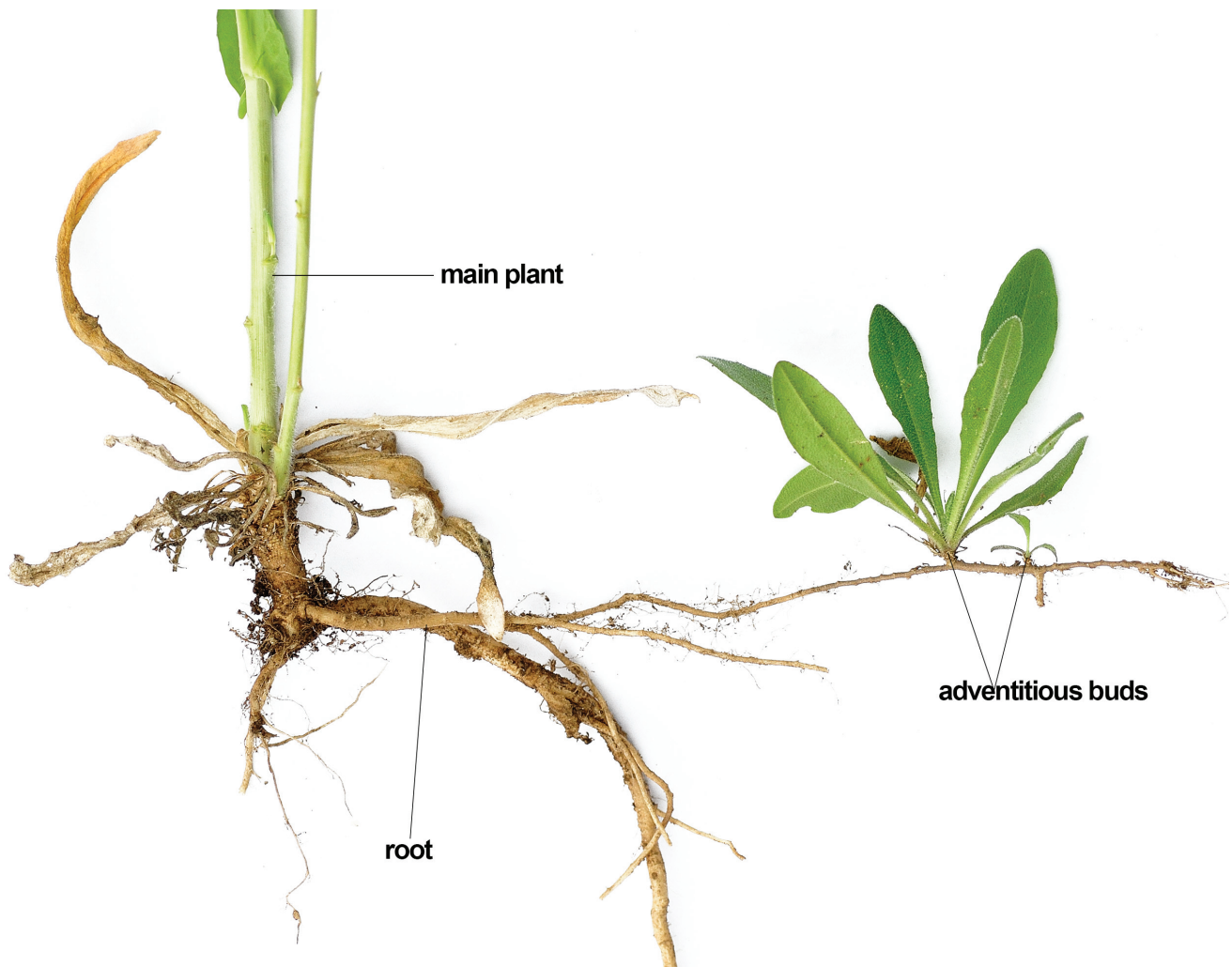


FIGURE 2. Adventitious buds growing on roots of *Turritis glabra* L.

Regarding typification of *A. columnalis*, Suh *et al.* (2009) and Chang *et al.* (2014) reported that the “holotype” of *A. columnalis* is kept at the University of Tokyo (TI; herbarium acronyms according to Thiers 2018+); however, the use of the term holotype is not applicable because Nakai (1914) mentioned that the type gathering included two specimens. Accordingly, those duplicates are considered as syntypes (Art. 9.5; McNeill *et al.* 2012). Currently, one of these is kept at TI (Fig. 1-A), and the other one is deposited at the Sung Kyun Kwan University (SKK) (Fig. 1-B). As long as none of the above citations of “holotype” meets the requirements of Art. 7.10 (McNeill *et al.* 2012) and can therefore be treated as the lectotype designation, this is done here.

Noteworthy, the designated lectotype specimen shows minor differences with respect to the collection site when compared with the protologue. In this, Nakai (1914) cited the collection site as “Pandja montis Chirisan” [Currently Banyabong (peak) Jirisan (Mt.); Gurye-gun, Jeollanam-do borders Namwon-si, Jeollabuk-do], whereas the original label of the lectotype shows a different collection site, namely, ‘智異山 堂峙’ [Currently Dangchi (hill) Jirisan (Mt.); Gurye-gun, Jeollanam-do borders Hadong-gun, Gyeongsangnam-do] (Fig. 1-A).

We have concluded that Nakai (1914) made typographical errors while translating his descriptions from Chinese into English, based on the original label of the specimens (which actually belong to the lectotype).

Lectotypification and nomenclature

Turritis glabra Linnaeus (1753: 666). ≡ *Arabis glabra* (Linnaeus) Bernhardi (1800: 195).

Type (lectotype designated by Jafri 1973):—*C. Linnaeus*, 843.1 (LINN, digital photograph!).

= *Arabis columnalis* Nakai (1914: 271) ≡ *Arabis glabra* f. *columnalis* (Nakai) M. Kim (2017: 530) **syn. nov.**

Type (lectotype designated here):—KOREA: “智異山 堂峙” (Currently Dangchi (hill), Jirisan (Mt.), border area of Naedong-ri, Tojimycheon, Gurye-gun, Prov. Jeollanam-do and Beomwang-ri, Hwagae-myeon, Hadong-gun, Prov. Gyeongsangnam-do), 4 Jul. 1913. *T. Nakai* 401 (TI), (Fig. 1-A).

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