



A new combination in *Phedimus* (Crassulaceae), with neotypification of *Sedum latiovalifolium*

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According to recent molecular studies (‘t Hart 1995, Ham 1995, Ham & ‘t Hart 1998, Gontcharova *et al.* 2006, Thiede & Egli 2007, Gontcharova & Gontchaov 2009), the genus *Phedimus* Rafinesque (1817: 438) was segregated from *Sedum* Linnaeus (1753: 430). This taxonomic treatment of *Phedimus* is also supported by morphological evidences (Ohba *et al.* 2000, Ohba 2001, Fu *et al.* 2001).

During the preparation of the account of the Crassulaceae for the *A Synonymic List of Vascular Plants in Korea*, it was decided that *Phedimus* should be separated from *Sedum*. Most of correct names in *Sedum* which is found in Korean peninsula have combinations in *Phedimus* already. However, *Sedum latiovalifolium* Y.N.Lee (1992: 8), which is described as a endemic to Korea has not yet been transferred to *Phedimus*.

Meanwhile, regarding taxonomic identity of *S. latiovalifolium*, ‘t Hart & Bleij (2003) considered that *S. latiovalifolium* was tentatively treated as synonym of *P. ellacombianum* (Praeger 1917: 41) ‘t Hart (1995: 168). However, the former has morphologically clear difference from the latter by the broadly ovate leaves arranged in rosettes (Lee 1992, Lee *et al.* 2003, Park 2007). Therefore, for this species, we propose below a new combination under *Phedimus*.

Phedimus latiovalifolium (Y.N.Lee) D.C.Son & H.J.Kim, *comb. nov.*

Basionym: *Sedum latiovalifolium* Y.N.Lee (1992: 8).

Type (neotype, designated here):—KOREA. Gangwon-do: Taebaek-si, Changjuk-dong, Mt. Geumdaebong, 4 July 2012, *H.S.Lee, Y.H.Hong, T.H.Kim & B.K.Park HNHM-0029* (KH barcode KHB1395820!), Fig. 1.

Note:—*S. latiovalifolium* was described as a new species by Lee (1992) who had been worked in Ewha Womans University. In the protologue, he cited the type localities as “Kumdaebong, Mt. Taebaik, Kangwon-do [Present address: Mt. Geumdaebong and Mt. Taebaek in Gangwon-do], about 1200 m above sea level” and mentioned that the holotype of *S. latiovalifolium* to be house at Ewha Womans University (EWH). However, factually he did not keep all type specimens for the names which had been published since 1986 at EWH, but conserved at his personal herbarium (Korea Plant Research Institute, KPRI). After he died at June 22, 2008, all specimens including type specimens which were conserved at KPRI were donated to National Institute of Biological Resources (KB) by his family at June 2, 2009. On that basis, after examining herbarium specimens of KB and EWH, we could find only a single specimen which is contained in the type folder at KB. However, the specimen in the type folder cannot be the holotype (because collector names are perfectly fit the protologue, whereas collection locality is not annotated in the label, and remarks etc. does not fit the protologue, besides the collection date is posterior to the protologue), and it led us to concluded that the holotype of *S. latiovalifolium* has gone lost. According to Art. 9.11 and 9.13 of International Code of Botanical Nomenclature (ICN, McNeill *et al.* 2012), if holotype is lost and other original material is no longer in existence, a neotype may be selected. Therefore, we designate the specimen *H.S.Lee, Y.H.Hong, T.H.Kim & B.K.Park HNHM-0029* at Korea National Arboretum (KH) as neotype of *S. latiovalifolium*, due to its completeness and good state of preservation as well as having all diagnostic morphological features.

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Korea National Herbarium (KH)
Neotype!
Phedimus latiovalifolium (Y.N.Lee) D.C. Son & H.J. Kim comb. nov.
 태백기린초 2016. 8. 13
 Son, D.C. and Kim, H.J.

KOREA NATIONAL HERBARIUM (KH)	
04 Jul 2012	Flora of Korea
HNHM-0029	
Sedum latiovalifolium Y.N.Lee	
Crassulaceae 태백기린초	
loc.	Mt. Geumdaebong, Changjuk-dong, Taebaek-si, Gangwon-do 강원도 태백시 창죽동 금대봉
GPS	N37° 12' 17.6" E128° 54' 54.7"
alt.	1297m
note.	
col.	H.S.Lee, Y.H.Hong, T.H.Kim, B.K.Park
det.	S.C.Ko
Specimen Infra of the Korean Forest Species, 2012	



2014년 농림분야
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FIGURE 1. Neotype of *Phedimus latiovalifolium* (Y.N.Lee) D.C.Son & H.J.Kim (*H.S.Lee, Y.H.Hong, T.H.Kim & B.K.Park* HNHM-0029, KH barcode KHB1395820).

References

- Fu, K.J., Ohba, H. & Gilbert, M.G. (2001) Crassulaceae. In: Wu, Z.Y. & Raven, P.H. (Eds.) *Flora of China*, vol. 8. Science Press, Beijing and Missouri Botanical Garden Press, St. Louis, pp. 202–268.
- Gontcharova, S.B. & Gontcharov, A.A. (2009) Molecular phylogeny and systematics of flowering plants of the family Crassulaceae DC. *Molecular Biology* 43 (5): 794–803.
<http://dx.doi.org/10.1134/S0026893309050112>
- Gontcharova, S.B., Artyukova, E.V. & Gontcharov, A.A. (2006) Phylogenetic relationships among members of the subfamily Sedoideae (Crassulaceae) inferred from the ITS region sequences of nuclear rDNA. *Russian Journal of Genetics* 42 (6): 654–661.
<http://dx.doi.org/10.1134/S102279540606010X>
- Ham, R.C.H.J. van. & 't Hart, H. (1998) Phylogenetic relationships in the Crassulaceae inferred from chloroplast DNA restriction-site variation. *American Journal of Botany* 85: 123–134.
<http://dx.doi.org/10.2307/2446561>
- Ham, R.C.H.J. van. (1995) Phylogenetic relationships in the Crassulaceae inferred from chloroplast DNA variation. In: 't Hart, H. & Egli, U. (Eds.) *Evolution and Systematics of the Crassulaceae*. Backhuys Publishers, Leiden, pp. 16–29.
- Lee, K.B., Yoo, Y.G. & Park, K.R. (2003) Morphological relationships of Korean species of *Sedum* L. subgenus *Aizoon* (Crassulaceae). *Korea Journal of Plant Taxonomy* 33 (1): 1–15.
- Lee, Y.N. (1992) New taxa on Korean flora (4). *Korea Journal of Plant Taxonomy* 22 (1): 7–11.
- Linnaeus, C. (1753) *Species plantarum*, vol. 1. Laurentii Salvii, Holmiae, 560 pp.
<http://dx.doi.org/10.5962/bhl.title.669>
- McNeill, J., Barrie, F.R., Buck, W.R., Demoulin, V., Greuter, W., Hawksworth, D.L., Herendeen, P.S., Knapp, S., Marhold, K., Prado, J., Prud'homme van Reine, W.F., Smith, G.F., Wiersema, J.H. & Turland, N.J. (Eds.) (2012) *International Code of Nomenclature for algae, fungi, and plants (Melbourne Code), adopted by the Eighteenth International Botanical Congress Melbourne, Australia, July 2011*. Koeltz Scientific Books, Königstein, XXX + 208 pp. [Regnum Vegetabile 154]
- Ohba, H. 2001. *Phedimus*. In: Iwatsuki, K., Boufford, D.E. & Ohba, H. (Eds.) *Flora of Japan*, vol. 2b. Kodansha, Tokyo, Japan, pp. 19–21.
- Ohba, H., Bartholomew, B.M., Turland, N. & Fu, K.J. (2000) New combination in *Phedimus* (Crassulaceae). *Novon* 10: 400–402.
<http://dx.doi.org/10.2307/3392995>
- Park, K.R. (2007) Crassulaceae. In: Flora of Korea Editorial Committee (Eds.) *The Genera of Vascular Plants of Korea*. Academy Publishing Co., Seoul, Republic of Korea, pp. 513–520.
- Praeger, R.L. (1917) Some new species of *Sedum*. *Journal of Botany, British and Foreign* 55 (650): 38–44.
- Rafinesque, C.S. (1817) Museum of Natural Sciences. *The American Monthly Magazine and Critical Review* 1: 460–442.
- 't Hart, H. & Bleij, B. (2003) *Phedimus*. In: Egli, U. (Ed.) *Illustrated Handbook of Succulent Plants: Crassulaceae*. Springer, Berlin, Germany, pp. 196–203.
- 't Hart, H. (1995) Classification of the Crassulaceae. In: 't Hart, H. & Egli, U. (Eds.) *Evolution and Systematics of the Crassulaceae*. Leiden: Backhuys, pp. 159–172.
- Thiede, J. & Egli, U. (2007) Crassulaceae. In: Kubitzki, K. (Ed.) *Flowering Plants. Eudicots*, vol. 9. Springer, Berlin, Germany, pp. 83–118.
http://dx.doi.org/10.1007/978-3-540-32219-1_12