**H. montana** = オオバギボウシ Part 1

*H. montana* var. *montana* F. Maekawa 1940

*Journal of the Faculty of Science, Imperial University of Tokyo, Section 3 Botany, Vol. 5:356–357, 361 ic. 21, 23 1940*

オオバギボウシ = 大葉擬宝珠 = Ōba Gibōshi (Iinuma/F. Maek.) = Large-leaf Hosta

高い花柄擬宝珠 (= Tall cluster plantain lily [classic alternate])

큰비비추 = Keun-bi-bi-chu (Korean [recommended])

**History and Nomenclature:** *H. montana* (オオバギボウシ= Ōba Gibōshi) together with *H. sieboldii* (コバギボウシ= Koba Gibōshi) are two taxa with wide representation in large parts of the Japanese Archipelago. One, *H. montana* is known as “large-leaved hosta” and it is considered the archetypal hosta. It is so common in central and northern Honshū that it has become an agricultural weed in rice fields, but clever farmers soon found out that this “weed” can be harvested in

*H. montana* (in situ; オオバギボウシ= Ōba Gibōshi)

Racemes in full bloom on tall scapes held high above competing grasses and plants

Nyūkasayama (入笠山); Nagano-ken (長野県); Chūbu-chihō (中部地方) ©HH/WGS

2010-09-02 - 1 -
spring and used as vegetable or wrapping for sushi (寿司). *H. montana* garnered the early attention of botanists and was mentioned by Y. Iinuma (飯沼慾斎) in his floristic work *Somoku Zusetsu* (1856, 1874; 草木図説 = An iconography of plants), revised by T. Makino, 1910. According to Maekawa (1940), Iinuma assigned the name 大葉擬宝珠, which translated means “large (“great”)-leaf hosta” (in Katakana = オオバギボウシ = Ōba Gibōshi). Early Japanese observers noticed the very tall scapes of this taxon and coined the alternate name 高い花柄擬宝珠, which translates to “tall-stalked (plantain lily) hosta.” As shown in the photograph on page 1, *H. montana* populations have evolved with elongated scapes to project the raceme above adjacent tall alpine grasses and subshrubs to facilitate pollination in their montane meadow habitats. The tall peduncles gave rise to this old Japanese name. The scientific binomial *H. montana* was established by Maekawa (1940) designating a new species. Maekawa created this new species to separate the Japanese taxa with tall peduncles (高い花柄擬宝珠 [or 高い花茎擬宝珠] = tall-stalked hostas) from those having much short scapes (短い花柄擬宝珠 [or 短い花茎擬宝珠] = short-stalked hostas), which is typified by a number of European “species” named *H.*

*H. montana* (in situ; オオバギボウシ = Ōba Gibōshi)
Closer view of individual clump
Court.: © kashida (樫田森) (FC2 ブログユーザー)
sieboldiana (トウギボウシ). It is recognized that these taxa are related as determined by a similar DNA content (Zonneveld, B.J.M. and F. Van Iren (2001) and that they both belong in section Helipteroides (Maekawa 1940; Schmid 1991) H. sieboldiana is, however, differentiated by anther coloration and other macromorphological markers as well as by RAPD/DNA analysis (Y. Yu, 2002; Sauve, R.J., S. Zhou, Y. Yu, and W.G. Schmid. 2005)). Major points of morphometric differentiation are provided on page 4. (Compare the leaves of

H. montana (in situ)►►►
オオバギボウシ = Ōba Gabōshi;
(margins closely undulate [piecrust])
Loc.: Aichi-ken (愛知県)
Higashikamo-gun (東加茂郡)
near Asuke-cho (足助町)
W.G. Schmid 1989

the wild population with that of the cultivar H. ‘Donahue Piecrust’). This is one of the many named cultivars that may be a phenotype (or hybrid) of the species with many of the characters of this taxon. A large number of selected phenotypes now have been assigned cultivar names. Compare the leaf to left and the cultivated specimen on page 4 with the leaves shown in a wild, sympatric population of H. montana photographed in Aichi-ken (愛知県), above. The scape/raceme length is shorter that that of the species but the flower morphology is the same. This cultivar has a dull green leaf, a color also seen in wild populations.

►► H. ‘Donahue Piecrust’ [see to left and on page 4, below] (Donahue/Ruh 1999)
Court.: © H. Philips • MyHostas.net
## COMPARATIVE MACROMORPHOLOGY

<table>
<thead>
<tr>
<th><strong>H. montana</strong> (大葉擬宝珠)</th>
<th><strong>H. sieboldiana</strong> (唐擬宝珠)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F. Maekawa (前川文夫) 1940</td>
<td>(Hooker) Engler in Engler &amp; Prantl 1888</td>
</tr>
<tr>
<td>オオバギボウシ = Ōba Gibōshi</td>
<td>トウギボウシ = Tō Gibōshi</td>
</tr>
<tr>
<td><strong>Anthesis:</strong> July/August</td>
<td><strong>Anthesis:</strong> June/July</td>
</tr>
<tr>
<td>Fertile (stainable pollen ± 93%*)</td>
<td>Fertile (stainable pollen ± 82%*)</td>
</tr>
<tr>
<td>Anthers blue/violet posterior/anterior (before dehiscing)</td>
<td>Anthers whitish yellow (before dehiscing)</td>
</tr>
<tr>
<td>Refer to page 8, Part 1 and page 5 Part 2</td>
<td>Refer to <strong>H. sieboldiana</strong></td>
</tr>
<tr>
<td>Petiole shiny to matte green</td>
<td>Petiole glaucous blue-grey</td>
</tr>
<tr>
<td>Leaf top to shiny green remaining shiny or changing to a duller green by anthesis</td>
<td>Leaf top glaucous blue-green in spring, then dark dull, green later by anthesis</td>
</tr>
<tr>
<td>Leaf underside shiny to dull green; rarely glaucous dull green</td>
<td>Leaf underside glaucous whitish or grayish blue-green</td>
</tr>
<tr>
<td>Veins: 12-14 principal veins</td>
<td>Veins: 16-18 principal veins</td>
</tr>
<tr>
<td>Leaf smaller: 12 by 9 in. (30 by 23 cm)</td>
<td>Leaf larger: 17 by 11 in. (43 by 27 cm)</td>
</tr>
<tr>
<td>Scape/raceme 48 to 60 in (1.2 to 1.5 m)</td>
<td>Scape/raceme 22 to 35 in (56 to 89 cm)</td>
</tr>
<tr>
<td>Bracts fertile: large, leafy turning white</td>
<td>Bracts fertile: large, thick leafy grey-green; Bracts sterile large, thick</td>
</tr>
<tr>
<td>Bracts sterile below raceme 2-3 withering at anthesis</td>
<td>withering after anthesis</td>
</tr>
</tbody>
</table>

Habitat and Taxonomy: A meaningful discussion of habitat requires an accurate circumscription of the taxonomy of *H. montana* (オオバギボウシ = Ōba Gibōshi). Several taxonomic placements have been published, which combine to various degrees the infrageneric taxa in section Helipteroides. N. Fujita (1976) placed most related taxa under *H. sieboldiana* var. *sieboldiana* (トウギボウシ), including the following: *H. sieboldiana* var. *gigantea* (Bailey) Kitamura (1966); *H. sieboldiana* var. *yakusimensis* (sensu G. Masamune); *H. montana* Maekawa (1940) [= オオバギボウシ]; *H. montana* var. *praeflorens* Maekawa (1940); *H. montana* var. *liliiflora* Maekawa (1940); *H. liliiflora* var. *ovatolancifolia* Araki (1942); *H. crassifolia* Araki (1942). After combining all of these morphologically differentiated taxa, Fujita (1976) named the new variety *H. sieboldiana* var. *glabra* (= ナメルバギボウシ) and combined *H. nigrescens* (クロギボウシ = 黒擬宝珠) and *H. fluctuans* (クロナミギボウシ = 黒波擬宝珠) in synonymy with this new taxon. Fujita’s consolidation also included a number of Maekawa’s taxa later reduced to cultivar form by Schmid (1991): *H. ‘Elata’* (in part) and *H. ‘Tokudama’*. Fujita’s taxonomy has found partial acceptance only and is not confirmed by later scientific investigations. Fujita’s inclusion of taxa in section Rhynchophorae (*H. kikutii* complex) within section Helipteroides has not been confirmed by DNA content (Zonneveld and Van Iren; 2001). RAPD/DNA analysis (Y. Yu, 2002; Sauve, R.J., S. Zhou, Y. Yu, and W.G. Schmid. 2005) does not support Fujita’s combination of many taxa in synonymy. Monographs by D. Grenfell (1990) and W.G. Schmid (1991) did not follow Fujita’s placements. The use of *Hosta* species and cultivars in horticulture constitutes its primary economic importance and Fujita’s taxonomy, if accepted, would cause endless confusion. For this reason, major international horticultural societies have not recognized Fujita’s classification. Zonneveld (2001) suggested similar taxonomic changes. In their study, Maekawa’s separation of Helipteroides and Rhynchophorae is maintained but a number of species, including *H. montana*, were reduced to the rank of varietas within the species *H. sieboldiana*. Based solely on genome size as a taxonomic criterion, these placements have not been confirmed using morphometric studies and RAPD/DNA (Schmid 1991; 2008. Y. Yu, 2002; Sauve, R.J., S. Zhou, Y. Yu, and W.G. Schmid. 2005) so have not been adopted. By far the most vexing problem is the conjoined use *H. montana* and *H. sieboldiana*. After examination of a number of exsiccate from Japanese and European herbaria, it is obvious that the names have been used interchangeably, even before Fujita (1976) published his revision. This is hard to explain because the macromorphological differentiation is obvious even to gardeners, who have no scientific background. The data on page 4 describe major differences. These include anther coloration (before dehiscence), number of principal veins, and height of peduncle. Scientific investigation, such as RAPD analysis of genomic DNA, also supports differentiation of *H. montana* and *H. sieboldiana* (see page 11). Further detailed analysis of the differentiation between *H. montana* and *H. sieboldiana* is given in Parts 1 of *H. sieboldiana* (*H. ‘Sieboldiana’) and *H. montana*. To illustrate a typical example, a herbarium specimen (OOM; No. 673467) is shown on page 6. It typifies *H. sieboldiana* var. *gigantea* (Bailey) Kitamura (1966) included in the synonymy of Fujita (1976), which is identified by its Japanese name = オオバギボウシ as *H. montana* (ex Maekawa, 1940) and by morphology.
**H. montana (オオバギボウシ = Ōba Gibōshi)**

Herb. Sp. OOM 67346; Coll.: T. Takahashi 665 1987.9.30 (大本花明山植物園)

Ōmoto Kameyama Botanical Garden; Kameyama-shi (亀岡市); Mie-ken (三重県)

Dim. ±: Leaves 25 × 18 cm (10 × 7 in); Scape 110 cm (43 in); Raceme 25 cm (10 in).
The introductory remarks concerning the taxonomy of this taxon, delimit the habitat of in situ populations of *H. montana* (in sensu Maekawa, 1940). This taxon is one of the most prevalent *Hosta* species in Japan. The type (in TI) was collected by F. Maekawa near Yamanaka-ko (山中湖), Yamanashi-ken (山梨県); topotype for northern distribution in SAP was collected by K. Miyabe (1981.04.08) in Hokkaidō (北海道 also Ezo, Yezo), in Shiribeshi-shichō (後志支庁) and in areas of Hokkaidō montane conifer forests. On the main island of Honshū it occurs primarily in the ecoregions of the Omote-Nihon (表日本 = “front of Japan” = Pacific Ocean regions of Honshu), which includes areas in both montane deciduous and some evergreen forests. It also occurs in the higher mountains facing the Sea of Japan side, or Ura-Nihon (裏日本 = “back of Japan” = Sea of Japan regions of Honshu). Main habitat stretches along the Pacific Ocean side (表日本) of Tōhoku-chihō (東北地方), Kantō-chihō (関東地), Chūbu-chihō (中部地方), and south to Kansai-chihō (関西地方). It is represented in eastern forest areas of Chūgoku-chihō (中国地方). Habitat in the subtropical ecoregions of Shikoku (四国) and Kyūshū (九州) has not been confirmed, but this taxon may have escaped from cultivation. *H. montana* many visually many distinct and differentiated phenotypes. Due to collections in various areas of Japan, several of these are now in cultivation (see Part 2 *H. montana* in Cultivation).
Members of the American Hosta Society during the 1995 excursion examine a population of *H. montana* growing on a steep bank along a road near Iwakuni City. Note how successfully this dense population competes with a large number of tall grasses and subshrubs on a difficult, near vertical and rocky growing site.

(© 1995; Dr. R. Olson)

**Plant Morphology:** In this *Species Update*, *H. montana* is classified in the narrower sense as proposed by Maekawa (1940) and confirmed by Ohwi (1953, 1965). It is differentiated from the “European” *H. sieboldiana*, as confirmed by the following research results. Maekawa included several cultivated phenotypes as taxa, namely *H. montana* f. *aureomarginata*, *H. montana* var. *liliiflora*, *H. montana* var. *praeflorens*, and *H. montana* var. *transiens*. Of these the first is

*H. montana*

Calyx with 10 tepals 12 stamens and 2 styles

Court: © fsuzuk nogusanatu (くろんど池)

Katano-shi (交野市), Osaka-fu (大阪府)
a plastome mutation (see Part *H. montana*—Part 2) and has been reduced to a culton (cultivar form) in Schmid (1991). The remaining three named varieties are minor phenotypical variants based on cultivated plants and were considered as synonyms under *H. sieboldiana* var. *sieboldiana* by Fujita (1976). Schmid (1991) retained them under their original names but reduced them to culta (cultivated forms). *H. montana* is a variable species that inhabits large ecoregions with varying climatic and ecological conditions. Local populations have undergone modifications to adapt to these conditions. One of these adaptations involves the length (= height) of the scape/raceme combination to an erect and tall posture, which favors pollination in competition with sub-shrubs and tall grasses occupying the same habitat (see photo pages 7 and 8). Varying habitats have also led to adaptive phenotypes with varying leaf shapes and leaf margins. Most wild populations have flat and wavy leaves, but
some forms inhabiting shaded forest areas have developed “pie-crust” margins (see photo on page 3). Phenotypical variations with verticillately grouped flowers (arranged in whorls with several groups along the raceme) occur in the wild and in cultivation. In Japan this is known as *H. montana* ‘Kurumazaki’ hort. (くるまざきオオバギボウシ (Photo No. 1). *H. montana* ‘Yae’ (八重オオバギボウシ; also known as *H. ‘Yae Ōba’) with true hose-in-hose flowers (Fig. 2 and 3; this page). I have also observed true double flowers with double or more the normal number of tepals (6), pistils, and stamens; and occasionally some petaloid stamens (Fig. 2 and 3; this page). Glaucous-backed leaves and branched-scape forms also occur, with the latter named informally *H. montana ramosa* Satomi (1957 nomen nudum). Most of these mutants occur sporadically in the wild so are considered deviate forms. Due to the macromorphological variations observed in wild *H. montana* populations, selected clones brought into cultivation exhibit different features, but all fall within the general limits of the following diagnosis. Correct identification of cultivated material is sometimes difficult, because, aside from natural variability, a number of putative hybrids are cultivated under the species name. Very large-leaved hostas have been identified with *H. montana* but they are probably interspecific hybrids (with *H. sieboldiana*). This does not include the variant *H. montana* f. *macrophylla*, a large-leaved named infraspecific taxon (forma) found in the wild (Schmid; 1991).

**Plant size** 60–120 cm dia., 40–60 cm high (24–48 by 16–24 in.). Petiole 25–40 by 1.2 cm wide (10–16 by 0.50 in.), ascending in an arch, forming a large dome-shaped plant, slightly winged, deeply grooved, dull dark green. Leaf 23–28 by 15–22 cm (9–11 by 6–8.5 in.), leaf attitude at petiole arcuate spreading, very contracted, broadly ovate, oblong-ovate, ovate-cordate, generally flat surface, open, margin flat to undulate, or tightly sinuate (“piecrust margin”) or no waves; surface flat, sometimes undulate, not rugose, acuminate tip, ± twisted and turned under, surface with matt sheen or shiny deep green, dull green or grey below. Venation (10) 12–14, sunken above (Fig. 6; page 11) projected, strigose below with irregular papillae (Fig. 4, page 11) [cont’d page 13]
Fig. 4: Strigose veins on back of leaf with irregular papillae (note shadow lines)  
Magn. 4x (Hosta Hill R.G. © Schmid 2008)

Fig. 5: Type A Tepal (Schmid 1991)  
Hosta Hill R.G. 1991  
Darker center in higher elevations

H. montana (cultivated) (オオバギボウシ = Ōba Gibōshi)

Fig. 6: Leaf surface pattern with sunken principal veins  
Magn. 2x (Hosta Hill R.G. © Schmid 2008)

Fig. 7: H. montana (cultivated)  
(オオバギボウシ = Ōba Gibōshi)  
Emerging shoots in cultivated setting at Hosta Hill R.G. Voucher: HH 112584  
© W.G. Schmid 1989.04.01
**H. montana** (オオバギボウシ = Ōba Gibōshi)

**Leaf details**

Fig. 8: Leaf backside (shiny green phenotype)
Fig. 9: Principal vein showing strigose papillae (shiny phenotype)
Fig. 10: Leaf backside (dull green phenotype)
Fig. 11: Leaf backside showing strigosity on veins (dull green phenotype)

F. Mack.) W.G. Schmid 1992; Cult. at Hosta Hill R.G. HH 112584
© W.G. Schmid 2008.05.05 and Court.: © hananouta 2006

2010-09-02
Scape tall, 90–120 cm (36–48 in.), 2–3 (to 5) isolated fertile bracts widely spaced along scape away from raceme, straight, erect to slightly bending, solid, terete, matte green (viresent), lightly or not purple-spotted at base. Fertile bracts large, flat and broad, thick and fleshy, very whitish green, sometimes tinged purple, developing and opening in a stellar form as seen from above, withering, persisting briefly after anthesis. Raceme 25–35 cm (12–14 in.), 15–30 flowers, compactly clustered. Flowers 5 cm long, 3 cm broad (2 by 1.25 in.), mostly white to white very lightly purple suffused in center of tepals; Type A (Schmid 1991; shown in Fig. 5, page 11), sometime with distinct lines, in northern and high montane habitats, with darker purplish in the center of the tepal; perianth expanding, funnel-shaped, in the central part lightly dilated bell-shaped, lobes spreading straightly to ±angled to the axis of perianth, stamens short and inside or rarely even with perianth; anthers purple dotting on barely whitish posterior, looks purple; style projecting beyond perianth. July/August, but earlier anthesis occurs in the southern habitat. Fertile (Stainable pollen 87-96%).

Karyotype-Chromosomes: Sporophytic Count = 60; 12 large, 48 small; (2n).

Genome Size: DNA content (2C) in pg (one (10^{-12}) gram) for *H. montana* = 23.9 and 23.2 and *H. montana* f. *macrophylla* = 23.2 (Avg. 23.55) (Zonneveld, B.J.M. and F.Van Iren. 2001). The cultivar *H. montana* ‘Aureomarginata’ tested with a DNA pg = 23.1.

Pollen: Pollen type was not determined by M.G. Chung and S.B. Jones, 1989. The closely related *H. sieboldiana* in section Helipteroides was determined to have pollen type RG(III) [(Pollen shape after Erdtman, 1966)].

DNA Banding: (Y. Yu, 2002; Sauve, R.J., S. Zhou, Y. Yu, and W.G. Schmid. 2005). In additions to other taxa, the banding patterns of *H. sieboldiana*, *H. montana* and *H. montana* f. *macrophylla* and *H. nigrescens* were compared in the 2002/2005 study. The 4 taxa shown in the banding pattern (10 = *H. montana* ; 11 = *H. montana* f. *macrophylla*; 12 = *H. sieboldiana*; 15 = *H. nigrescens*) were compared using primer OPB-02 (5' - TGATCCCTGG-3'). The single primer generated bands as shown in Fig. D to the right). One polymorphic band was common for *H. montana* [10] and *H. montana* f. *macrophylla* [11] (= 894bp). Two distinct marker bands were produced for *H. montana* f. *macrophylla* [11] (= 650bp and 544bp) and these bands allow for the differentiation of the taxa. *H. sieboldiana* is compared by a different primer (OPB-12), which see under *H. sieboldiana* in this Species Update.
H. montana ▲
(in situ)
(Ooba Gibōshi)
Unfolding leaves in
montane grassland
Loc. cit.: Ichinoyama
(市の山);
Uonuma-shi (魚沼市);
Niigata-ken (新潟県)
Ct.: ©トキワのもり

H. montana ▼
(in situ)
AHS 1995 Excursion;
Mrs. Hideko Gowen
showing raceme. Loc.
cit.: Iwakuni-shi
(岩国市) in Yama-
guchi-ken (山口県).
(© Dr. R. Olson)
▲ *H. montana* (cultivated voucher) (オオバギボウシ = Ōba Gibōshi) ▲
Scapae/raceme/clump combination (left) and closeup of opening bud initial (right)
*Left:* Hosta Hill R.G. HH 112584 ©Schmid (*H. sieboldiana* front; *H. ‘Crispula’*
center; *H. montana* back (60 in./1.5 m tall) • *Right:* Court.: ©Maipiku (たけぼ)
▼ *H. montana* (in situ near Niigata-shi (新潟市) [© giboushiblog/7978585] ▼
Morphology Notes:
Due to its wide-ranging habitat, *H. montana* exhibits local differentiation of some morphological features. One of these is the coloration of the cataphylls. In northern ecoregions (Tohoku-chihō; 東北地方), the cataphylls have a darker color and have a bluish, glaucous color, while further south they tend to be green. The leaf margins are also differentiated. As many monocotyledons, most *H. montana* populations have smooth leaf margins. Some populations consistently show undulations, as seen on page 3. The undulations vary from wavy to uniformly curly (“pie-crust”) but this feature does not appear to have regional causes. These minor variations are of horticultural interest only.
Taxonomic Type and Synonymy:

*H. montana* var. *montana* (Maekawa) W. G. Schmid (em.; in the original sense of Maekawa) (type). Taxon Number: 404791 (USDA, ARS, National Genetic Resources Program).

*Journal of the Faculty of Science, Imperial University of Tokyo, Section 3 Botany, Vol.* 5:356–357, 361 ic. 21, 23 1940 (em.; excluding *H. montana* var. *transiens* and the synonym *H. bella* Wehrhahn 1936 which are not conspecific and have been reduced to cultivar forms).

Type: In TI No. 31: Coll. F. Maekawa, near Yamanaka-ko (山中湖), Yamanashi-ken (山梨県) and at roadsides Kanagawa-ken (神奈川県). In SAP: Coll. K. Miyabe (1981.04.08) in Hokkaidō (北海道; also Ezo, Yezo), in Shiribeshi-shichō (後志支庁), Shiribeshi (topotype to show northern distribution).

Hab.: Montane forest margins, moist grasslands and rocky river valleys in southern Hokkaidō (北海道) and on the Pacific Ocean side (表日本) (and occasionally further west) of Tōhoku-chihō (東北地方), Kantō-chihō (関東地), Chūbu-chihō (中部地方), and south to Kansai-chihō (関西地方); Sporadically further south to Kyūshū (九州), where in some areas may be cultivated transplants or grown for Ūrui = うるい = food crop).

Botanical Synonyms:

For *H. montana* var. *montana* (in sensu F. Maek. sp. typica):

*Funkia sieboldi* Lindley (with respect to the illustration): *Bot. Reg.* 25, tab 50 1839 (not *Hemerocallis sieboldii* Paxton 1838 = *H. sieboldii*).

*Hemerocallis sieboldtiana* Loddiges (pp; nom. nudum; with respect to the flowers and leaf illustrated): *Botanical Cabinet*, 19, tab. 1869 1832 = *H. ‘Sieboldiana’*

*Hosta sieboldiana* Engler; Makino in Iinuma: *Somoku Dzusetsu*, Ed. 3, 2:469, ic. pl. 6/20 1910 = *H. ‘Sieboldiana’*


*Hosta sieboldiana var. montana* Zonneveld: *Plant Biology* 3, 176-185 2001 (not accepted).
H. montana infraspecific placements
here considered synonyms:

H. montana ‘Liliiflora’ (a cultivar form):
H. montana var. liliiflora Maekawa: J. of the
Faculty of Science, Imperial University
of Tokyo, Section 3 Botany, Vol. 5:360,
361, ic. 26 1940.
H. liliiflora Maekawa (nom. nudum, with
Japanese description): Botanical
Magazine, Tokyo, 52:43 1938.
H. liliiflora Maekawa ex Araki: Acta Phyto-
taxonomica et Geobotanica, Vol. 11:328
1942.
H. montana ‘Liliiflora’ W.G. Schmid: The
genus Hosta: Gibōshi Zoku
(ギボウシ属). London and Portland:

H. montana ‘Praeflorens’ (a cultivar form):
H. montana var. praeflorens Maekawa: Journal of the Faculty of Science, Imperial
University of Tokyo, Section 3 Botany, Vol. 5:363 1940.
**H. montana** ‘Transiens’ (a cultivar form).

*H. montana* var. *transiens* Maekawa (excluding synonym *H. bella* Wehrhahn 1936):
*Journal of the Faculty of Science, Imperial University of Tokyo, Section 3 Botany, Vol. 5:363, 362 ic. 25 1940.*


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**Japanese Names and Synonyms:**
The following Japanese names and synonyms include names published in the Japanese botanical literature as names and/or synonyms:

オオバギボウシ = 大葉擬宝珠 = Ōba Gibōshi (Iinuma/F. Maek.) = Large-leaf Hosta
トウギボウシ = 唐擬宝珠 = Tō Gibōshi (Iwasaki/Iinuma) = Hosta of old; incorrectly applied; this is the classic Japanese name of *H. sieboldiana*, which is here not considered a synonym of *H. montana*.
ハヤザキオオバギボウシ = 早咲き大葉擬宝珠 = Hayazaki Ōba Gibōshi (F. Maek.) = Early-blooming large-leaf Hosta (an early blooming phenotype named *H. montana* var. *praefl ores* considered a synonym of forma typica)
ウノハナギボウシ = Ūnohana Gibōshi (a lily-flowered phenotype named *H. montana* var. *liliiflora* is here considered a synonym of forma typica).
(described as an intermediate (transitional) form between *H. montana* and *H. sieboldiana*. The Kanji 移る stands for “transitional (or changed)” and the Latin species epithet *transiens* stands for “intermediary (form).” Maekawa cited *H. ‘Bella’* Wehrhahn as being comparative, but Schmid (1991) pointed out that *H. ‘Bella’* does not fit Maekawa’s morphometry. Maekawa also stated that it is very close (“*valde similis*”) to *H. ‘Fortunei’*, a better fit morphometrically. This phenotype named *H. montana* var. *transiens* is here considered a synonym of forma typica).

Korean Names and Aliases:

 큰비비추 = Keun-bi-bi-chu (Korean [recommended])
개옥잠화 = Gae-ok-jam-hwa (Korean [alternate/alias])
صوم옥잠화 = Jom-ok-jam-hwa (Korean [alternate/alias])
큰옥잠화 = Keun-ok-jam-hwa (Korean [alternate/alias])

Horticultural and Cultivar Names applied to *H. montana*:

The following Western and Japanese names and synonyms include names published in the Western and Japanese botanical and horticultural literature as names and/or synonyms for various forms (phenotypes) of *H. montana* var. *montana*:

*H. ‘Elata’*, *H. ‘Sieboldiana Gigantea’, and* *H. ‘Fortunei Gigantea’* hort. incorrect.
*H. ‘Donahue Piecrust’; like the species, piecrust margins/ shorter scapes; (hybr.).
*H. ‘Krossa No. X-3’* and *H. ‘Krossa No. X-5’* pp..
*H. montana* ‘Creech’ hort. A clone of this taxon selected by Dr. John Creech, USNA.
*H. montana* ‘Daihaku Ryu’ hort. (*H. ‘Daihaku Ryu Ōba’ = 大白竜オオバギボウシ*); the Kanji 大白竜 [Daihaku Ryu] = Daihaku Dragon; a variant named for a place name in Toyama-ken (富山県), Imizu-shi (射水市) [AHS NR].

*H. montana* ‘Fuji Botan’ (also as *H. ‘Fujibotan’*) hort. (*H. ‘Fuji Botan Ōba’ = 富士牡丹 オオバギボウシ*); the Kanji 牡丹 [Botan] = Japanese tree peony (*Paeonia suffruticosa*) refers to the flower of Mount Fuji peony; a pale lilac, double-flowered, form found by Kenji Watanabe at Fuji-san (富士山) [NR].

*H. montana* ‘Fuji-no-Shūzan’ hort. (*H. ‘Fuji-no-Shūzan’ = 富士の正座 オオバギボウシ*); the Kanji 正座 [Shūzan] = seat of honor [AHS NR].

*H. montana* ‘Mount Fuji’ hort. (富士山 オオバギボウシ*); a green selfed seedling of *H. montana* ‘Aureomarginata’ and very close to the species [AHS J. & J. Wilkins 1989].

*H. montana* ‘Kurumazaki’ hort. (くるまざき オオバギボウシ*); a natural variant of *H. montana* with verticillate grouping of the flowers around the raceme stem (like spokes of a wheel), but otherwise identical to typical species. [AHS NR].

2010-09-02 - 20 -
H. montana ‘Mount Tsukuba’ hort. (筑波山オオバギボウシ); a selected clone of the species named for Tsukuba-san (筑波山) near Tsukuba-shi (つくば市), a city located in Ibaraki-ken (茨城県).

H. montana ‘Nanbu Mutsu’ hort. (南部むつ オオバギボウシ); a phenotype of the species discovered in Aomori-ken (青森県), near Mutsu-shi (むつ市) and named for its place of origin.

H. montana ‘Taika’ hort. (H. ‘Taika Ōba’ = 帯化 オオバギボウシ); the Kanji 帯化 means “fasciation,” (a condition where two or more scapes/racemes have fused (grown) together to form one united and distorted structure, which occasionally also produces branches; an atypical mutant form [AHS NR].

H. montana ‘Urajiro’ hort. An invalid name per the ICNCP. See H. ‘Urajiro Ōba’

H. ‘Satin beauty’; a green seedling of H. montana and much like the typical species (E. Fisher AHS 1986)

H. sieboldiana hort. incorrect. This taxon is not considered synonymous with H. montana in this Species Update.

H. ‘Urajiro Ōba’ = 裏白 オオバギボウシ; the Kanji 裏白 [Urajiro] = white back; a typical phenotype, except with a white indumentum (glaucous coating) on the leaf underside.

Notes on cultivar names applied to H. montana: The widespread habitat of H. montana has given rise to differentiated phenotypic features. (Maekawa 1940, Fujita 1976, Schmid 1991, Zillis 2009; also see pages 9-10). Major features are the basis for botanical keys but beyond that, minor phenotypical variations are discovered in the wild and they include (for H. montana): 1) a darkening in tepal coloration and tepal vein delineation at higher elevations and more northerly locations; 2) leaf shapes and sizes vary, but the number of principal veins remains constant within the given limits for mature plants (usually 12-14, but can include a few plants with less than 12 or more than 14 vein pairs); 3) leaf surface features vary to some degree, most having a shiny green top surface but some tend to dull green, while the underside can vary from shiny to dull green and rarely glaucous entirely; 4) leaf shapes are ovate with a length/width ratio of 3:2 to 6:5 and occasionally 1:1 (per Systematics Assn.); 5) leaf tips are cuspidate and often twisted and the leaf base is always cordate; 6) flowers may have multiple sets of tepals by factors of 1.5, 2.0, 2.5 and (rarely) (3.0). and 7) a number of oddities occur including fasciated scapes, branching scapes, verticillate grouping of flowers and other abnormalities. Collectors in Japan have discovered some of these anomalies among natural populations and have assigned various Japanese horticultural names to several of these phenotypical variants. Some of the better known and published names are listed above and in Part 2 of this Species Update. It should be emphasized that differentiated morphological features are influenced by localized ecology and geography, resulting in similar patterns of variation within the species H. montana. These patterns are obvious during field studies, but exact correlation cannot be determined due to the paucity of collected specimens. Sports, mutations, and occasional aberrant forms of the species also contribute to intraspecific variations, but they are isolated and of little importance to general typifying macromorphology.
**H. montana** (in situ Niigata-shi (新潟市)) • seedlings are visible near mother plant

Court.: ©Maipiku (たけぼ) [giboushiblog/7898828]

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**H. montana** (in situ; unknown loc.)

Developing racemes in montane grassland.

Note white fertile bracts on a compact raceme

Court.: ©HAIKAKORIKKU (ハイカーホク)

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**H. ‘Fuji Botan Ōba’ (NR)**

富士牡丹 オオバギボウシ

Flowers vary from white to pale lilac

Ex: K. Watanabe (御殿場市)

Court.: ©T. Nakayama/HL

1986.08.05
Economic Use: うるい = (Hosta as Food): The Japanese term うるい (うるい = 呑い) is in general use for wild plants (including hostas), which can be utilized as a food crop. Many wild Hosta species are rare (some classified as endangered) so cannot be collected as food. But  H. montana  is widespread and common and has become an agricultural weed in some rice-growing areas, so is available for harvesting as a food supplement. In this role, it is assigned the alias うるい. Thus  H. montana  (オオバギボウシ) when collected in the wild or grown as a crop is called うるい, i.e., edible wild plants. These reports state that the green-leaved, wild-collected  H. montana  is preferred over the heavier grey-leaved  H. sieboldiana. The latter originates from cultivated stock in several areas of Japan. It should be pointed out that other wild Hosta species are being used as うるい, including  H. sieboldii  (日本名: 小葉擬宝珠 alias → うるい → botanical name =  H. sieboldii) and  H. longipes  (日本名: 岩擬宝珠 alias → うるい → botanical name =  H. longipes).

Are  H. ‘Sieboldiana’ and  H. montana  synonymous? In Japan, the primary name Tō Gibōshi for  H. ‘Sieboldiana’ indicates its continued historical use in Japanese temple gardens, with the Kanji pointing to the T’ang-Dynasty (唐朝; Táng Cháo 618-907). Pictures of Japanese Zen gardens show the preferred use of hostas with a soothing, bluish grey leaf color, contributing to a calm mood for meditation and reflection (see  H. ‘Sieboldiana’, Part 1 for details). This leaf color is shown by the modern hybrid European  H. ‘Sieboldiana’ (=  H. ‘Robusta’ [nomen nudum] Arends 1905), but also shows in other hostas listed in see  H. ‘Sieboldiana’, Part 1. This accounts for the use of two primary Japanese names, i.e. Tō Gibōshi (=  H. ‘Sieboldiana) and Ōba Gibōshi (=  H. montana). The status of  H. ‘Sieboldiana’ as a taxon, i.e. a plant occurring in the wild, is not accepted here.  H. montana, on the other hand, is widely distributed all over Japan as an endemic. In Japan, I have
carefully analysed plants in several private collections labeled *H. sieboldiana* and they are *H. montana* var. *montana*, with tall scapes surmounted by elongated, tall racemes with large sterile bracts and purple anthers. Several Japanese and American researchers (Sugita 1988; Yinger, pers. comm.; Schmid 1991; Zilis 2001, 2009; Ito 2008, 2009 pers. comm.) have attempted to find endemic populations of *H. ‘Sieboldiana’* in the wild. Most of the wild populations discovered are *H. montana*. Schmid (1991) and Zilis (2009) were told by Japanese *Hosta* researchers that it could be found in northern Honshu, or possibly Hokkaido. Zilis (2009) states “during a 2006 trip to northern Japan, I was hopeful of finally seeing this elusive species.” He further relates, “unfortunately, the closest I came to seeing *H. ‘Sieboldiana’* were several specimens of *H. ‘Amplissima’* in a collection in central Honshu. Even veteran planthunters, who had found hundreds of other unusual hostas in the wild, had never seen it.” W.G. Schmid (1991) investigated a number of endemic populations in several Japanese locations and all turned out to be *H. montana*. To this, we have the 2009 observations of Taoto Ito (伊藤太乙; 2009, pers. comm.) who investigated and reported on populations by others purported to be Tō Gibōshi (*H. sieboldiana*) in Hokkaido (北海道). The
The northern limit of *H. montana* is near Otaru-shi (小樽市), but Taoto Ito reports that endemic populations exist further north, as follows: Near Ofuyu (雄冬; 43° 44' 5" North, 141° 20' 23" East) in the Hamamasu District (浜益区), Ishikari Subprefecture (石狩支庁; Ishikari-shichō). A large population reported as Tō Gibōshi is endemic on the rocky western slopes of Mount Shokanbetsudake (暑寒別岳), near Hakugin-no-Taki (白銀の滝) waterfall. Another population was discovered near Ku-maishi (熊石) in Oshima Sub-prefecture (渡島支庁; Oshima-shichō). All of the populations investigated in Kumaishi (熊石), Otaru (小樽), and Ofuyu (雄冬) are not Tō Gibōshi (*H. sieboldiana*) but Ōba Gibōshi (*H. montana*), as evidenced by the photographs included here (pages 25-27). *H. montana* is growing on near vertical rock walls and was observed during flowering period. The site is near a highway and protected by landslide netting so is not accessible for close examination, but the tall scapes and elongated racemes with white flowers are typical of *H. montana*. Nearby populations were available and could be examined in detail and were identified as *H. montana*. This indicates, at least in part, that the northern populations formerly identified as *H. sieboldiana* (Tō Gibōshi; Fujita; 1976) conform to the analysis published for *H. montana*. The “European” *H. sieboldiana* is of multi-farious origin, i.e. a hybrid and may have been imported into Japan between 1905 and 1935. Some of these specimens have found their way into Japanese collections and nurseries, where they were propagated. As described under “European *H. sieboldiana*” earlier (see pages 4-15), the epithet “sieboldiana” was assigned to several distinct hostas. Today, most plants with this label are actually green-leaved seedlings of *H. ‘Elegans’* and (Zilis 2009) states that “though sharing many traits with its famous offspring. These seedlings differ by their greener leaf color, narrower blade, limited corrugation, and a thin (vs. thick) bloom on the leaf underside.” *H. ‘Elegans’* is of cultivated origin but it is not a clone. During my visit to Europe in 1984, I saw five verified vouchers cultivated at the trial gardens of Fachhochschule (University of) Weihenstephan, Freising, Germany. I examined all five in detail and they have similar morphological features, yet are different enough to be separated as Type I through Type V. These vouchers had their origin with the hybrids produced by Arends (1905) and were distributed originally in Sweden and Germany. They are clearly from the same cross and are cultivars, but not clones of the original. The originator Arends (1905) selected at least five seedlings from his cross (see page 2) and may have selected even more. Nurserymen, eager to increase their stocks of *H. ‘Elegans’*, germinated a huge number of seeds from the five copies (or more). Seedlings with good substance and blue-green foliage were sold as *H. ‘Elegans’*, while bluish green or green-leaved hybrids were sold as *H. sieboldiana*. Thus, a large number of plants identified in gardens as *H. sieboldiana* were culls from the production by seed of *H. Elegans’* (Zilis 2009). This has been going on since 1905 and for this reason *H. sieboldiana* in horticulture it is a European creation. We also know that “the name originates from cultivated plants” as expressed by L.H. Bailey (1930). (See also *H. ‘Sieboldiana’*).
H. montana (Ōba Gibōshi)
▲▲▲ (in situ)
◄◄◄ (in situ)

identified as To-Gibōshi, but in fact Ōba Gibōshi
Loc. cit.: Kumaishi (熊石) in Oshima Subprefecture (渡島支; © 2009 Taoto Ito (伊藤太乙)
References

(The references shown apply to Parts 1, 2, and 3 of *H. montana* Species Update)


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*H. montana* (in situ)
Loc. cit.: Ashiū Primeval Forest (芦生原生林); Kyōto (京都)
Ashiū no genseirin is an old growth forest located north-west of Kyōto, Bordering Fukui-ken (福井県).

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H. montana (in situ)
AHS 1995 Field trip. Loc.: Iwakuni-shi (岩国市) • © Dr. R. Olson