**H. nakaiana F. Maekawa 1935**

*J. Japanese Botany, 11:687–689; 1935*

カンザシギボウシ = 簪擬宝珠 = Kanzashi Gibōshi = Ornamental Hairpin hosta
비녀비비추 = Bi-nyeo-bi-bi-chu = Ornamental Hairpin hosta

**History and Nomenclature:** In 1991, I determined that *H. nakaiana* must be different from *H. capitata* and I dealt with the reason for this in my book *The genus Hosta: Giboshi Zoku* (W.G. Schmid. 1991). The main problem exists because botanically these species are very similar. Some botanists consider them the same species. There are, however, convincing and scientific reasons why these taxa should remain separate species. The two species are differentiated in macromorphological characters, such as 1) The projecting under-side leaf veins of *H. capitata* are papillose, while *H. nakaiana*, has smooth veins; and 2) the anther color is different. More important, RAPD analysis (R.J. Sauve, S. Zhou, Y. Yu, and W.G. Schmid. 2005) has determined that *H. nakaiana* can be differentiated from *H. capitata* with a single RAPD primer. This subject is also discussed under the species *H. capitata*, to which refer. This nomenclature problem began when Maekawa (1935, 1940) identified only Japanese populations as being *H. capitata* while concurrently establishing a new taxon based on Korean type specimens, calling it *H. nakaiana*. On the other hand, Maekawa (1940) used for *H. capitata* several type specimens from populations located only in Japan proper in the prefectures ▼▼▼ shown in red on map below.
Field studies also include Iyo-no kuni (伊予国; in Tokushima-ken), Hizen-no kuni (肥前国; in Nagasaki-ken); Ise-no kuni (伊勢国; in Mie-ken) and Mimasaka-no kuni (美作国), in Okayama-ken.

The *H. capitata*/*H. nakaiana* Relationship.

According to my own research (Schmid 1991, 2005), these disjunct Japanese populations are phenotypically similar to *H. capitata*, but they differ in key analytical features detailed in the following. Zilis (2000) reports observation of two forms of *H. capitata*: One from Shikoku (no exact location given) and the other from Tokushima-ken, also on Shikoku. The former is described by Zilis as having narrower leaves and the latter having wider leaves and “closely matching what has been grown in North America” under the name *H. capitata*, but with no specific phenotypical analysis, these taxa could also be *H. nakaiana*. Maekawa (1935, 1940) also assigned a Japanese name, namely *Kanzashi Giboshi* =簪擬宝珠 = カンザシギボシ, which translates to “ornamental hairpin hosta.” The equivalent Korean name is Bi-nyeo-bi-bi-chu = 비녀비비추, which also translates to “ornamental hairpin hosta.” Chung (1990) indicates that the phenotypically similar *H. nakaiana* (Maekawa 1935, 1940) is synonymous to *H. capitata*, at least as far as the Maekawa collections in Chollanam-do(!), Korea, are concerned. This taxonomic decision answers the question as to the identity of the taxa called *H. nakaiana* in Maekawa 1940. The species listed by Maekawa under his name *H. nakaiana* and having been collected in Korea by Nakai
are in fact *H. capitata*. On the other hand, Nakai (1930) collected from several populations located in Japan proper on the west coast of central Honshu in the prefectures shown in the map above (Page 1) and these were for some reason identified by Maekawa (1940) as being *H. capitata*, which they are not. These Japanese populations are phenotypically similar to *H. capitata*. I have maintained systematic separation and treated *H. nakaiana* as separate Japanese populations, realizing that they may in fact be putative hybrids that are fully fertile. Chung (1990) further indicates the phenotypically similar *H. nakaiana* (Maekawa 1935, 1940) is synonymous to *H. capitata*, at least as far as Maekawa’s collections in Chollanam-do (South Jeolla; 전라 남도) are concerned. This taxonomic decision answers the question as to the identity of the taxa called *H. nakaiana* in Maekawa (1940). The species listed by Maekawa under his name *H. nakaiana* and collected in Korea by Nakai are in fact *H. capitata*. This also includes specimens Nakai (1930) collected from several populations located in Japan proper on Shikoku (四国), in Iya Valley (祖谷渓谷) of Tokushima-ken (徳島県); in Hizen-no kuni (肥前国), now part Nagasaki-ken (肥前国) on Kyūshū (九州), and Ise-no kuni, now Mie-ken (三重県) in Kansai-chihō (関西地方), central Honshū (本州), now part Nagasaki-ken (肥前国); all identified by Maekawa (1940) as *H. capitata*, and the Japanese populations are phenotypically modified forms of *H. capitata*, changed by long periods of isolation in a different habitat. Some populations have since been identified as *H. nakaiana*, a species similar to, but not identical to *H. capitata* (see page 6).

1) The projecting under-side leaf veins of *H. capitata* are papillose, while *H. nakaiana* has smooth veins.

2) Genome Size: DNA content (2C) in pg (10^{-12} gram) = 19.3 ± for *H. capitata* and 17.6 for *H. nakaiana* (Zonneveld, B.J.M. and F. Van Iren. 2001).

3) RAPD/PCA DNA analysis differentiates the *H. capitata* from the Japanese *H. nakaiana* so I have maintained systematic separation and treated *H. nakaiana* as a separate species (RAPD in Sauve, R.J., S. Zhou, Y.Yu, and W.G. Schmid; 2005). Zilis (2000) reports two forms of *H. capitata*: One from Shikoku (四国; no loc. cit.) and the other from Tokushima-ken (徳島県), Shikoku. The former has narrow leaves and the latter has wider leaves and Zilis states “closely matching what has been grown in North America” under the name *H. capitata*. T. Nakai specimens in TI (named *H. nakaii*; see page 2) and my own observations in loci show that some of the Japanese *H. nakaiana* populations are interspecific hybrids. Several Japanese vernacular names are being used to describe these different forms, an indication of their variability. For example, a large-leaved phenotype is has been given the vernacular name Ōba-Kanzashi Gibōshi = オオバカンザシギボウシ, “Kanzashi” being the transliterated Japanese name for *H. nakaiana* (= Kanzashi Gibōshi). Also in Japan, the kana name カンザシギボウシ = Kanzashi Gibōshi is in some areas considered a vernacular name for *H. capitata* in botany and horticulture.

The genus *Hosta* includes two taxa with tightly capitate flower buds enclosed by congested (imbricate), fertile bracts. At anthesis, the opening bracts are followed by closely spaced flowers that are opening several at one time. The botanical names *H. capitata* and *H. nakaiana* together with their equivalent Japanese Kana names イヤギボウシ (= Iya Gibōshi) and カンザシギボウシ (= Kanzashi Gibōshi) have
### COMPARATIVE MACROMORPHOLOGY

See page 14 for DNA banding and genome weight comparisons

<table>
<thead>
<tr>
<th><strong>H. capitata</strong> (祖谷擬宝珠)</th>
<th><strong>H. nakaiana</strong> (簪擬宝珠)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Koidzumi) Nakai 1930</td>
<td>F. Maekawa 1935</td>
</tr>
<tr>
<td>イヤギボウシ = Iya (Village) Gibōshi</td>
<td>カンザシギボウシ = Ornate Hairpin Gibōshi</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Anthesis: July-August • Fertile</th>
<th>Anthesis: June-July • Fertile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bud initial globular, capitate, top rounded; raceme very compact, gathered at top of scape; 5 to 10 flowers</td>
<td>Bud initial first spicate, top pointed, raceme less compact, 10 to 22 flowers</td>
</tr>
<tr>
<td>Perianth campanulate</td>
<td>Perianth funnelform, but with expanded tubus dilatatus</td>
</tr>
<tr>
<td>Scape with lamellar ridges, long, slim; bending down in situ to subhorizontal; arcuate; 55 to 75 cm (22 to 32 in.)</td>
<td>Scape with lamellar ridges, upright or slightly leaning; 46 to 53 cm (18 to 21 in.)</td>
</tr>
<tr>
<td>Single scape per rhizome in situ and in cultivation; rarely more</td>
<td>Multiple scapes per rhizome develop in situ and cultivation</td>
</tr>
<tr>
<td>Single sterile bract below bud initial, large, leafy turning white; withering at anthesis</td>
<td>Sterile bracts large, thick, leafy, grey-green; withering after anthesis</td>
</tr>
<tr>
<td>Leaf larger, 18.0 × 10.5 cm (7.0 × 4.0 in.) cordate, margins entire; wavy, frequently sinuate margin; veins papillose underside</td>
<td>Leaf smaller 9.0 × 6.5 cm (3.5 × 2.5 in.) ovate-cordate; margins entire; sometimes wavy; veins smooth underside</td>
</tr>
<tr>
<td>Veins: 7-10 principal veins</td>
<td>Veins: 5-7 principal veins</td>
</tr>
</tbody>
</table>

*) Genome Size: DNA content (2C) in pg $(10^{-12}$ gram) = 19.3 ± for *H. capitata*  
*) Genome Size: DNA content (2C) in pg $(10^{-12}$ gram) = 17.6 for *H. nakaiana*


used interchangeably for both taxa. This is due to both species being morphologically very similar, but only *H. capitata* has been reported in Korea as well as in southern Japan. The classic Japanese Kanji are 祖谷擬宝珠 for *H. capitata* and 簪擬宝珠 for *H. nakaiana*. Some botanists consider these taxa to be the same species and have suggested that the names are synonymous (q.v. Maekawa 1969; Fujita 1976). The type of *H. capitata* (in TI) was found in Japan, on Shikoku (四国), in the old province of Awa no kuni (阿波国), now part of Tokushima-ken (徳島県). The reported loc. cit. of collection is recorded near Iya-mura (谷山村) in Iya Valley (祖谷渓), hence the name 祖谷擬宝珠 (= Iya (Village) Gibōshi). The basionym for *H. capitata* is *H. cærulea* var. capitata by Koidzumi (1916). As a synonym, the name *H. capitata* has priority over the binomial *H. nakaiana*. On the other hand, *H. nakaiana*
according to Maekawa (1935, 1937, 1940) is found both in Korea and southern Japan, but its type was collected in Korea, fide T. Nakai (in TI), loc. cit. in “Zennan” (now Chŏllabuk-to [전라북도 = Northern Jeolla]) near “Hakuunzan” (Baegunsan (백운산; 白雲山; 1,278.6 m [4,195 ft]). Thus, the Korean endemic *H. capitata* has a Japanese type location and *H. nakaiana* considered a Japanese endemic has a Korean type location. The two taxa are very similar morphologically, but field investigations and voucher specimens collected in Korea, compared with vouchers seen, measured and photographed on Shikoku in Iya Valley (祖谷渓) confirm that considerable differentiation exists (coll. W.G. Schmid 1989; M.G. Chung/UGA 1989, 1900; T. Avent/D. Probst 1997). See also comparative morphometric analysis on page 4).

**Habitat and Biology:** *H. nakaiana* speciated or developed in the southern of the Japanese archipelago. It is represented by widely spaced populations (see map on Page 1). The possibility exists that it became established when displaced specimens of *H. capitata* from Korea intergraded with one or more Japanese species. The lack of papilllose veins projecting the leaf underside points to that. The possible interspecific cross now cultivated under the binomial *H. nakaiana* has smooth veins and is fertile, thus establishing itself in the wild in disjunct Japanese areas. Several forms have evolved but they differ, some with larger, others with narrower leaves. *H. nakaiana* is larger than *H. venusta* and the flower bud is first spicate-capitate, then becomes globular after bracts open, the scapes solid not hollow and the flowers arranged densely on the raceme, abbreviated, and not racemose; all of which are principal differences. Most of the plants cultivated in North America are smaller than those reported by Zilis in 2000. In fact, a majority of cultivated specimens originated from the same
source. Specimen used for the 2005 RAPD study came from cultivated samples that can be traced to vouchers imported to the United States from Osaka University (大阪大学, Ōsaka daigaku) in the 1950s (Krossa, 1966) and filed as a herbarium specimen in BH in 1962. A number of herbarium specimens indicate that H. nakaiana, as currently delimited, may be representative of interspecific hybrid swarms formed by the union of cultivated specimens of a Korean species with one or more native Japanese species a long time ago. Zilis (2009) suggests it could be native to Korea and naturalized in southern Japan but this is not confirmed by M.G. Chung (1989).

**Plant Morphology:** Plant size to 16–22 cm dia., 12 cm high (6–9 by 5 in.). Petiole 9–10 by 0.4 cm wide (2–4 by 0.135 in. wide), ascending in an arch, forming a dome-shaped plant, slender, narrowly open. Leaf 6–9 by 3.5–6 cm (2.5–3.5 by 1.5–2.5 in.), ovate-cordate, very truncate at the base, transition usually very contracted, recurving, acuminate tip, interior leaf flattish, margin undulate, wavy, not pruinose, surface with metallic sheen, shiny below, dark green above, lighter green below, opaque. Venation 4–7, very thin, not much sunken above, smooth below. Scape 40–50 cm (16–20 in.), distinct lamellar ridges parallel or slightly spiral to scape axis, straight, erect, usually perpendicular. Fertile and sterile bracts navicular, grooved, thick, green, ascending, imbricated even during flowering and nearly equal in size, persisting at anthesis but withering soon after; developed unopened flower head first spicate, then globular, capitately after bracts open. Raceme 12 cm (8 in.) 6–15 flowers. Flowers 4.5–5 cm long, 2.5 cm broad (2 by 1), closely spaced on expanded raceme, held erect in ±horizontal position on strong pedicels, dark veins on a lighter colored background, perianth pale purple-violet, with white markings, ▲▲▲ Type B coloration; ex-panding, in the central part dilated, bell-shaped, lobes ±angled to the axis, stamens exerted. Anthers purple. Seed pods dark green, sometimes purple; July. Fertile.

**Taxonomic Type and Synonymy:**


**Typus:** F.C. Graetrex, coll. loc. cit.: in Hizen-no kuni (肥前国), now part Nagasaki-ken (肥前国) on Kyūshū (九州), Mt. Taradake (多良岳).

**Botanical Synonyms:**

*H. capitata* (Koidzumi) Nakai. *Botanical Magazine*, Tokyo, 44:514 1930 (synonymy applies only to the types collected in Japan which are considered here *H. nakaiana* (M.G. Chung 1989))

**Japanese Language Synonyms:**

*H. nakaiana* = Kanzashi Giboshi = カンザシギボウシ =簪擬宝珠 = Ornamental Hairpin hosta

**Korean Language Synonyms:**

*H. nakaiana* = Bi-nyeo-bi-bi-chu = 비녀비비추 = Ornamental Hairpin hosta

**Horticultural Synonyms:**


*H. nakaiana* hort. incorrect. *H. venusta* ‘Carder’ (in part)
Smooth principal veins on leaf back ▲ Bud initial covered by bract colored ▲ veins and lamellar ridges to scape axis

*H. nakaiana* = Kanzashi Giboshi = カンザシギボウシ

Loc. cit. coll.: 济州島産 (Plants grown on Cheju Island)

© yahoo.jp/parismina_brachy

▼ Lamellar scape ridges not as ▼ pronounced as in *H. venusta*

▼ Tepal interior coloration ▼

*H. nakaiana in Cultivation:* The first specimens of what may have been *H. nakaiana* arrived from Osaka University in the 1950s (Krossa, 1966), however there is no proof that they were in fact that species. Initial imports of unknown attribution were not identified and were given a number of horticultural names (see horticultural synonyms). Summers No. 204 lists “*H. nakaimo minor*” in 1967. That incorrect name
was also affixed to herbarium specimens of that time. The origin of the first *H. nakaiana* (identified by its binomial) is due to the activities of the American collectors J.E. Craig and L.B. Davidson, who resided in Japan for some time. I have reported on their activities in detail (W.G. Schmid 1991; pp. 250-252). Their collecting was also partially documented in the early issues of *The American Hosta Society Bulletin*, (1970, 1971, 1972 and 1976), to which refer. Craig and Davidson were assisted in their explorations by Japanese botanists, including Dr. Moria and Dr. Miyazawa, and several private collectors, including Hirano-san and Hamada-san. These collections brought a number of species to North America, among them two specimens of *H. nakaiana*, but unfortunately their exact original collection parameters were not recorded. *H. nakaiana* is an important factor in the creation of many named and unnamed cultivars. It is an extremely fertile pod parent ♀ and has produced huge numbers of hybrid seedlings. Due to manifest heterozygosity, *H. nakaiana* shows increased variability among its seedling progeny, most of which is expressed in larger size. This can also point to interspecific hybrid origin. Zilis (2000, 2009) indicates that the original imports may have been dwarfed clones of the species, which also supports his report of larger-sized plants he identified as *H. capitata*. However, these may actually be part of the highly variable and disjunct *H. nakaiana* populations of Japan. This variability and the proclivity of its seedlings to sport made it one of the foremost parent cultivars of the 1970s, in particular the lines bred by Eunice Fisher and R.R. Savory. A sport of one of its seedlings is *H. ‘Golden Tiara’* started the “Tiara Craze.” In addition to the *H. Tiara Group*, the list of related cultivars
Shirofukurin Kanzashi Gibōshi = 白覆輪カンザシギボウシ = white-margined form, is often considered to be H. ‘Allan P. McConnell’ but is most likely not a direct sport of H. nakaiana, considering it does not have the flowers gathered at the top of the raceme (See picture page 10).

**Horticultural Progeny:**
Note that only direct species progeny is shown. If a H. nakaiana hybrid is involved in a sport (H. nakaiana is part of the sport indirectly), or the cultivar is a sport of a H. nakaiana hybrid sport, List 3 will include the cultivar name. The following code abbreviations are used:

♀ = the species as a pod parent directly = List 1
♂ = the species as a pollen parent directly = List 2
All other cultivars in which H. nakaiana is involved = List 3

List 1: Cultivars with H. nakaiana ♀ as a pod parent:
H. ‘Betty’ = ♀ H. nakaiana × ♂ H. ventricosa by R. H. Benedict 1983
H. ‘Big Hearted’ = ♀ H. nakaiana × ♂ H. sieboldiana by R. H. Benedict 1983
H. ‘Big Blue Boy’ = ♀ H. nakaiana × ♂ H. sieboldiana by D. Stone and AHS 1986
H. ‘Bouquet’ = ♀ H. nakaiana × ♂ H. ‘Birchwood Ruffled Queen’ by S. Moldovan; AHS, K. Walek (R) 2009
H. ‘Dear Heart’ = ♀ H. nakaiana × ♂ H. ‘Blue Boy’ by E. Minks 1975
H. ‘Drummer Boy’ = ♀ H. nakaiana × ♂ H. ‘Ruffled Queen’ by S. Moldovan 1983
H. ‘Floradora’ = ♀ H. nakaiana × ♂ H. longipes hybrid by P. Aden 1978
H. ‘Holly’s Hybrid’ = ♀ H. nakaiana × ♂ (?by P. Ruh 2002
H. ‘Lorna’ = ♀ H. nakaiana × ♂ H. venusta by R. H. Benedict 1983
H. ‘Peter Pan’ = ♀ H. nakaiana × ♂ H. ‘Helen Field Fisher’ by E. Minks 1980

List 2: Cultivars with H. nakaiana ♂ as a pollen parent:
H. ‘Oxheart’ = ♀ H. ‘Green Platter’ × ♂ H. nakaiana by E. Minks 1976
H. ‘Warwick Curtsey’ = ♀ H. ‘Dorothy Benedict’ × ♂ H. nakaiana by L.G. Jones AHS/K. Walek (R) 2009
H. ‘Warwick Edge’ = ♀ H. ‘William Lachman’ × ♂ H. nakaiana by L.G. Jones 1993

List 3: Other cultivars with H. nakaiana involved:
H. ‘Bountiful’ by E. Fisher 1971 = Sport of: H. nakaiana Hybrid
H. ‘Candy Hearts’ by Ruh 1989= Sport of: H. nakaiana Hybrid
H. ‘Dixie Queen’ by R. Savory 1982 = Sport of: *H. nakaiana* Hybrid
H. ‘Duchess’ by R. Savory 1982 = Sport of: *H. nakaiana* Hybrid
H. ‘Egret’ by R. Savory 1984 = Sport of: *H. nakaiana* Hybrid
H. ‘Fond Hope’ by E. Fisher 1973 = Sport of: *H. nakaiana* Hybrid
H. ‘Goldbrook Genie’ by S. Bond 1989 = Sport of: *H. nakaiana* Hybrid
H. ‘Happy Hearts’ by E. Fisher 1973 = Sport of: *H. nakaiana* Hybrid
H. ‘Heartleaf’ by E. Fisher 1971 = Sport of: *H. nakaiana* Hybrid
H. ‘Kilowatt’ by M. Armstrong 1970 = Sport of: *H. nakaiana* Hybrid
H. ‘Lucky Charm’ by E. Fisher 7 AHS 1986 = Sport of: *H. nakaiana* Hybrid
H. ‘Marquis’ by R. Savory 1982 = Sport of: *H. nakaiana* Hybrid
H. ‘Pastures New’ by E. Fisher 1971 = Sport of: *H. nakaiana* Hybrid
H. ‘Shells at Sea’ by A. Arett 1980 = Sport of: *H. nakaiana* Hybrid
H. ‘Soft Touch’ by R. Savory 1977 = Sport of: *H. nakaiana* (?)
H. ‘Special Gift’ by E. Fisher 1973 = Sport of: *H. nakaiana* Hybrid
▲▲▲ **H. nakaiana** open flowers  
© by P. Woodbury/HL

**H. nakaiana** seed pods ▲▲▲  
Hosta Hill R.G. 1994.08.29  
Photo © W.G. Schmid

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**H. nakaiana** with *H. ‘Shade Fanfare’* (Aden 1986) in Garden Setting  
Fern at left is *Athyrium niponicum* ‘Pictum’  
Photos by W.G. Schmid ● At Hosta Hill R.G. 1994.06.15
H. nakaiana
(cultivated plants)

1) Specimen with elongating scapes and bud initials

2) Raceme with opening bud initials and sterile bracts

3) Reblooming clump with old scape and seed pods and new scapes with flowers
**Color Note:**
Of the several selections of *H. nakaiana*, the color pattern of scapes, buds, tepals, bracts and seed pods (see Page 8) changes somewhat. It appears that the relative sun exposure has some effect on final coloration. Usually, in northern latitudes the color deepens somewhat, while high light levels further south result in less coloration. The bracts are first green, turn whitish when the bud opens, then turn green again before withering.

*H. ‘Allan P. McConnell’* ►
(M. Siever 1980)
At Hosta Hill R.G.
© W.G. Schmid 1989.06.19

This cultivar is often considered a sport of *H. nakaiana*, but it is closer to *H. minor*, considering the much longer raceme when compared with *H. nakaiana* and widely spaced flowers. In Japan, it is often called *Shirofukurin Kanzashi Giboshi* = シロフクリン カンザシギボウシ (also 白覆輪 カンザシギボウシ). This application of the Japanese cultivar to *H. ‘Allan P. McConnell’* is probably incorrect. Registered by M. Seaver in 1980, it is listed with “origin and parentage unknown.”

◄ *H. ‘Birchwood Gem’*
F. Shaw (by P. Ruh 1989). This cultivar is listed as a sport of *H. nakaiana* but no parentage is given. It looks much like the species and may be an F1 seedling or selfed progeny.
Note: Illustrations of most of the cultivars listed on page 10 and 11 can be accessed in the cultivar photo section of The HostaLibrary.
Go to HostaLibrary.org
References:
Maekawa, F. 1940. The genus Hosta. J. of the Faculty of Science, Imperial University Tokyo, Section 3 Botany, Vol. 5:317–425.
Portland: Timber Press.


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