# Part 4E

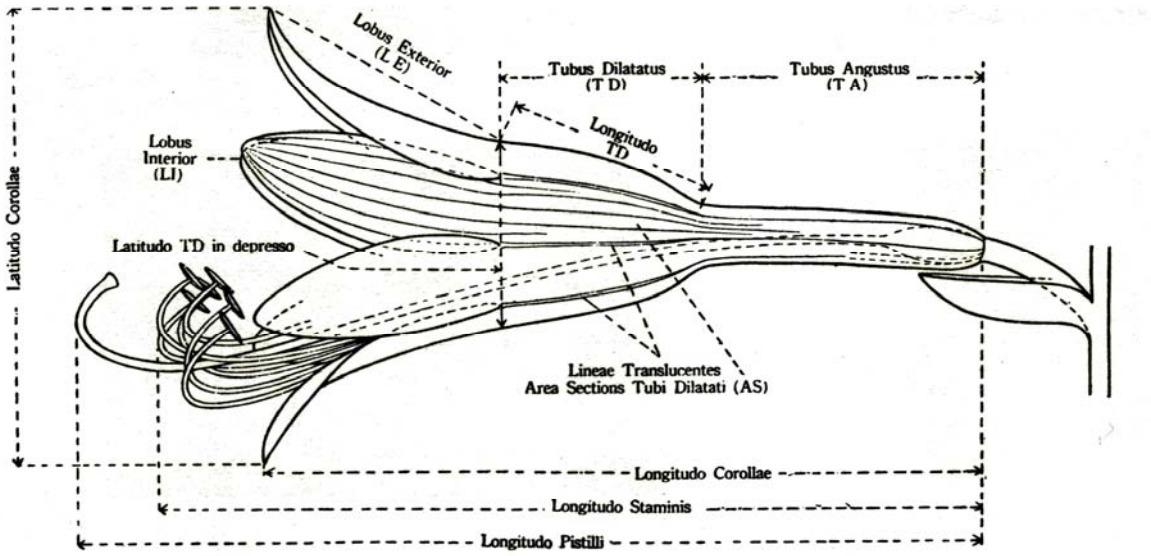
## *Hosta* Species: The *Hosta* Flower

**By W. George Schmid ®2006 for the Hosta Library**



***Flowers:*** **The flowers of hostas are mostly ignored. It is the colorful leaves of the cultivars that attract gardeners. Notwithstanding, hosta flowers are very attractive. The one feature that seems to be of negative value is that they last but one day. Most of the species have well-populated racemes so they remain attractive for some time. Some species have fragrant flowers, but only in *H. plantaginea* is the fragrance strong enough to be easily perceived in the garden. While there are bell-shaped and spider-shaped flowers, most of the flowers in the genus are funnel-shaped as shown below. Double flowers and flowers with petaloid stamens that appear like double flowers do occur in species, as in *H. montana* 'Yae', *H. plantaginea* 'Aphrodite, and *H.* 'Venus', also a derivation of *H. plantaginea.***

**The Beautiful Flowers of *H.* 'Nakaimo'**
**W.G.Schmid Photo ● Hosta Hill; June 1986**




## Composition and Structure of the *Hosta* Flower

**Del. F. Maekawa 1940**

***Flower Shape*: The flower is composed of a narrow tubular section (*tubus angustus*) followed by an expanding section (*tubus dilatatus*) formed by 6 lobes. The 3 exterior lobes (the calyx) are technically sepals and 3 interior lobes (the corolla) are petals but there is little difference between them so they are called tepals. All are either white or colored and together form a perianth which combines calyx and corolla parts. Because there is no distinction between calyx and corolla the entire structure has been referred to as a corolla by Maekawa, whilst other authors correctly call it a perianth (Fujita, 1976a). The center section of the perianth beginning at the point of expansion to the onset of the lobes is either funnel-shaped (*corolla infundibuliformis*) or bell-shaped (*corolla campanulata*) with many in-between shapes. This central shape gives the flower either a funnel-shaped or bell-shaped character. Most cultivars have a more or less bell-shaped flower, while a few have truly funnel-shaped inflorescence The spider-flowered species of section**

**Bell-shaped Flower**
***H. ventricosa* Hosta Hill 1983**

**Spider-shaped Flower**
***H. laevigata* Hosta Hill 1988**

***Arachnanthae*** **are basically funnel-shaped in outline but the lobes are separated giving a spider-flowered appearance.**

**One exception to these two major types is those flowers which do not open. These closed perianth (*corolla clausa*) types develop to the point, where the flower would normally open its lobes, but, in these cases, the flower remains closed in bud form until it dries and separates from the pedicel. This character is not limited to the latter but has also been observed in hybrids in which the perianth expands but the lobes remain closed and remain on the raceme for 2 to 3 weeks until the closed flower drops from the pedicel.**

**Most species in the genus have flowers that are 5.0 ─6.3 cm (2.0 ─2.5 in.) [±] long. The only exception is *H. plantaginea*. It has large flowers that are 13 cm (5 in.) [±] long. The illustration below shows the relative size difference. Scale is indicated by match sticks, the shorter being 1 cm and the longer 1 inch.**

***Hosta*** **Flower Sizes**
**Average left and right ● Largest Center**

## Flower Coloration

**Identification of cultivars by the average gardener depends mostly on shape and color of leaves only and this is possible to some degree due to distinct leaf shapes and variegation patterns. Flowers, observable for only a short period during each season, are usually not considered. For botanical determinations on species, close inspection**

**of flower perianth color is in many cases an absolute necessity for correct identification because leaf morphology in species can vary considerably.**
**Flower colors have been commonly characterized as being lilac, rose-purple, purple, blue, lavender, mauve, white and even pink. Obviously, some of these colors are personal interpretations of the color spectrum and just as "gold" and "silver" are in the eye of the beholder, so is "pink." Exact description of flower-color is as difficult as describing leaf-colors, but botanical guide lines are available and given later.**

***H. pachyscapa* Maekawa 1940**
**Showing Typical Funnel-shaped *Hosta* Perianth**
**W.G.Schmid Photo ● Hosta Hill 1989**

***Perianth Colors*: Detailed analysis of flower coloration is presented in this section. It is, among many other traits, used primarily for species identification:**

***Detecting Flower Color Patterns*: To permit easy observation and side-by-side comparison of color patterns I developed a procedure for analysis which can be performed by the average gardener, although it might put his patience and dexterity to test:**

**1. Collect a single flower cutting it flush with the stem. Remove the bract. Cut off the pedicel with the base section of the ovary to permit easy removal of the stamens and style.**

**2. With a sharp blade cut the flower lengthwise between two lobes all the way to the narrow tube end. Unroll the perianth to create a fan consisting of the six lobes. Flatten out the fan on a dark surface and place a small pane of glass over it. The inside of the perianth (the tepals) now on top facing the observer will look as shown in the illustration below.**

**3. The color pattern can now be analyzed and studied in detail.**

*H. plantaginea* 'Aphrodite'
(Maekawa 1940) Schmid 1991
W.G.Schmid Photo ● Hosta Hill 1988

***Red-Blue Perception*: Characterizing colors belonging to this group is very difficult, because these colors are perceived differently by different observers. It is obvious that early botanists have had difficulty with the placement of purple, which is the color most frequently seen in *Hosta* flowers. Characterization of purple from a botanical standpoint has caused confusion and a definition quoted from Jackson (1899) is meaningful so is reprinted here: "Purple is variously understood. Practically, it is any mixture of blue and red. Saccardo (1912) treats it as synonymous with crimson, but the majority regard it as having more blue in its composition. *Purpureus*, *porphyreus*, therefore, are general in their application, followed by *purpurascens*, *purpurellus*, *purpurinus* and *porphyreo-leucus*. *Atropurpureus* is familiar to most in the old cultivated 'Sweet Scabious', *Scabiosa atropurpurea;*; *lilacinus*, *lilaceus*, *syringus* recall the tint of *Syringa vulgaris* (Common Lilac). Colder in hue we have the violets: *violaceus*, *violeus*, *ianthinus*, *ionides* to recall the violet in all its shades, deeper tones denoted by *amathysteus*, *amathystinus*, *hyacinthinius*, and *atro-violaceus*."**

**Most *Hosta* flowers are colored in shades of purple. Since "one observer's purple may be another's blue," an examination of the color purple follows. The background color in flowers is usually white but some have suffused lavender or purple coloration. Background color either alone or combined with blue-lavender-purple striping or suffused effects result in the separation of species into perianth color types as described in the following and used in the individual species descriptions. There are several factors, which affect the development and recognition of color, namely geographic latitude, seasonal timing, and location and pattern on the lobes.**

**1. *Geographic Latitude*. During a data-gathering visit to England in July 1988, I noticed flower colors in southern England are very intense. This may indicate that perhaps the latitude at which plants are grown might affect the colors. The coloration of the lobes is much darker in gardens south of London at 51° North latitude than those in Atlanta at 34° North latitude, or anywhere else in North America below 45° North latitude. Not only are the colors deeper near London but in some cases buds take on a transparent, bone china look. My hosts described this as a normal occurrence. The flowers of *H. kikutii* which are near white in their native habitat on Kyushu and Shikoku (between 30° and 34° North latitude) and also near white near**

**Atlanta (34° North latitude) are lavender suffused near London. Occasionally in my garden, some taxa re-bloom in the fall and these flowers are usually darker, indicating perhaps, that night-time temperatures may also be involved. More study is needed to determine the reasons.**

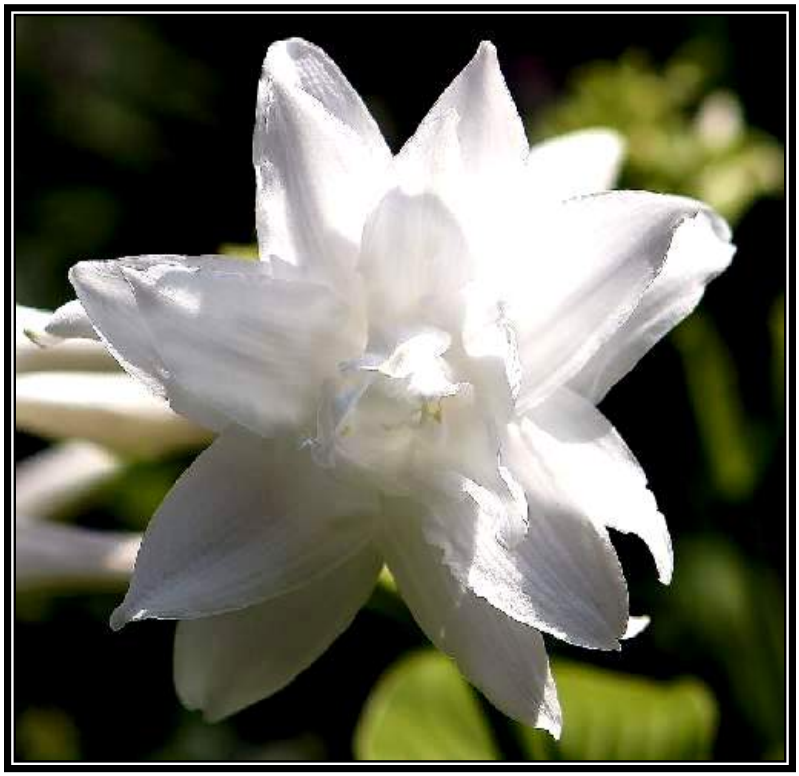
**2. *Seasonal Timing.* The exterior of flower buds is initially more intensely colored, becoming paler as the flower expands so that after opening, the interior of the perianth is more strongly colored than the exterior. In the morning the colors are stronger and fade as the day progresses.**

**3. *Location and Pattern.* Maekawa (1940) was first to classify the location and the pattern of color fields on the interior of the lobe: 1) Very dark colored veins on a lighter colored background; 2) dark colored veins on pale or white; and 3) white or near-white lobes.**

***H. plantaginea* 'Aphrodite' (Maekawa 1940) Schmid 1991**
**Roy Davis Photo**

**Maekawa's system requires the colors to be assessed on the inside of the perianth, because it is where the most intense coloring occurs in the opened flower. This method requires more care and better timing than the casual observance of the exterior flower-color. It is, nevertheless, the only precise way to utilize flower pigmentation patterns for identification purposes. Users of this method must regard this principle.**

**Maekawa's method also includes consideration of transparency or non-transparency of the veins in the perianth, as well as the placement of colored field alongside them but these are difficult to detect with knowledge and caution. Interspecific hybridization causes the characteristic color patterns of species to be muddled and so their interpretation becomes inexact. Early generation hybrids originating from parents belonging to the same taxonomic section and removed one or two generations from these parents ($F_1$ and $F_2$) can carry over some distinct color patterns, but succeeding hybrids no longer show the standard configurations consistently and reliably. For species identification, however, pigmentation of the perianth is important. It is indispensable for the determination of pure specific material versus inter- and intraspecific natural hybrids occurring in the wild.**



**H. plantaginea 'Venus'**
**(C.H.Falstad/Walters Gardens 1993)**
**Paul Heljum Photo**

**Some species are very easily identified, for example a *H. montana* type or *H. sieboldii*, without resorting to the examination of perianth flower coloration. The general appearance of the plants and their leaves allow positive identification in most cases. A large group of taxa in the genus have white flowers with little coloration. Although there are distinct differences in veining, they are too minute and difficult to detect in simple procedures. Fortunately, most white-flowered species are well known and possess other, very distinct features useful for identification. Flower pigmentation patterns are most effective in identifying the lesser known groups of wild hostas, such as the *H. kikutii* group (section *Rhynchophorae*) and the *H. longipes* group (section *Picnolepis*).**

***Timing of Observation*: For the purpose of arriving at a standard, the color should be observed at the time the flower opens. This occurs just before or just after sunrise in day-blooming species and cultivars.**

***Location of Coloration*: The coloration on flowers is not simple or uniform but occurs as complex patterns, more visible on the *inside* of the flower perianth, than on the outside. The color appears as stripes or colored fields, usually in a purple, on white, lavender or purple background. This system recognizes four types which are reflected in the systematic keys and used for classification:**

**Type A. White or near-white: *H. plantaginea*; Sections *Helipteroides* (*H. sieboldiana*, *H. montana*) and *Rhynchophorae* (*H. kikutii* complex).**

**Type B. More or less uniform medium to dark background color, stripes visible but not obvious and blending into background. Margins partially or entirely white: Section *Eubryocles* (*H. ventricosa*), Section *Lamellatae* (Korean species), Section *Arachnanthae* (*H. yingeri*, *H. laevigata*).**

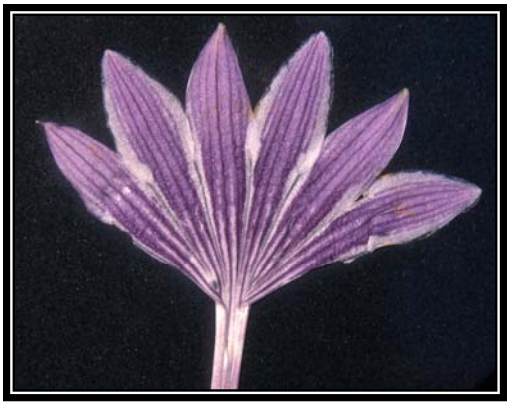
**Type C. Obvious dark colored stripes on colored background of different intensities: Section *Nipponosta* (*H. sieboldii* and *H. rectifolia* complex).**

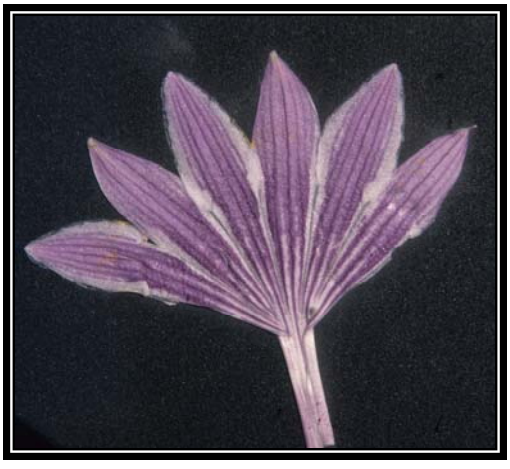
**Type D. Colored field in center of lobe with no obvious stripes, surrounded by mostly white or very lightly tinted background color: Section *Picnolepis* (*H. longipes* complex)**

**There are obvious, overlapping characteristics which may be due to the extensive intra– and interspecific hybridization in the natural habitat. In some of the key groups, as for example Sections *Picnolepis* and *Nipponosta*, the coloration of the lobes is quite distinct and can be used for positive identification.**

***Type A* • Whitish, white:**
**Having the appearance of white, but actually not a pure white. *Hosta plantaginea* has flowers that approach a pure white. This white is combined with a waxy sheen surface effect. It has been called a waxy white. Representatives in section *Helipteroides*, as *H. montana* and *H. nigrescens* appear whitish. The veins are barely visible but there may be a noticeable lavender tint in the lobes and this coloration varies with abiotic factors (the environment). Type A color is meant to be mostly white, or, with a white appearance. A good example is *H. kikutii* which has wild populations with whitish flowers and was so diagnosed by Maekawa (1940). In cultivation it often takes on a distinct lavender color not normally seen in the wild although Fujita (1976a) included some atypical populations with colored lobes.**

***Type B* ● Purple:**
**Intensely purple-colored veins on each interior lobe surrounded by more or less tinted (purple and dark mauve, lilac, or lavender) areas which are bordered by a thin white margin. Most of the inside of the perianth is colored. The narrow tube may be tinted or near white. On the outside this coloration appears as uniform, purple coloration. This is seen in the species *H.ventricosa*, *H. capitata*, *H. nakaiana* and many of their hybrids. The purple stripes (veins) are barely visible and a more or less uniform purple field surrounded by narrow, white margins takes their place.**





***Type C* ● Purple striped:**
**The veins in each inner lobe are very intensely colored, usually a dark purple, with the adjacent areas very pale suffused lilac or near white giving a striped effect. On the outside these flowers are near white, with some tint showing through. This type of coloration is common in the *H. sieboldii* group and its variants and hybrids. Exceptions are the white-flowered variants of this group, such as *H. sieboldii* `Alba' and *H. sieboldii* `Louisa'.**

***Type D* ● Lavender:**
**A large group of species have veins in the inner lobes which are very pale and almost the same color as the background so barely visible. In certain species this color field is surrounded by wide margins of white or very pale lavender as found in *H. longipes* and many of its hybrids and this feature is useful for sectional classification. In many cultivars characterized as having lavender colored flowers the white margins overlap where the lobes join so are hidden and the overall effect is lavender or light purple. The entire perianth takes on a suffused lavender or light purple color, which is also observable on the outside. This type of tinting is most often described in the horticultural literature as lavender, mauve or lilac, reflecting the slight differences in shading and hue.**

***Nota Bene:* A large group of species have veins in the inner lobes which are very pale and almost the same color as the background so barely visible. In certain species this color field is surrounded by wide margins of white or very pale lavender as found in *H. longipes* and many of its hybrids and this feature is useful for sectional classification. In many cultivars characterized as having lavender colored flowers the white margins overlap.**

**H. takahashii Araki 1942 in Flower**
**W.G.Schmid Photo ● Hosta Hill 1989**

***Flower Fragrance*: It was once thought that only the Chinese species *H. plantaginea* in subgenus *Niobe*, its varieties (and some of its hybrid offspring) are fragrant. However, several unrelated fragrant cultivars are grown in Japan with apparently no connection to *H. plantaginea*. Upon close examination, these are to some degree fragrant, but the fragrance is noticeable**

**in very close proximity only (less than 30 cm (12 inches)) so for all practical purposes, they do not waft fragrance throughout the garden as *H. plantaginea* does.**

***H. clausa* var. *normalis* Maekawa**
**M.G.Chung ● Chungchongnam-do, Korea**
**Natural Habitat (M.G.Chung Photo)**

***Season of Bloom*: Depending on the species, blooming takes place between June and October. Most of them flower during a period June 1–July 15. Geographic location influences onset of blooming as do climatic and environmental conditions. All dates of flowering have been recorded at my Hosta Hill Research Garden, Tucker, Georgia, located at 34° North latitude with a mean January isotherm temperature of 43° F. (6° C.). This location approximates conditions in southwestern England and Ireland; the south-central and southern part of the Japanese archipelago, including Shikoku and Kyushu; south-eastern Australia; and much of western New Zealand. For every 2 degrees of latitude north (or southward in the southern hemisphere), the onset of blooming occurs about one week later. Thus the blooming period indicated in the listing must be adjusted for latitude. It is quite possible that some species bloom too late in northern garden and will be overtaken by early freezes. Some species that require high temperatures and high amounts of moisture, as *H. plantaginea*, may not flower at all in northern areas. The following arrangement has been used to indicate the beginning period of flowering:**

***Very early period*:**
**Before June 1.**
***Average period:***
**June 1 to July 15.**
***Summer period:***
**July 15 to August 15.**
***Late period:***
**August 15 to October 1.**
***Very Late period:***
**After October 1.**

***Day and Night Blooming:*** **The classification system developed for these descriptions pays no heed to as to whether species are night- or day-blooming taxa. The species *H. plantaginea* is the only night-blooming taxon of record, the flowers opening in late afternoon. All others are day-bloomers, the flowers opening in the morning hours.**

***H. longipes* var. *vulgata* W.G.Schmid/G.S. Daniels 1991**
**Coll. Nikko, Tochigi-ken**
**W.G.Schmid Photo ● Hosta Hill 2003**
**Showing the Very Long Flower Pedicels Typical for *H. longipes***