

Sarracenia

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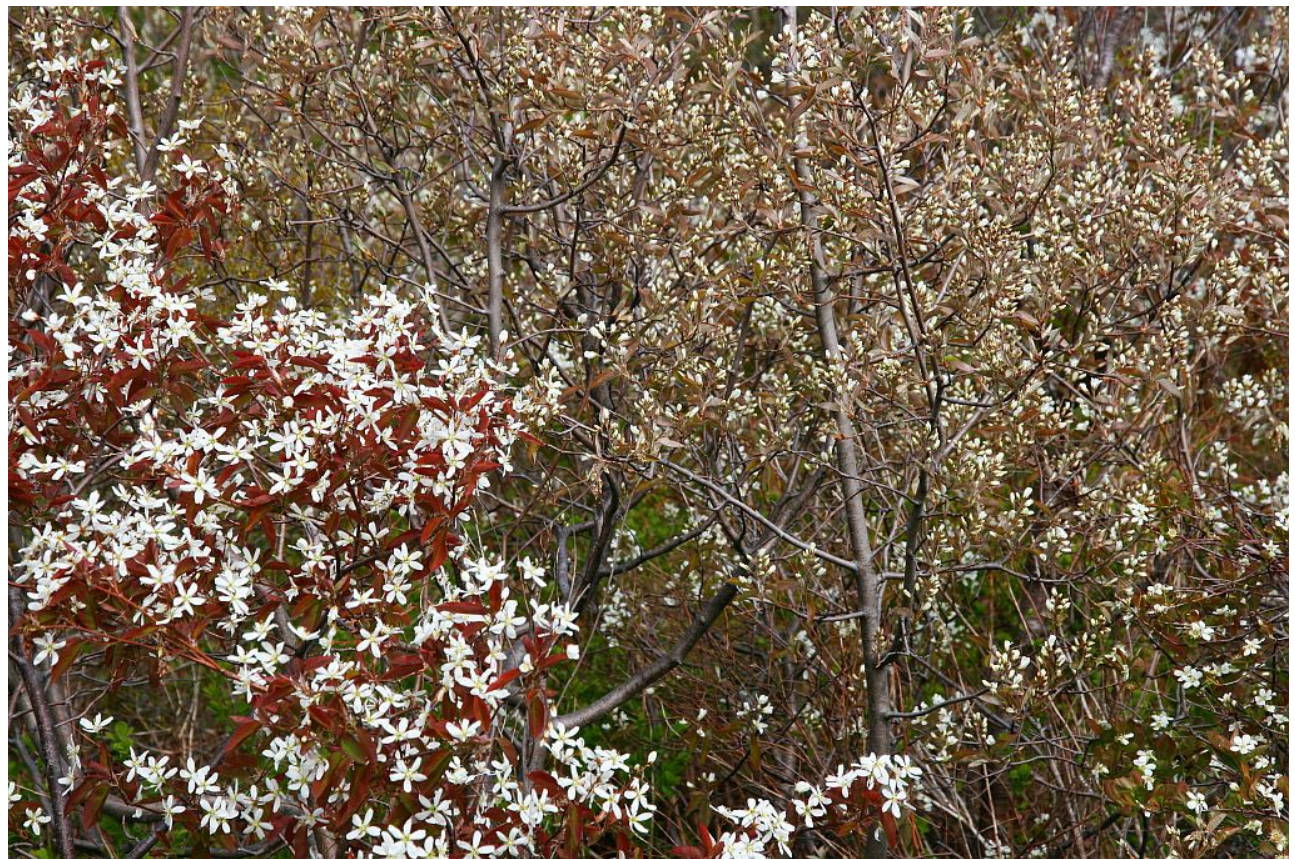
Newsletter of the Wildflower Society of Newfoundland and Labrador.

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Amelanchier laevis (left) and *A. canadensis* see p.35

A. Glen Ryan

Notices

A pop-up *Amelanchier* walk will be held near the Geo Centre when the time is right (probably early June). Notice will be sent by e-mail.

The 2017-18 Executive		
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Notes to contributors.

Sarracenia is prepared using Apache OpenOffice – a free office suite that offers capabilities far beyond the needs of the ordinary user, and is largely compatible with MSOffice. (A new version AOO4.1.5 is just out. As a fan of AOO I would be happy to help anyone who is interested in trying it out, It includes several other programs as well as the word processor such as the equivalents of excel and powerpoint.) It runs under Windows, Mac and Linux operating systems. It would help me as editor if contributors would take note of the following guidelines when submitting articles, I will be happy to discuss the details, and I will send proof copies to authors whenever possible.

General.

The editor will be responsible for the overall format and layout of the magazine. Contributors should keep to default formatting as far as possible. Please avoid excessive use of the space bar and block capitals. Leave the the fancy formatting to me! Don't spend a lot of time on formatting it to look "just right", I shall probably have to undo it all and start again, and sometimes it has proved very difficult for me to remove all the Word hidden

formatting instructions – it has even crashed my computer.

Text.

Text should be supplied without embedded pictures or tables, but type styles like italics, underlining, etc. should be included. The "native" format for OOo is Open Document Text (.odt) but I can also handle files in .rtf, .doc, .docx, and .wpd formats. All word processors give the option of saving in rich text format (.rtf), this preserves italics etc. Please do not use simple text (.txt) as all these styles will be lost. Typos may be corrected, but changes of substance will only be made after consultation with the author. It is my normal practise to send proofs to authors before publishing.

Pictures and Tables.

These should be supplied separately; pictures preferably as .jpeg files, raw formats like tiff are very bulky and will have to be converted. Please do not resize to very small sizes, such as are usually used in e-mails, these may not contain enough detail when printed, even though they look fine on the screen, but very large files can be resized, 5 MB maximum if possible. Pictures will likely be cropped – but leave that to me, it depends upon the space available. You should indicate in the text where you would like them to be placed if it isn't obvious. Captions may be included at the end of the text or separately as convenient.

Hard copy.

Material which is already printed will have to be scanned into electronic form, (I can do this). Illustrations will be kept as is, but text will either be re-typed or converted via an optical character reader. The format may be changed, but I shall only do this in consultation with the author.

Scientific Names.

Scientific names will be italicised, they need not include authorities if they follow those in the 2015 edition of the "Annotated Checklist of the Vascular Plants of Newfoundland and Labrador" by Susan J. Meades, et al. All articles should include both the scientific name and the common name of each plant at least once, normally at first mention. The main text may use either. Only scientific names will be indexed.

Newfoundland *Amelanchier* Flowering Key

By A.Glen Ryan

Shrubs of the genus *Amelanchier* are common in Newfoundland, where they are usually called Chuckley Pears. As a group, they are readily identified, particularly in late Spring when the white blooms are conspicuous across the landscape.

Amelanchier is, however, a very complex and challenging genus to identify to species. Identification is usually difficult due to a lack of definitive morphological characters for many species. For example, it is especially difficult to use leaves as a reliable character since leaf shape is extremely variable on the same plant, let alone across species. Often, a leaf from one side of an individual plant may be very different from a leaf on another part.

The most reliable character is the flower, particularly the condition of the top of the ovary and the sepals. Some species have the ovary summit hairy, others have the ovary summit hairless. Likewise, some have the top of the sepals hairy, others not. These two characters can be used in combination with some other flowering details (such as raceme [long flower cluster] shape and dimensions, and petal shape and size), as well as the state of the leaves (how far open they are at flowering, color, degree of hairiness underneath) to assist with identification. Realize, however, that the differences are sometimes slight, and it is necessary to consider several features together to aid with reaching a conclusion. One can expect to encounter a specimen

sometimes which will not readily key out to one of the listed species. Species hybridize frequently and many [but not the diploids – i.e. those with the basic number of chromosomes] can reproduce asexually, resulting in self-perpetuating microspecies at the local level.

The number of known species of *Amelanchier* in our Newfoundland flora continues to be unclear and in a state of flux. The numbers have varied somewhat over the last 50 years, and continue to change. Rouleau's original checklist (1956) of the Newfoundland Flora included 8 species; his later list (1978) included 7 species, and the Rouleau and

Lamoureux (1992) atlas has 8 species. Scoggan's Flora of Canada (1978) has 7 species. The Flora of North America (Campbell *et al.*, 2014) and a recent checklist by Meades *et al.* (2015) both include 6 species.

I have produced the following key for use during the relatively brief flowering period (typically early to mid-June) when it is easiest to identify *Amelanchier* to species. I have decided to include 8 species and one hybrid in the key. To include some was an easy choice. For instance, several species have been long recognized as occurring in Newfoundland and are supported by collections and documentation. These

are *A. bartramiana*, *A. interior*, *A. spicata*, *A. intermedia*, and *A. laevis*, and are mostly widely distributed. One other, i.e. *A. fernaldii*, has been noted by several botanists as occurring in central and western parts of the island, while another, *A. gaspensis*, has sporadic mention and may or may not occur. (see p. 37). *A. x neglecta* is considered a hybrid between *A. bartramiana* and *A. laevis* and has been noted as occurring in Newfoundland. And, finally, even though recent checklists have not included it, I have collected and photographed *A. canadensis* [in its broad sense] on the Avalon and the Bonavista Peninsulas. I expect some of the discrepancies are due to a lack of observations and collections throughout the island.



Amelanchier canadensis: A. Glen Ryan

Newfoundland *Amelanchier* Flowering Key.

1. Flowers in small clusters of 1–4 (mostly 2-3), one terminal, the others from leaf axils.....***A. bartramiana***
1. Flowers in racemes [long clusters] of usually 4-10 (or up to 15)
 2. Ovary summit densely hairy
 3. Sepals hairy on top
 4. Leaves beneath sparsely hairy to hairless
 5. Leaves usually reddish bronze, unfolded but not full grown at flowering; racemes loose, drooping or nodding, 3-7.5 cm. long; 4-12 flowers; petals obovate, 6-15mm long***A. interior***
 5. Leaves green, well grown at flowering; racemes short, erect or ascending, 2-4cm. long; 4-7 flowers; petals narrowly oval, 8-10mm. long***A. x neglecta***
 4. Leaves beneath densely hairy, green or bronze, half grown at flowering; racemes erect, short, dense, 1.5-4cm. long, 4-10 flowers; petals linear-oblong, 6-10mm. long***A. spicata***
 3. Sepals hairless on top
 6. Leaves mostly expanded at flowering, finely serrated with 6-10 teeth/cm.; racemes erect or ascending, 3 – 6 cm. long, 5 – 15 flowers; pedicels with few hairs, closest 1-3 pedicels subtended by large leaf; petals oblanceolate, 6-9 mm. long***A. gaspensis***
 6. Leaves half to mostly expanded at flowering, coarsely serrated with 2-5 teeth/cm.; racemes spreading or drooping, 2 – 4 cm. long, 3 – 10 flowers; pedicels hairless, only closest pedicel subtended by a leaf; petals oval to broadly oblanceolate, 8-11 mm long.....***A. fernaldii***
 2. Ovary summit hairless
 7. Sepals hairless or few hairs on top.

Leaves half expanded or more at flowering, usually tinged red or bronze, hairless or sparsely hairy below, base commonly cordate, petiole slightly hairy; racemes erect, compact 2-4cm. long, 4-9 flowers, pedicels hairless or few hairs; petals oblong, 9-12mm. long.....***A. intermedia***
 7. Sepals hairy on top
 8. Leaves less than half-expanded at flowering, green or tinged reddish, densely hairy (white felted) beneath, base rounded; petioles hairy; racemes erect, short and close, 4 – 6 cm. long, 4 – 10 flowers; pedicels densely hairy; petals linear-oblong, 7.5-11mm.long.....***A. canadensis***
 8. Leaves at least half (50-70%) expanded, red or bronze, at flowering hairless or few hairs beneath, base subcordate or rounded; petiole hairless; racemes usually drooping or arching, 3-7 cm. long; 4-11 flowers; pedicels hairless; petals linear-oblong, 12-22 mm long***A. laevis***

Comments on individual species:

A. bartramiana. The easiest *Amelanchier* to identify because of its floral arrangement. Usually, there is a small cluster of 2-3 flowers, with one being terminal and the others emerging from a leaf axil. It is the earliest

Amelanchier to bloom. It occurs throughout Newfoundland and is the only known species from Labrador

A. interior. (Synonymous with *A. wiegandii*.) It is similar in appearance to *A. laevis* with both having a reddish-

bronze appearance when the leaves are emerging. A big difference, however, is the top of the ovary: in *A. interior*, it is densely hairy; in *A. laevis*, it is hairless. There are scattered records in Newfoundland, including the Avalon and Bonavista Peninsulas and the South Coast. It is the second species to start blooming.

A. x neglecta. Considered a recurring hybrid between *A. bartramiana* and *A. laevis*, so expect to find both of these species in the vicinity. Records are scarce in Newfoundland, but it may be more widespread than known. It is a mid-period bloomer.

A. spicata. (Synonymous with *A. stolonifera*.) It has a high degree of hairiness. The top of the ovary and the tops of the sepals are densely hairy, and the leaves are densely hairy underneath at flowering time. It appears to be widespread throughout most of Newfoundland. It is a mid period bloomer.

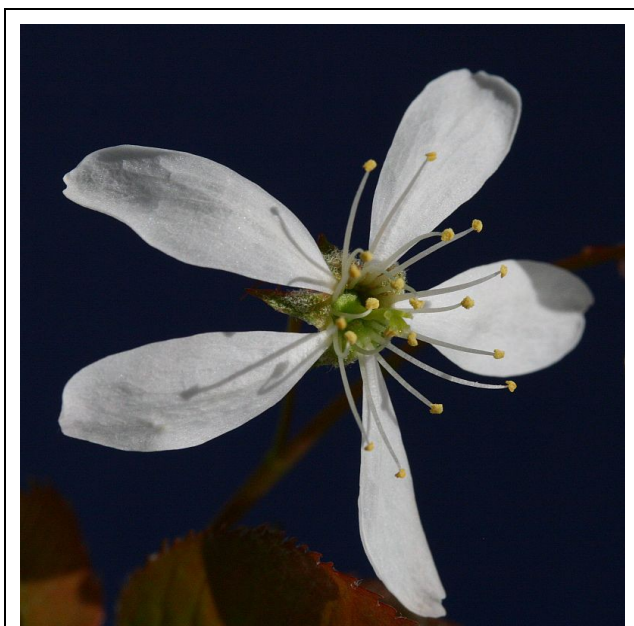
A. gaspensis. Some authors have indicated its occurrence in Newfoundland (see entry in the “Digital Flora ...” http://www.digitalnaturalhistory.com/genus_amelanchier_index.htm#amelanchiergaspensis), but it is lacking from most checklists. More field observations and collections are required to confirm this issue.

A. fernaldii. Most Newfoundland floral listings include it, with limited records and distribution. It has been reported from western and eastern parts of the island. It is usually found on calcium (limestone) substrate.

A. intermedia. It is generally considered an intermediary of hybrid origin [i.e. from an “old” hybridization event] between *A. laevis* and *A. canadensis*. All three species have a hairless ovary top but only *A. intermedia* has sepals that are hairless or nearly so, while *A. laevis* and *A. canadensis* have hairy sepals. Most Newfoundland floras include it. It has been recorded from the Avalon Peninsula. Further observations/collections are required to confirm its presence and distribution. A mid period bloomer.

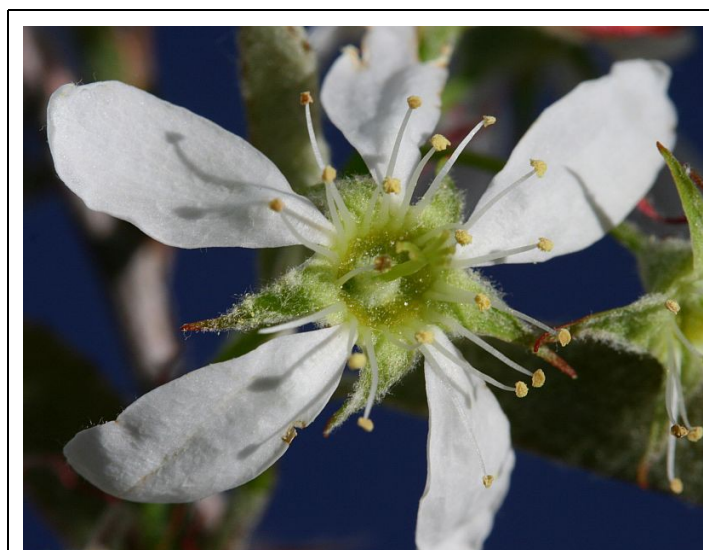
A. canadensis [in its broad sense]. It is not presently regarded as occurring in Newfoundland, but was recorded by Rouleau (1978, 1992) and was collected by Ayre from Eastern Newfoundland. I have recorded it from the Avalon and the Bonavista Peninsulas. During early leaf emergence and at flowering it has a very obvious downy appearance from a distance. It is the last to bloom in the St. John’s and Bonavista areas. [According to ongoing studies in the State of Maine by Burgess *et al.* (2015), *A. canadensis* [in its broad sense] includes both “diploid” and “tetraploid” forms [the latter has twice the number of chromosomes]. The diploid form is considered to be *A. canadensis* “proper” while the tetraploid form remains unnamed. It is thought that our “*canadensis*” is the tetraploid form, but this remains to be confirmed.]

A. laevis. This species is widely regarded as a common *Amelanchier* throughout Newfoundland. It is a mid-period bloomer.



Amelanchier laevis

A. Glen Ryan



Amelanchier spicata

A. Glen Ryan

Acknowledgement: The author thanks John Maunder for his helpful comments.

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Amelanchier laevis

A. Glen Ryan

Uncommon Wildflowers of Newfoundland 19: Colourless Variants of Normally Coloured Wildflowers.

By Henry Mann, Phyllis Mann, Andrus Voitk and Maria Voitk

The beauty of colour is a major feature drawing naturalists into the world of wildflowers. Colour is one of the original forms of advertising which has served plants well in their quest for survival, development and dispersal by insects and humans alike. Everyone is familiar with colour, yet the whole topic is “a can of gummy worms”, “a fine kettle of fish”, or just a plain muddle. Strangely, systematics and taxonomic textbooks hardly say a word about observed colour, but may provide a few lines about the chemistry of plant pigments. Identification manuals and guides often use flower colour in their keys but rarely explain or elaborate on their concepts or definitions of the colour terminology they use. Common colour terminology is a quagmire of colours, shades, hues, saturation and brightness, used differently and probably perceived differently by different individuals. For example the colour pink has been defined as “varying from light crimson to pale reddish-purple”, and “intermediate

between red and white”, and spawning a plethora of terms such as rose, salmon, coral, fuchsia, magenta, pink-purple, lavender, incarnadine and many others. In this article we concentrate on one of the supposedly simple aspects of flower colour, that of uncommon white forms of normally coloured flowers which are noticed from time to time in our flora. Immediately a problem arises, “Is white a colour, or an absence of colour?” The answer given seems to depend on who is asked, a physicist, a neurophysiologist, or a youngster with a pack of Crayola crayons, all three able to offer some insight, but none being able to fully and definitively answer the question. For our purposes we will consider white and colourless to be synonyms. Colour for us (humans) is produced by parts of the visible spectrum and their mixtures, but which when viewed totally together produce colourless or white light.



Figure 1: *Lupinus spp.* Range of common colours in populations, white usually being least common.

Colour in plants and flowers is created by chemicals (pigments) which selectively reflect certain parts of the visible spectrum, the most common being the green chlorophyll in leaves, stems and sometimes also in flowers. Yellow pigments are also very common. Other pigments produce the reds, purples, pinks and blues, and their combinations, usually in flowers that are especially noticeable by pollinators (and bedazzled humans!), but sometimes in leaves and stems as well. Their chemical structure is genetically controlled, and white forms of normally coloured flowers are said to be mutants or sports, indicating that the gene or genes involved have become chemically altered so they no longer produce the normal form or amount of the pigment which reflects the usual colour. Other factors can also affect flower colour and intensity such as pollination, flower age, shading and soil conditions. In some species there is a range of colour intensity from deeply intense to very pale (hypochromic), but still indicating the presence of some pigment. Flowers that are totally white without a hint of pigment are known as albinos. In some flowers a reddish or bluish pigment may mask an underlying pale greenish/yellowish pigment, and when the normal masking pigment is absent or present in very low amounts, these colours may remain. Flowers which have lost most of their normal colour and appear white to the unaided eye may be difficult to distinguish from a true

albinos where no normal pigment remains, not even in tiny amounts.

Some species produce flowers with several petal colours in their populations. This can readily be seen in our lupines (*Lupinus spp.*) where individuals ranging from deep blue through purple, pink and white are common, however, the white form always seems the least common in a population (Figure 1). Another example is our musk mallow (*Malva moschata*) where both pink and white forms occur throughout their range, apparently equally common (Figures 2a, 2b). Mistassini Primrose (*Primula mistassinica*) often has white and lavender individuals scattered in the population (Figure 3). (Note that in the photo, white and coloured inflorescences of different plants are intermingled.) However in most species, petal colour, as perceived by humans, is pretty well fixed to a single colour whose intensity may vary somewhat with environmental and genetic conditions and truly white forms are rather rare finds. It is this group that is the main focus of this article. Following are some examples of white forms of normally coloured flowers that we have observed in our flora. Some are albinos and some are probably hypochromic. How frequent white sports occur varies from species to species, but most are quite uncommon and are always a treat to find and photograph.



Figure 2a: *Malva moschata*, pink petal form.



Figure 2b: *Malva moschata*, white petal form.



Figure 3: *Primula mistassinica*. Inflorescences of white and lavender plants intertwined.

The pink lady's-slipper (*Cypripedium acaule*) exhibits some of the "purest" pink found in nature while its rare albino form perhaps the purest white (Figure 4a, 4b). In the same location this lone white mutant plant came into bloom on June 26, 2017, about a week after the normal pink form in Corner Brook. It has been noted by

researchers that generally, white mutants of many species tend to be less hardy and more affected by environmental stress (flooding, drought, temperature extremes, light intensity, disease, etc.) and so rarely persist in areas with highly variable climatic conditions.



Figure 4a: *C. acaule* normal pink form.

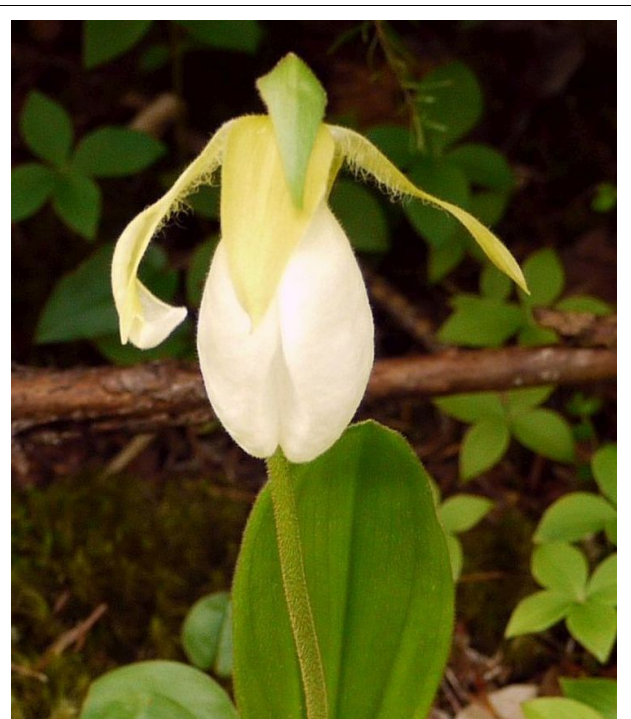


Figure 4b: *C. acaule* white mutant albino.

Rose Pogonia (*Pogonia ophioglossoides*) is another orchid whose albino form occasionally appears on our bogs (Figure 5), as does also, Dragon's Mouth (*Arethusa bulbosa*) (Figure 6). Colour variants in members of the Orchid Family are often noted by wildflower enthusiasts.

We wonder if mutants are actually more common in this family or are they just more commonly sought and seen because the orchids as a group tend to be favorites for viewing and photographing due to their intricate and beautiful flowers.



Figure 5: *P. ophioglossoides*: albino mutants.



Figure 6: *Arethusa bulbosa*, albino form.

White forms of two members of the Aster Family have been noted on several occasions, Canada Thistle (*Cirsium arvense*) (Figure 7) and Wild Chicory (*Cichorium intybus*) (Figure 8). The Chicory flower here

presented appeared pure white to the naked eye, but a hint of blue has crept into the photo, a reminder that the human eye and the camera often do not "see" colour identically.



Figure 7: *Cirsium arvense*, albino form.

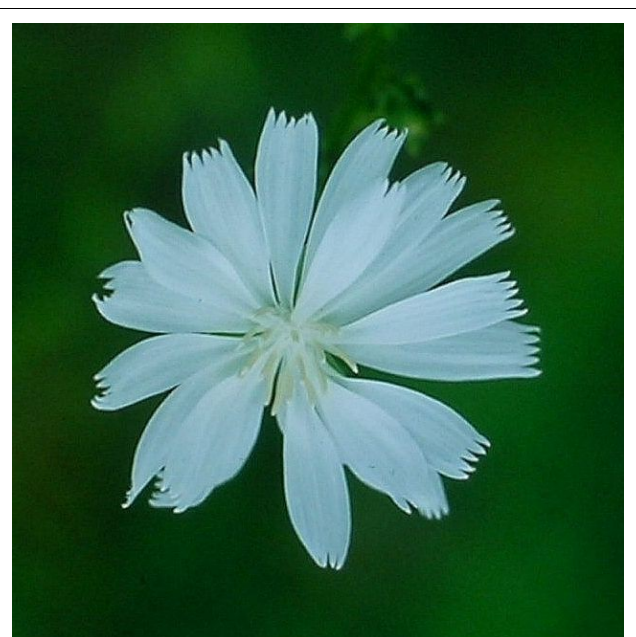


Figure 8 *Cichorium intybus*, white form.

Healall (*Prunella vulgaris*) of the Mint Family is a common herb of disturbed sites. Its two-lipped flowers range from deep blue/purple to pale lavender, but it's rare to find a plant with pure white petals (Figure 9). The

apparent albino form in the photo also has paler leaves and stems, but this may be due to such factors as soil conditions or shading.



Figure 9: *Prunella vulgaris*: albino form.



Figure 10: *C. gieseckeana*, white mutant.

Three other white variants we have observed are Harebell (*Campanula gieseckeana*) (Figure 10), Wood-

land Forget-me-not (*Myosotis sylvatica*) (Figure 11), and Field Oxytrope (*Oxytropis campestris*) (Figure 12).



Figure 11: *Myosotis sylvatica*, white form



Figure 12: *Oxytropis campestris*, white mutant.

This article to be continued in the next issue.

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