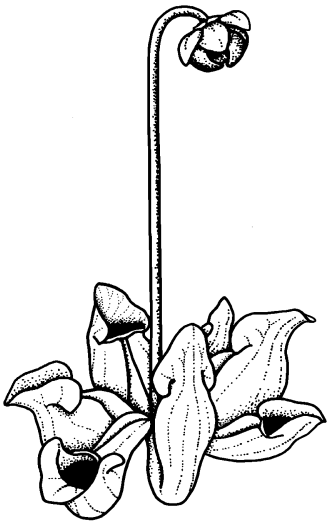


Sarracenia

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Contents

Notices and Yet Another New Name....2
A Walk Down Shoe Cove Path. By Ed Hayden....3
Uncommon Wildflowers of Newfoundland 13: "Newfoundland Plants That Want To Be Mushrooms". By Henry Mann....6
The Cambridge N.E. Iceland Expedition 1958. By Howard Clase....8
Unusual Plants of the Avalon 1: *Galinsoga quadriradiata* Ruiz & Pavón. By Howard Clase....9



Ed inspects Ragged Robins. (see pp. 3-5) Carmel Conway

December Meeting

December 4th, 2013, 7:30 p.m. MUN Botanical Gardens, Mt. Scio.

Christmas Party and Member's Slide Show including Photography Competition 2013 and winners!

(Judges for this year's competition: Eva Musseau, Glen Ryan & John Bridson. Compiling of all images by: John Maunder).

Please bring a small treat (sweet or savory) Wine, tea, or Coffee will be served.

Draft list of speakers for Spring 2014.

This is a preliminary and tentative list only- full details will be released later. N.B we do not meet in January.

*February - **Ken Knowles,** Flora and Fauna of Arizona, Utah and Colorado.*

March - **Madeleine Florent** on Gosse's Pond. (update - both good and bad news) with slide presentation. And/or - **Roger White** on flowers of the Azores.

April - **Todd Boland,** Flora and Fauna of Columbia.

May - **Julissa Roncal**, Palms.

New botanist in town.

Paul Marino, Head of Biology at MUN released the following earlier in the year:-

"On behalf of the Biology Department I would like to welcome Dr. Julissa Roncal as a new Assistant Professor in our Department.

Julissa received her Licenciature's degree in Biological Sciences from the Universidad Peruana Cayentan Heredia, Lima, Peru in 1999 and her Ph.D. from the Department of Biological Sciences, Florida International University, Miami, USA in 2005.

She has served as project plant ecologist for the Center for Tropical Plant Conservation at the Fairchild Tropical Botanic Garden, Miami, FL, USA and held a post-doctoral position in the Department of Biosciences, Aarhus University, Denmark and a Marie Curie post-doctoral position at the Institute de Récherche pour le Developpement, Montpellier, France.

Her research focus is on understanding the patterns and processes underlying the evolution of plant diversity in tropical America. She uses molecular dated phylogenies, species distributions, phylogenetic comparative methods and biogeographic modeling to understand plant species evolution. Julissa has wide-ranging field research experience, having worked in Peru, Costa Rica, Panama, French Guyana, Puerto Rico and the continental USA.

Welcome to the Department Dr. Roncal!"

Julissa is already a member of our society and as you will see from the list has agreed to give us a talk in Spring 2014. Welcome to the WFSNL too Julissa!

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Yet Another New Name.

You may notice in Ed's article that our familiar Harebell is now called *Campanula gieseckiana* Vest instead of *C. rotundifolia,* and the "official" common name is Giesecke's Bluebell. Most name changes are simple synonyms: all of the plants known by the old names now have the new ones. But, in this case, the new name only applies to North American and Greenland *rotundifolia*-like Harebells, the European and Asian ones are still "round leaved". They are now considered two separate, albeit closely, related species. The name change has been a long time coming, it is in honour of Karl Ludwig Giesecke, a colourful fellow who was an explorer of Greenland in the early nineteenth century, and first collected the plant there. The name *C. gieseckiana* has been around since the late 1700's, but has only finally been generally accepted in the last few years. Giesecke himself had a number of professions, tailor, actor and writer for the theatre, (he had a small part in the premiére of Mozart's "Magic Flute"), explorer and mineral prospector, and finally Professor of Mineralogy. Like many plants, he changed his name to suit the occasion, starting life in Austria as Johann Georg Metzler, and ending it in Dublin as Professor Sir Charles Lewis Giesecke. For more details see: http://en.wikipedia.org/wiki/Karl_Ludwig_Giesecke. *{Ed.}*

A Walk Down Shoe Cove Path.

By Ed Hayden.



The small number of people. Bill Hynd

Shoe Cove is a tiny, narrow inlet at the south end of Pouch Cove on the North-east Avalon. It is a wild place facing north, with dark, sheer cliffs on both sides and a beach of smooth, light-grey cobblestones that shift formation with north-easterly gales. Shoe Cove Brook, running through the beach, is fed by Grog, Peyton's and Shoe Cove ponds. For a fascinating history of Shoe Cove, and the people who lived and fished and farmed there, see Dettmer (2003)

The cove is accessible by shallow boat and also by hiking east about three kilometres from the Post Office in Pouch Cove along the East Coast Trail or by walking down the old path from the end of Shoe Cove Road, as we did on July 6, 2013. On the heels of the Wildflower Society's annual week-long field outing, this year held on the Great Northern Peninsula, only a small number of people showed up for the interpretive walk to Shoe Cove, but what a splendid morning it turned out to be.

Only metres down either side of the Shoe Cove path, single, waxy white blossoms of One-flowered Wintergreen (*Moneses uniflora*) poked above the shady mosses of the woodland under-story. It was worth getting down on hands and knees to tilt up their heads for closer looks at the prominent waxy stigmas. Their show of humility now, in early summer, like children at First Holy Communion, is a ruse to protect their pollen in the damp under-story. What a delight it will be to visit them again in late summer to see their ripened fruit capsules standing straight up,



Real Timothy J. Maunder

brown and split open lengthwise, ready to fling out their seed at the wind's provocation. These intriguing little gems are the only species in the *Moneses* genus.

The dainty and aromatic Twinflower (*Linnaea borealis*) was blooming here in abundance. We looked into their pink corollas through hand lenses to see the surprisingly thick masses of crisscrossing white hairs. The leaves beneath the soft violet flowers of Common Speedwell (*Veronica officinalis*) growing here are so large that we wondered if it were a different species, but John Maunder, our guide for the morning, confirmed them to be *officinalis*. A week ago on a birding trip, swaths of a very showy relative, known as Bird's Eye Veronica or Veronica Germander (*Veronica chamaedrys*), were in full bloom beside the hiking access path to the abandoned community of La Manche.

"Real Timothy," I shouted in response to John's memory test from discussions of hay on a previous field trip. "As opposed to false Timothy?" Bill Hynd joked. "Yes, exactly," I said, proud of retaining at least a sliver of botanical information shared by John and other leaders over the years. Much of what passes for Timothy (*Phleum pratense*) is actually Meadow Foxtail, also known as False Timothy *(Alopecurus pratensis)*. "And how do you know?" John continued. "To test for the real McCoy," I said, "hold the grass flower head at eye level with one hand, and with the other hand bend the flower head over. If you see prominent hairs sticking out from the sides of the

flower head, it is False Timothy or Foxtail, to which it bears a striking resemblance."

A thrilling sight along the path was Ragged Robin (*Silene flos-cuculi*, Syn. *Lychnis flos-cuculi*), an introduced member of the Pink family, blooming here like crazy this year, beginning with small patches along the upper stretches of the lane and growing in large stands in wet spots nearer the cove. The species name *flos-cuculi* means 'cuckoo-flower.' Its ragged-edged petals, suggesting its common name, are deeply divided into four lobes, which draw the eye. Another member of this family, the garden ornamental Maltese Cross (*Lychnis chalcedonica*), equally eye-catching, bears little resemblance.

Growing in a wet portion of the lower end of the path is a mat of tiny, bright-green leaves topped with minute, white flowers, the aptly named Mossy Pearlwort (*Sagina procumbens*). Raspberry (*Rubus idaeus*), Orange Hawkweed (*Pilosella aurantiaca*, syn. *Hieracium aurantiacum*), Harebell *Campanula gieseckiana* formerly *Campanula rotundifolia*), Small Sheep Sorrel (*Rumex acetosella*), Marsh Bedstraw (*Galium palustre*) and the smallest Forget-Me-Not (*Myosotis laxa*) were all blooming there.

On a bank above the beach we saw Yellow Rattle (*Rhinanthus minor* subsp. *minor)*, and John drew our attention to the tiny blue ears the colour of "blue ballpoint-pen ink" on either side of its yellow snapdragon-like flowers. These tiny blue ears signify the variety *fallax*, as opposed to the much less common (in Newfoundland) variety *minor* which has slightly shorter, *white* ears. I've taken pleasure in hearing the loose, ripe seeds rattle around inside the capsules of Yellow Rattle since I was a child roaming the coastline in Placentia Bay, but only today, for the first time, did I see the blue 'ears'. Another interesting aspect of this plant noted by Boland (2010, p.166) in his stunning *Wildflowers of Fogo Island and Change Islands* is that Yellow Rattle is semi-parasitic. While it produces some of its own food through photosynthesis, specialized structures on its roots attach to neighbouring grass roots to steal some of the grasses' photosynthetic sugars. Every society outing reveals new wonders, whether gorgeous eye candy that we haven't noticed before or inner workings that intrigue us. Yellow Rattle has both.



Ragged Robin Carmel Conway

Along the upper stretch of the beach, Oysterleaf (*Mertensia maritima*), also known as Beach Bluebells and Sea Lungwort, with leaves dotted with glands, is blooming in clusters of red (early) and blue (late) flowers, useful colour contrasts for attracting insect pollinators. Salt can be toxic, but Alain Cuerrier and Luise Hermanutz, in their recently published 'Our Plants, Our Land: Plants of Nain and Torngat Mountains' (p. 27) explain that some plants have found ways to survive in saline environments. Halophytic, or salt-loving, plants, such as Oysterleaf, have fleshy or succulent leaves and store salt in specialized pockets within their cells. As an indirect consequence, they retain fresh water, and they have tiny glands that remove salt so they can live within the salt-spray zone.

Also at the top of the beach, Wild Mint (apparently a "male-sterile" *Mentha* hybrid, possible between *M. arvensis* and *M. x gentilis*?, according to John) growing in the brook is easily identified not only by leaf colour, shape and aroma when its oil is released upon crushing the leaves, but also by feeling the square shape of a cross-section of its stem. On the eastern side of the brook, Tall Meadow Rue (*Thalictrum pubescens*, syn. *T. polygamum*), was in eye-catching full bloom, with stunning flowers that have no petals, just clusters of stamens (males) or pistils (females) on separate male and female plants.

Further down the beach, a large, verdant mound of Seabeach Sandwort (*Honckenya peploides*), another halophyte, was looking healthy in the gravel. It is considered a salty snack before flowers appear (Cuerrier and Hermanutz, 2012 p.28). Interestingly, Seabeach Sandwort flowers are mostly either functionally male (reduced pistil) or functionally female (reduced stamens). Nonetheless, the flowers on *some* plants do produce both pollen and seeds. Later in the fall, I'll be back to look for the globe-shaped

seed structures. I was surprised that photographs of Seabeach Sandwort on the Connecticut Botanical Society website were taken in Newfoundland, and the plant is listed there as rare in Connecticut but more common in Newfoundland.



Oysterleaf Carmel Conway

We sat on the beach and tasted the peppery leaves of Sea Rocket (*Cakile edentula*), which John suggested adds zest to salads. It has been observed as the first plant to grow on new volcanic islands off Iceland. Seaside Plantain (*Plantago maritima* subsp. *juncoides*) was growing low on the cliffs, with Roseroot (*Rhodiola rosea*, syn. *Sedum rosea*) growing higher up. The former genus name s*edum* is from *sedere*, to sit, and refers to the way that plants perch on rocks and cliffs (Scott, 2006 p.217).

Non-botanical highlights included large spiders scuttling about the gravel, quickly hiding upon approaching footsteps; a dazzling tiny red mite on cliff rocks; and Short-tailed Swallowtail Butterflies, which feed on parsnips, angelica and Scotch Lovage (Ryan, 1975, p.12), the latter growing in Shoe Cove. The butterflies here, though, were loving the green and burgundy clumps of Beach Pea (*Lathyrus japonicus*), a delightful name said to have been derived from *la* (very) and *thuros* (passionate); the plant was originally used as an aphrodisiac (Scott 2006, p.17). We searched in vain for *Petrobius brevistylis*, [the Newfoundland species was once thought to be *P. maritimus*] a shore bristletail (insect), like a dark-brown silverfish, with long bristly antennae and a triple-forked tail. John had seen them here previously crawling on the low cliffs just above the high-water mark on the western side of the cove. This gives us another reason to return, although arthropods, even unusual ones with forked tails, may be more enticing to some members of the society than to others.



Short-tailed Swallowtail nectaring on Beach Pea. Alison Mews

John suggested Shoe Cove as a pleasant swimming spot, with warm fresh water from Shoe Cove Brook flowing into the shallow, narrow cove. Not today though. The water I felt was more like the north Atlantic, toward the icy end of the thermometer. I suspect that John has thicker skin, but he did concede that late summer, on calm days, after a period of light, sustained, southwesterly winds, might be better. John mentioned, too, a lovely pool at the base of a waterfall, far upriver and unseen from the cove, as an alternative great swimming hole; but did also mention that it is exceedingly difficult to get to! Across the East Coast Trail bridge is a traditional cow path cutting into the cove's eastern slope. We didn't explore this path uphill, but notes on the East Coast Trail map for Styles Cove Path, which passes through here, indicate that the extensive crowberry and sheep laurel heaths at the top of this hill are known as the Grazing Grounds and were once Shoe Cove's chief pasture.

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Uncommon Wildflowers of Newfoundland 13: "Newfoundland Plants That Want To Be Mushrooms".

By Henry Mann.

What a silly title! What plant worth its chlorophyll would want to be an organic grubbing mushroom of the nether world? After all, green things are kings of life on this planet, the only organisms capable of converting sunlight energy into food that almost all others "eat" including animals, fungi and most bacteria. They are the undisputed keystones of almost all life on the planet. Without "plants" it is "game over" for anything that might look like a living being on this blue orb.

Well, perhaps the answer can be summed up in another silly-ism, "Nothing Succeeds Like Success". There is a powerful drive innate in living things to survive (i.e. succeed) and a built-in experimental process continually looking for something better (natural selection). So when sunlight-requiring plants are continually shaded and eliminated by taller plants, there are only a limited number of options available if they "wish" to survive in such habitats. They could adapt by becoming woody and taller, become climbers, produce larger leaves for trapping more light, develop a more efficient photosynthetic system, and so on. But other options may also include becoming a mixotroph, a mycotroph, a saprophyte, or a parasite.



Fig. 1: *Comandra umbellata* H. Mann

Now as far as I know (not terribly far), there are no true saprophytes in the plant kingdom, that is, plants that can totally survive like fungi on nutrients derived from dead decaying organic matter. However, there are a few parasitic plants in Newfoundland and elsewhere that can attach to other plants and draw their nutrients from them. Parasitism is also one of the common modes of nutrition in the fungal kingdom, however, there is a fundamental difference. Fungi, like bacteria, secrete powerful enzymes into their host which digest the host tissues and then absorb these digested nutrients, whereas plant-plant parasites attach to their hosts and penetrate cells with modified root structures known as haustoria and then absorb nutrients from the host's living cells. These plants range from green species that can photosynthesize for part of their nutrients (e.g. Bastard Toadflax- *Comandra umbellata* – Fig.1) to those non-green species deficient in chlorophyll that are supposedly totally dependent on their host (e.g. Dodder- *Cuscuta gronovii* – Fig.2) and One-flowered Cancer Root – *Orobanche uniflora* – Fig.3). Both are distinctly uncommon in Newfoundland and it is a real treat to encounter these photogenic species in full bloom. There is a hint in the literature that even these may have a fungal relationship at some stage of their development from seedling to adult. Parasitic species like the Screwstems (*Bartonia* spp.) and Dwarf Mistletoe (*Arceuthobium pusillum*) appear non-green to the naked eye, but when examined anatomically still have a small amount of chlorophyll in their tissues, but no doubt derive most of their nutrients from their hosts.

Then there are the mixotrophs , those plants that are green and can manufacture much of their nourishment by photosynthesis, but have also developed a mycorrhizal relationship with soil fungi which provides some nourishment as well. Apparently most of our trees, shrubs and herbaceous species (perhaps 90% or more) have such mycorrhizal relationships with their roots whereby the mushroom fungus obtains organic compounds from the photosynthetic plant and in return makes some soil nutrients such as phosphorus more readily available to the plants, a true win-win situation.



Fig 2: Cuscuta gronovii H. Mann



Fig. 3: Orobanche uniflora J. Maunder



Fig. 4: Monotropa hypopitys H. Mann



Fig 5: Monotropa uniflora H. Mann

However, the totally achlorophyllous species of plants are the ones that most often strike us as “mushroom-like”. These are the mycotrophs (mycoheterotrophs). In the deep past they have struck up a relationship (symbiosis) with ground dwelling mushrooms. Some soil fungi/mushrooms are mycorrhizal with trees and other green plants where both partners benefit from the interaction, as indicated above. The “wannabee-mushroom” non-green mycotrophs have inserted themselves into the mycorrhizal partnership, possibly as parasites of the fungi, and draw all of their nutrients from that relationship between the fungus and its mycorrhizal green partner. Whether these ghostly plants are strictly parasites of their fungi or whether they provide some benefit to the tripartite relationship is still open to question. In Newfoundland we have several of these totally non-green flowering species including Pinesap (*Monotropa hypopitys* – Fig.4), Indian Pipe (*Monotropa uniflora* – Fig.5), Spotted Coral Root (*Corallorhiza maculata* – Fig.6*)* and Striped Coral Root (*C. striata*). Some like Indian Pipe are reasonably common in their preferred habitats although one needs to be wandering the deep woodland trails in late summer to notice them. Striped Coral Root on the other hand is quite rare, known only from four locations in western Newfoundland. Uncommoness and rarity may at least partially be attributed to the availability of the required fungal associate. There is still much to learn about parasitic, fungal and symbiotic relationships in our flora.



Fig.6: Corallorhiza maculata H. Mann

Superficially the two great kingdoms, plants and fungi, appear to be very distinct in how they obtain their nourishment. But when we look closely, we see that the two have become amazingly integrated, ranging from parasitic to mutualistic relationships, and it is not always easy to determine which of the partners benefits the most, although both or all three may contribute in ways that we do not yet fully understand. In fact, the whole of Nature can be viewed as a symbiotic integrated system where cooperation among species is a more powerful life force than the oft misrepresented and misunderstood Darwinian concept of “survival of the fittest”, “nature red in tooth and claw”, and “winner take all”. And perhaps surprising to some, there are direct and obvious analogies with some of the misconceptions about how Nature functions to some of the belief systems that drive our human societal social, political and economic activities.

The Cambridge N.E. Iceland Expedition 1958.

By Howard Clase.

This is the somewhat pretentious name three friends and I called ourselves when we spent a month at Lake Mývatn in the summer of 1958 at the end of my first year at the University. The others were all real biologists and their names were: Fred, Tom and Bill – I was the only polysyllabic one! We had written to Finnur Guđmundson, the director of the National Museum of Iceland, asking for a bird project at Mývatn and he suggested we survey the

Slavonian (Horned) Grebe (*Podiceps auritus*) nesting population at the lake. Mývatn means “Blackfly Lake” (Midge Water) and it certainly lived up to its name, the downwind shores were piled high with mounds of dead blackflies, and there were plenty of live ones around too. We were all keen birders and this was a birder's paradise with 15+ duck species nesting around the lake and feeding on the blackflies, including Europe's only Harlequins and Barrow's Goldeneyes. But Bill and Tom were botanists too, and this was the first time I had really come across this particular species close up.

I had almost forgotten about this trip until I was sorting out my “archive” prior to our pending move to a smaller place in 2011. I came across a couple of pages of pressed plants from Mývatn and remembered my early start as a botanist that was more or less suspended for many years. What is interesting to me now is that nearly all of the plants on these two pages also occur here in Newfoundland, and there are close equivalents for those we don't have. It is also surprising that they are so well preserved after so many years stuck in the bottom of a drawer and having been involved in at least one trans-Atlantic move if not three.



Clockwise from top left:
Tofieldia pusilla, Draba incana, Potentilla crantzii, Saxifraga sp., Pinguicula vulgaris.

At the end of that trip I had an interest in grasses for a short while and collected and identified those I could find around my home town of Salisbury – one turned out to be a rare American introduction which I took back to Cambridge in triumph to show them at the herbarium – but when we found the archived specimens it turned out that they had been collected in the same field as mine – one of the University's botanists also called Salisbury home!

After that I concentrated on birds for 30 years or so until I went along with Leila on our Society's early long field trips here and got converted permanently to botany.

Unusual Plants of the Avalon 1: *Galinsoga quadriradiata* Ruiz & Pavón. (Syn. *G. ciliata* (Raf.) S.F. Blake).

By Howard Clase.

This alien weed has been reported only twice in Newfoundland, both times discovered by the author in St John's. It is a small, inconspicuous plant of waste ground and may well have been overlooked. In 1998 I found a single plant growing on some spent potting soil behind Holland Nurseries off Torbay Rd, and in 2012 I came across a small colony growing around the base of the loading bay behind the closed super-market in Churchill Square. In 2013 only a couple of plants grew here, but a larger group appeared about 20 m. away around a light pole behind the Bell Aliant building. Both sites are of poor soil surrounded by concrete and presumably basic in nature. The VASCAN website records it as introduced in every other province of Canada, and one of our Nova Scotian members, Patricia Chalmers, told us that it is quite common in Halifax. It will be interesting to see if it holds on here. Keep an eye open for it.

The genus originates in tropical America and commemorates a Spanish botanist and physician, Ignacio Mariano Martinez de Galinsoga (1766-97). Although his life appears to have been rather short it is worth commemorating, as he founded both the Royal

Botanical Garden in Madrid and the Spanish Royal National Academy of Medicine. *Galinsoga parviflora* came to Kew in 1776 and *G. quadriradiata* first appeared in the UK in the 1860's.They have both spread to become frequent weeds in the UK and mainland Europe. The two species are quite similar, both annuals, differing largely in their hairyness.

G. parviflora, (small flowered) is the more common in the UK but it's the other way round in Canada. The generic name was anglized as "Gallant Soldier" in England by a botanical wit (maybe the same one who converted *Asparagus* to "Sparrowgrass"), and since ours is rather hairier it became "Shaggy Soldier" - the synonym *G. ciliata* means just that. North American books give the more straight-laced "Shaggy Galinsoga". The name *G. quadriradiata* actually means four rayed – if you look at the flowers in the picture you will see that whoever named it wasn't very good at counting!



Galinsoga quadriradiata Churchill Square 2012 J. Maunder

A member of the *Asteraceae, G, quadriradiata* looks rather like a miniature, failed ox-eye daisy, its tiny (<1 cm.) flower heads have only 5 (rarely 4) ray flowers (petals). It grows from 20 – 60 cm high and is usually many branched. The leaves are 2-3 cm long and broadly oval, coarsely toothed and hairy at the edges, the stems too are generally more hairy than those of *G. parviflora* (see inset). *{I hope this will be the first of a series. Ed.}*

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Index of Scientific Names

Alopecurus
pratensis.....3
Arceuthobium
pusillum.....6
Cakile
edentula.....5
Campanula
gieseckiana.....2, 4
rotundifolia.....2, 4
Comandra
umbellata.....6
Corallorhiza
maculata.....8
striata.....8
Cuscuta
gronovii.....6
Galinsoga
ciliata.....9, 10
parviflora.....10
quadriradiata.....9, 10
Galium
palustre.....4
Hieracium
aurantiacum.....4
Honckenya
peploides.....4
Lathyrus
japonicus.....5
Linnaea
borealis.....3
Lychnis
flos-cuculi.....4
Mertensia
maritima.....4
Moneses
uniflora.....3
Monotropa
uniflora.....8
hypopitys.....8
Myosotis
laxa.....4
Orobanche
uniflora.....6
Phleum
pratense.....3
Pilosella
aurantiaca.....4
Plantago
maritima.....5
Rhinanthus
minor.....4
Rhodiola
rosea.....5
Rubus
idaeus.....4
Rumex
acetosella.....4
Sagina
procumbens.....4
Sedum
rosea.....5
Silene
flos-cuculi.....4
Thalictrum
pubescens.....4
Veronica
chamaedrys.....3
officinalis.....3