



## NEWSLETTER

# IOWA NATIVE PLANT SOCIETY

Volume 9 Issue 3

October 2003

## THE BRADLEY METHOD OF ELIMINATING EXOTIC PLANTS FROM NATURAL RESERVES

From: Fuller, T.C. & G. Douglas Barbe (1985): *Fremontia* 13(2): 24-25.  
[Adapted here from: <http://caspar.commons.org/Gorse/Bradley/Method.htm> ]  
Dr. A. Ceska, P.O.Box 8546, Victoria, B.C. Canada V8W 3S2

A method of weed control in natural areas, developed at Sydney, Australia, by Joan Bradley and her sister, has been so successful a summary of their methods is presented here with the thought that similar endeavors in California would result in better weed control where such methods might be appropriate.

The Bradley method makes practical use of well-known ecological principles. The method consists of hand weeding, without replanting, selected small areas of vegetation in such a manner that after weeding, each area will be promptly re-inhabited and stabilized by the regeneration of native plants.

If the weeding is approached as a conventional gardening operation, in which large areas are cleared and burned or the debris carted away, the effort will fail because large exposed and disturbed areas will become recolonized by new weeds. The Bradley method urges a naturalist's approach by encouraging the native vegetation to become reestablished. The Bradleys used their method to successfully rid a forty-acre woodland reserve of weeds so that the reserve needed slight attention only once or twice a year, mainly in vulnerable spots such as creek banks, roadsides, and clearings, to be maintained weed-free. They summarize their activities as follows:

"We are regenerating bush with conspicuous success over a total area of about forty acres, and our results are plain to see, both in Ashton Park and on nearby Chowder Head. We have also taken care of the weeds induced by a six-acres "silvicultural" winter burn, and about four or five acres of other fires. We have not overworked at it. We are both over fifty, able-bodied but by no means Amazonian. My sister takes the dog for a walk on most mornings, and I do the same in the afternoons. On these walks we might average, between the two of us, about three-quarters of an hour spent actually pulling up weeds."

"Done in our way, the regeneration of weed-infested bush land is an easy and fascinating part-time occupation. We are still forging ahead, my sister mainly on a dry ridge, myself mainly in a damp gully, faster than we should have thought possible... We hope that this outline of our methods will encourage and help you to do the same."

### Preliminaries

1. Permits and Permission. Initially, of course, permission must be obtained from a landowner, whether a public park or private reserve, to carry out the weed control program. If necessary, a permit to collect plant specimens for identification must also be secured from the appropriate authorities.

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2. Plant Identification. Although it is not necessary to know every species in an area, it is essential to be sure that no native are pulled up and no weeds are left behind. The Bradleys maintain a collection of dried specimens, which had been identified at the National Herbarium in Sydney, for every plant species in their working area.

3. Labour. The Bradleys emphasize that a single person, working intelligently, will do more good than many persons crashing through a project area.

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## Leaves from the President's Notebook

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**Historian/Editor Newsletter**  
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As plant enthusiasts we are indebted to the work of early botanists such as Thomas Jefferson Fitzpatrick and his wife, Mary Frances Linder Fitzpatrick. Part Creek Indian who also traced his ancestry to Thomas Jefferson, T. J. was born in a log cabin in Centerville, Iowa in 1868. He received his undergraduate and Master's degrees from the University of Iowa. His wife had a Ph.D. degree in botany. From 1895 -1899, while T.J. taught at Graceland College in Lamoni, the Fitzpatricks collected plants extensively in southern Iowa. They also wrote numerous articles based upon their field trips and collections.

Their "Flora of Southern Iowa" and "Flora of Southern Iowa, II" published in the Proceedings of the Iowa Academy of Sciences, Volumes V and VI (1898 & 1899) are invaluable references for anyone restoring native plant habitats in southern Iowa. Not only do they list all the species collected in this area, but habitat and frequency are also noted. This fall, for example, I wanted to know which foxglove species I could expect to find in my Decatur County oak savanna. Although the *Aureolaria grandiflora* and the *Agalinis gattingeri* have become well established here, I've seen only one specimen of *Tomanthera auriculata*, and a small population of *Agalinis tenuifolia*. Referring to "Flora of Southern Iowa," I learned that all but the *A. gattingeri* used to be common in open woods of Decatur County. (*A. gattingeri* was not named until 1903)

To me it is just as important to know which plants belong here as it is to identify the ones that remain. Work done by the Fitzpatricks serves as a baseline for my restoration efforts. In The Plant World, December 1898, the Fitzpatricks stated that they found *Asclepias meadii* growing in "prairie soil by the waysides" and in unplowed "fields used as meadows". (Would that were still so.) An article in the unplowed "fields used as meadows". (Would that were still so.) An article in the same publication, October 1901, describes their observations of *Veratrum woodii*, which they concluded was "of frequent occurrence in southern and southeastern Iowa." (I have counted over 250 plants on my property.) "The Native Oak Groves of Iowa" also published in The Plant World (April, 1901), discusses the composition of the southern Iowa oak savannas as the Fitzpatricks found them. For those of us interested in native plant restoration, documents such as these are invaluable.

A bibliography of T.J.'s publications is located in Special Collections of the University of Nebraska-Lincoln library. Covering 16 pages, the listing includes many more articles of historic interest to Iowa botanists. "The Orchidaceae of Iowa", "Notes on the Flora of northeastern Iowa", and "The Fern Flora of Iowa" are just a few.

*Sibylla*

### 2004 Is Fast Approaching!

Perhaps this is a good time to pay your dues for 2004! Our dues structure: basic membership (incl. family) -- \$10; supporter -- \$25; benefactor -- \$50 or more. See membership form on page 7. Dues should be sent to: Diana Horton, 720 Sandusky Dr., Iowa City, IA 52240



**Iowa Native Plant Society  
Minutes of the Annual Meeting  
9 August 2003**

Sibylla Brown called the meeting to order at 1:05 p.m. The minutes were read by Linda Scarth with the motion to approve by Sandy Gossman and second by Mark Leoschke. Passed.

There was no formal Treasurer's report. A discussion of what to do with and how to approve the distribution of excess funds took place. After a number of suggestions were considered, Connie Mutel moved that the Board be enabled to fund projects up to \$500 each for a total expenditure of \$2500 per year as funds are available. Mark Leoschke seconded. Passed. Project proposals for land acquisition, floristic inventories and other related activities or events will be considered as requests are made.

Sandy Gossman reported on the newsletter which is published four times each year. She both thanked people for articles received and encouraged them to provide more. The newsletter is sent to approximately 380 addresses including County Conservation Boards. Book reviews are welcome.

Mark Leoschke reported on the field trips of the current year. He is open to suggestions for next year.

Linda Scarth reported on the INPS web site hosted by Iowa State University. Contributions are welcome, especially images of native plants.

The current set of officers was returned for another year after Marcia Readhead moved to accept the slate and Bob Scarth seconded.

Rosanne Healy reported on the membership booklet. She is willing to relinquish the maintenance to another interested person.

**Old Business:**

The Iowa Flora Project was discussed. The group is working on keys, descriptions and dot maps with each person addressing his or her specialty. There is need for assistance in documenting specimens, doing inventories and preparing the database. There is need for assistance in documenting specimens, doing inventories and preparing the database.

It was reported by Deb Lewis that the amalgamation of the University of Iowa Herbarium into the Iowa State University collection is progressing. It is anticipated that the actual move will take place over spring break 2004.

**New Business:**

Following on the success of the *Carex* identification workshops in 2002 and 2003, a fern workshop in 2004 is being considered. More information will come later. Watch the newsletter.

Sandy Gossman discussed the effort to make members of the Federated Garden Clubs more aware of native plants to include in their gardens and working with native plant societies in conservation and restoration efforts. She asked that INPS members interested in speaking to these groups provide her with contact information and topics.

John Harri, plant pathologist with the Iowa Department of Agriculture and Land Stewardship, discussed the Iowa weed law and how changes take place. There are a variety of stakeholders trying to influence the look and reach of the administrative rules under consideration. He encouraged INPS member input into the process.

Mark Leoschke, Deb Lewis and Sandy Gossman were presented with certificates of appreciation for their important and long standing contributions to the group as trip planner and newsletter producers.

The Invasive Species Working Group will be meeting in early November at Iowa State University.

Meeting adjourned and was followed by a presentation by Dr. Lois Tiffany on her life in botany.

Respectfully submitted, Linda Scarth



Dr. Lois Tiffany

*Bradley Method—Continued from page 1*

4. Strategy. The basis of this method is the native species' ability to recolonize by tipping the ecological balance away from the weeds and toward the native plants. If one begins by clearing, the weeds will come right back because they are now given ideal conditions; bare, disturbed soil, exposed to full sunlight. But by working a little at a time, from the strongholds of natural vegetation is favored and its natural regenerative power will prevail over the weeds.

In undisturbed vegetation, soils are often covered with a litter of decaying plant material. This natural mulch, when present, will permit very few weed seedlings to come through. Since disturbed soil favors the weeds over the natives, and weeding disturbs the soil, all natural litter possible should be replaced over the spots that are weeded. Also, wherever possible, the weeds themselves should be used as a mulch, except that such things as seeds, bulbs, rhizomes or other parts that might sprout should be removed.

**Plan of Work**

In this sequence the Bradleys designed work for one person to follow, working from the best stand of native vegetation to the worst infestation of weeds. By keeping the sequence always the same, it can be followed by any number of people in any number of places.

1. Prevent Deterioration of Good Areas. Start by getting rid of weeds that occur singly or in groups of four or five. Check once or twice a year for missed weeds.
2. Improve the Next Best. Choose a place that you can visit easily and often, where the native vegetation is pushing against a mixture of weeds and natives, preferably not woods with more than one weed to two natives. Start with a strip about 12 feet wide and no longer than you can cover about once a month during the growing season. If this boundary is on a steep slope that might erode, clear a number of patches instead, but still no more than 12 feet from the vigorous native vegetation. Let a few months go by before you lengthen the strip. Your experience will dictate whether to make the strip longer or shorter.
3. Hold the Advantage Gained. Resist the temptation to push deeper into the weeds before the regenerating natives have stabilized each cleared area. The natives need not be very tall but should form a dense ground cover. The Bradleys think excluding light from the ground is very important since weed seedlings consistently appear in bare soil at the edges of paths and clearings even when relatively undisturbed and surrounded by dense native vegetation.
4. Cautiously Move into the Really Bad Areas. When the new growth consists almost entirely of native species with only a few weeds, it is safe to move further into the weeds. Don't start to clear a block of solid weeds until you have brought the good native vegetation right up to that area. Solid infestations of weeds can be worked on at the edges by forming peninsulas of weeds, small clearings less than six feet in diameter. Also, spot weeding, removing a single large weed plant next to a native plant in the middle of a solid weed infestation, will bring remarkable results by allowing the native plant to grow much faster. There is no reason to hurry this process; much more is gained by allowing the native plant to grow well before removing another adjacent weed.

**Records**

The Bradley sisters keep general written records, make periodic surveys, and map the weed infestation. They find it much easier than relying on memory of past infestations. Also, the mapping is useful to show local authorities the progress of the work. Their work has been so successful, and the regenerated native vegetation looks so good, that it is difficult to show people what has been done. Wouldn't it be nice if all our parks and reserves were that weed-free?

**Reference**

Bradley, Joan. 1971. Bush Regeneration: The Practical Way to Eliminate Exotic Plants from Natural Reserves. The Mosman Parklands and Ashton Park Association, Mosman (Sydney), New South Wales. 15 p.

*Clear Creek Field Trip Report continued from page 7*

eventually feeding as individuals. The larvae pupate in late May or June into a gorgeous bluish-white chrysalis with orange and black spots. The adults emerge in mid to late June, mate and lay eggs for a few weeks, then die.

In northern Iowa the Baltimore checkerspot is found primarily in fens, though occasionally in sedge meadows too, but the white turtlehead has to be present. However, not all fens and sedge meadows where white turtlehead occurs also host the Baltimore checkerspot, which is something of a mystery to Iowa entomologists. This species is also found in forest in extreme southeastern Iowa, where the larvae feed on another member of the snapdragon family, yellow false foxglove (*Aureolaria grandiflora*) and perhaps other species of plants.

## Vegetational History of Iowa

By Dick Baker, University of Iowa

Deb Lewis thought that the INPS might like to know a bit about the past history of Iowa's vegetation and asked if I would contribute this article. My students, colleagues, and I have worked on the vegetational history of Iowa and adjacent states for over 30 years, but even so, there are a lot of holes. I will give you a short run-down on how we discover this history, and then a brief summary of the last ~33,000 years as we know it. The ages are obtained by radiocarbon dating of plant material.

We study recent fossil plant remains that are present in sediments from lakes, marshes, and streams, present and past, in certain parts of the state. The main types of plant remains that we can identify are pollen, seeds, and small fruits, though occasionally we have found whole leaves and other plant organs. Let's start with pollen, which is produced by most plants, gets into the air, and falls out over the landscape. If it falls in a lake, it will be preserved, and we can extract it from the sediments and identify it, though not usually to species. "Macrofossils" (seeds, fruits, leaves, etc.) are spread less widely, but are often identifiable to species, which is much more informative. These accumulate layer by layer through the years, and they represent the plants living around the site. By taking a core or digging out a section, we look back in time and see what grew there. A major problem is that the distribution of such sites is very spotty, both on the landscape and through time.

Prairie occupied much of the state in presettlement time, with forests in river valleys and in northeastern Iowa, on the uplands. But when did this pattern get established? How long have our prairies been around? In records that start ~33,000 years ago, there is good evidence that prairie was present. These are from small buried potholes, and they indicate that prairie species were present in an open parkland of scattered aspen, willow, and spruce, from ~33,000 to ~25,000 years ago. These potholes had a rich aquatic and wetland flora as well. The closest modern analogue to this vegetation is probably the aspen parkland along the northern edge of the present Great Plains.

This pattern disappeared ~25,000 years ago, when spruce became the dominant vegetation, growing on fens and forming thick peat beds in low areas, and even on upland sites. In the eastern part of the state, larch was also present in these wetlands. This closely resembles present vegetation in the boreal forest of southern Canada, and represents a cooling of the climate.

At ~23,000 years ago and north of Iowa, glaciers apparently began their advance southward into the US. We know this because loess (windblown silt) began to accumulate over much of the state at that time, and its source can be traced to

At ~23,000 years ago and north of Iowa, glaciers apparently began their advance southward into the US. We know this because loess (windblown silt) began to accumulate over much of the state at that time, and its source can be traced to rivers that drained the glaciers. Climate became colder still. The loess filled most of the sites that had been receiving organic sediments, and created gaps in the record. One gap is filled by a site in Johnson County dating from ~18,000 to 16,700 years ago. At this site, fossils of pollen, macroscopic plant parts, beetles, vertebrates, and molluscs all point strongly to a very open arctic environment, with tundra plants and animals, and a few scattered spruce trees, just like we see today at the arctic treeline. This represents part of the coldest period in Iowa.

When glaciers finally reached central Iowa ~14,000 years ago, spruce-larch forests had already become established, and in some places, the forest was overridden by glacier ice. Near Saylorville reservoir, for example, we found many spruce logs embedded in the glacial till. Surprisingly, this means that the glacier advanced to its maximum in Iowa only after the climate had begun to warm up.

These conifer forests gave way ~11,000 years ago to a succession of deciduous trees, starting with black ash and birch, and later oak, elm, basswood, ironwood, and other deciduous forest trees. This forest covered the state from 11,000 to 9000 years ago, but then our beloved prairie began to creep into western Iowa. It advanced across central Iowa, where it remained until ~3000 years ago. However, this prairie advance stalled from ~8000 to 6000 years ago west of a line extending north from Iowa City to the Minnesota state line. This prairie-forest border was stable for about 2000 years, and then the prairie rapidly moved eastward across the rest of the state and into Illinois.

Beginning ~3000 years ago, slightly cooler but relatively stable climate allowed oak savanna to expand southward back into at least northern Iowa. There have been only minor changes during that time. Thus today, we see the remnants of the patterns that were mainly established 3000 years ago. Prairie extended across the northwestern 2/3 of the state with lowland forests and woodlands along all major stream valleys. Forests were present in both upland and lowland habitats in the southeastern 1/3 of the state. In the transition zone between prairie and forests, and in more protected parts of the prairies, savannas were predominant.

### The following is a Question and Answer session between Deb Lewis and Dick Baker

*Deb L.*— 1) How do you determine "where to dig" -- which wetlands, lakes, streams, etc.? Does the "look", current biology, or geology of a site give you clues? Or is it more a matter of getting permission and other "politically expedient" factors? How many sites have been studied by you and your students?

*Continued on page 6 with Q & A between Deb Lewis and Dick Baker*

*Continued from page 5 Vegetational History of Iowa*

*Dick B.— 1) How I decide where to get samples (either digging or coring) has been variable. When I got to Iowa, there was little work done, so we went to some obvious sources like Okoboji, Clear Lake, Colo Marsh, etc. Later, I started to work with Art Bettis, and he walked a lot of creeks in the state, looking at soils, alluvium, and archaeology. It was he who discovered that there were lots of organics in many stream cutbanks, so we started by going back to places where he saw logs or peat or other organic materials. This happened to be places where we were lacking data, so we began to work on them. Usually landowners have been great in giving us permission. The geology is important though, because the stream has to have had a high water table; if not, organic materials are oxidized. I'm not sure how many I have studied (probably a dozen in Iowa and another dozen in adjacent states) , but an embarrassing number haven't been published (yet!).*

*Deb L. — 2) Can you tell if the prairie flora of 33,000 years ago was similar to that of today (e.g., are there recognizable species from that time? if so, are they the same as today's? or was it just known to be a grass-dominated landscape?)?*

*Dick B.— 2) It is difficult to say because we have rather a small sample, but almost all are modern species. It appears that grass was pretty dominant then too, and we know that big and little bluestem were both present. Some of the other species we have identified at least one site are needle & thread, white prairie clover, wild bergamot, black-eyed susan, and sun-flower (can't tell which species).*

*Deb L.— 3) Do woody plant macrofossils preserve better than herbaceous ones?*

*Dick B.— 3) Wood usually preserves well. Leaves (mostly fragments) and bud scales of woody plants generally preserve better than those of herbaceous plants. As for seeds and fruits, it depends entirely on the durability of the seed or fruit coat, not on whether the plant is woody or herbaceous.*

*Deb L.— 4) Is it known, or can you hypothesize, why the glacial advance occurred here to central Iowa if the climate was actually warming up at that time?*

*Dick B.— 4) I'm not sure why the glacier advanced so late into Iowa, because from Illinois to the east coast, it was at its maximum 18,000-21,000 yr B.P. (Art may have something to say about that). One thing seems to be fairly certain about the Des Moines Lobe--it has some characteristics of a surge, which is not unexpected if climate had become warmer.*

*Deb L.—5) In my trying to imagine the glacial advances, since Iowa was at the southern edge of at least the most recent one, should I picture the "Des Moines lobe" as being a solid sheet of ice, or a mosaic of ice-covered and open areas? If the latter, were most of the open areas actually glacial lakes? Did vegetation seemingly extend right up to the edge of the glaciers (as in alpine areas today) in at least part of the year?*

*Dick B.—5) It is pretty certain that while the ice was advancing, it came as a pretty solid front. Once melting became predominant, it may have gradually fragmented--I don't know for sure. Vegetation, in fact, spruce trees, did grow right up next to the glacier, and pretty surely, when melting was underway and ice stopped flowing, trees grew in debris on top of the ice, as they do today in places in Alaska. Glacial lakes formed especially as the ice melted, and some drained catastrophically, leading to large floods.*

### **NATIVE PLANT CONSERVATION CAMPAIGN NEWS**

This year is the 30th anniversary of the passage of the Federal Endangered Species Act. A coalition of scientific and environmental groups is looking for "success stories" of species which have been either stabilized or, better yet, recovered after being listed under the Act.

Are you aware of a plant "success story" in your area? Can you share the details? Photos? Please reply to me with a brief summary of why the plant was at risk and what was done to fix it, and I will pass the information along.

Too many people want to throw up their hands and assert that species loss is hopeless - and therefore inevitable. That is not true. It is difficult but not hopeless. We need to let people know that with good science, hard work, a little luck, and adequate funding, endangered species can be recovered.

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### **IOWA PRAIRIE NETWORK CENTRAL REGION WINTER WORKSHOP**

**January 31 (Saturday):** 1 PM, DMACC, Polk County. IPN Central Region Winter Workshop and silent auction. There will be prairie discussions, networking opportunities, and the option to help support a prairie project via the silent auction. Held at Des Moines Community College in Ankeny. Contact Trish Patrick, 57540 270<sup>th</sup> St., Ames, IA, 50010 or [tpatrick@iastate.edu](mailto:tpatrick@iastate.edu).

### Clear Creek Fen Field Trip

By Mark J. Leoschke

A few years ago the Iowa DNR's Fisheries Bureau purchased an addition to the Clear Creek Fish and Wildlife Management Area near Dorchester in northwest Allamakee County. The Bureau was interested in trout habitat, but in the process purchased an approximately 5 acre complex of fens and seeps along Clear Creek. Most of the fens and seeps are on the west side of the creek. This area was discovered in the mid-1980's by John Nehnevaj, a local naturalist who found a number of rare plants (including Iowa's only site for shining ladies-tresses, *Spiranthes lucida*) and one rare animal, the state threatened Baltimore checkerspot, *Euphydryas phaeton*, a beautiful black, orange and white checkered butterfly.

Fourteen people, including John Nehnevaj, showed up for the August 23 field trip at Clear Creek. We saw a number of interesting species including water horsetail (*Equisetum fluviatile*, just vegetative stems, no cones), marsh milkweed (*Asclepias incarnata*, with fruits), bog birch (*Betula pumila*, with fruits), porcupine sedge (*Carex hystricina*, with fruits), Spotted Joe-pye-weed (*Eupatorium maculatum*), boneset (*Eupatorium perfoliatum*), fringed gentain (*Gentianopsis crinita*, though unfortunately the plants were in bud so we missed the gorgeous blue flowers), Great blue lobelia (*Lobelia siphilitica*), monkey flower (*Mimulus ringens*), Grass of Parnassus (*Parnassia glauca*, its cream flowers with green veins just starting to open, as most plants had buds), swamp lousewort (*Pedicularis lanceolata*) and mountain mint (*Pycnanthemum virginianum*).

We were fortunate to find about two dozen fen twayblades (*Liparis loeselii*) with fruits. This wily orchid has light green flowers (late May and June), stems, fruits and leaves so it blends in well with other taller, green plants. The fen twayblades were less than 25 centimeters tall, typical for this species. At one time this orchid was considered rare in Iowa, but it turns out that it was probably just overlooked. It occurs in fens, but also prairies, sedge meadows and disturbed forest. The green fruits have a shorter stem and smaller wings than those found in this species' cousin, the brown twayblade (*Liparis liliifolia*), of disturbed to good quality forest. A key that separates these two species in fruit can be found in Welby Smith's wonderful book Orchids of Minnesota.

The Baltimore checkerspot put in an appearance in the form of small larvae about 8 millimeters long. They were orange and black striped with branching black spines. The larvae probably hatched in midsummer and spend there first year feeding communally inside webs exclusively on white turtlehead (*Chelone glabra*), which is a member of the snapdragon family (*Scrophulariaceae*). Well, at least that is what the literature says. To my surprise we also found webs with Baltimore checkerspot larvae on Joe-pye-weed, swamp lousewort and mountain mint (whether these larvae survive may be another question). The larvae over winter in webs in ground litter and emerge the following spring to feed on a variety of plants,

*Continued on page 4*

## INPS Membership/Change of Address Form and Survey

Send with your 2004 dues of \$10.00 to Diana Horton, 720 Sandusky Drive, Iowa City, IA 52240.

Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Phone: \_\_\_\_\_ Email Address: \_\_\_\_\_

Additional information or special interests for member directory entry \_\_\_\_\_

Mark this box if you do not wish to have this information published in the INPS member directory. The INPS mailing list is never distributed to other organizations or companies. Dues are payable on a calendar year basis from January 1 to December 31. Use this form for change of address.

## Prayer of the Solomon's Seal

By Margaret Okere

Head bowed like a woman  
in church, features draped  
by a green mantilla. Within

her leaves, the vulnerable  
inner space, the surprise  
beneath stem of buds

suspended, trembling,  
tears caught  
half-way down a cheek.

In single row, they descend  
below the leaves,  
as if each were a loss

an irreplaceable loss,  
succession of grief  
following grief, hidden

from the world, her body  
weighted down  
until she acquires

a delicate compassion.



### Newsletter

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