CHAPTER 7-3
GARDENING: PRIVATE MOSS GARDENS

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CHAPTER 7-3
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Figure 1. This is a large private moss garden in Nagoya, Japan, using boulders to add interest. Photo by Janice Glime.

Private Gardens

Private gardens are gaining popularity in the USA (Dunn 2008; Martin 2008; Cullina 2009). You know moss gardens are coming of age when an article appears in the New York Times (see Tortorella 2014). Garden journals give advice on establishment and care of moss gardens. But what works in one part of the world may not work in another, and that is true within countries as well. Watering instructions and species choice must be in tune with local climate, light, available bryophytes, and competing species.

In Japan, even tiny spaces a meter wide by three meters long are used for a garden. It may be a vegetable garden, but often it is a moss garden with a few tracheophyte highlights (Figure 1). Such private gardens give their owners a sense of space and tranquility (Figure 2). Mosses are particularly enjoyed because they miniaturize the landscape and give a feeling of looking into the distance (Figure 3-Figure 9). Cushions of *Leucobryum* (Figure 10) can resemble distant mountains. *Polytrichum* (Figure 11) can simulate a forest. *Hypnum imponens* (Figure 12), a common "sheet moss" sold for decorative purposes, is used to "fill nooks and crannies" (Cullina 2008). Small mosses in the foreground provide the open fields. Pebbles become boulders.

Figure 2. This peaceful scene is a private moss garden in Kyoto, Japan. Photo by Janice Glime.
Figure 3. This lamp adds interest in a private moss garden at a home near Nagoya, Japan. Photo by Janice Glime.

Figure 4. These rocks form a path through *Polytrichum* in a private moss garden in Nagoya, Japan. Picture by Janice Glime.

Figure 5. Fukushima-san sweeping his private moss garden in Nagoya, Japan. Photo by Janice Glime.

Figure 6. This path leads through *Polytrichum* in a private garden in Nagoya, Japan. Photo by Janice Glime.

Figure 7. *Entodon* and *Polytrichum* grow in a private moss garden in Nagoya, Japan. Typically, the *Polytrichum* will outgrow the pleurocarpous mosses such as *Entodon*. Photo by Janice Glime.

Figure 8. This portion of a private moss garden in Nagoya, Japan, has texture created by different species of mosses. Photo by Janice Glime.
Figure 9. This private moss garden in Nagoya, Japan, has a dry "stream" and bridge. Photo by Janice Glime.

Figure 10. *Leucobryum glaucum* growing naturally around a tree at Coopers Rock, West Virginia, USA. Species of *Leucobryum* are used to simulate mountains in moss gardens. Photo by Janice Glime.

Figure 11. *Polytrichum piliferum* showing white leaf tips. Species of *Polytrichum* are used to simulate mountains in moss gardens. Photo by David Holyoak, with permission.

Figure 12. *Hypnum imponens*, a common species in private gardens, available as sheet moss. Photo by Janice Glime.

**Making Your Garden**

Private moss gardens are common in Japan (Pullar 1966/1967; Inoue 1980), but elsewhere they are rare. In Chatsworth, Great Britain, there is a moss and lichen garden of 33 moss and 4 liverwort species, including such common taxa as *Dicranella heteromalla* (Figure 13-Figure 14), *Dicranum scoparium* (Figure 15), *Hylocomium splendens* (Figure 16), *Neckera crispa* (Figure 17), *Plagiomnium undulatum* (Figure 18), *Polytrichum commune* (Figure 19), *P. piliferum* (Figure 20-Figure 21), *Rhizomnium punctatum* (Figure 22-Figure 23), and *Thamnobryum alopecurum* (Figure 24) (Ando 1972). And where else but at the home of a poet – we find cushions of *Polytrichum commune* adorning the gardens of Poet Laureate W. Wordsworth.

Figure 13. *Dicranella heteromalla* on soil bank, a common species in this habitat. Photo by Janice Glime.
Figure 14. *Dicranella heteromalla* with capsules, showing the hair-like leaves. Photo by Michael Lüth, with permission.

Figure 15. *Dicranum scoparium*, a common species that is used in moss gardens in Europe and the USA. Photo by Janice Glime.

Figure 16. *Hylocomium splendens*, a common northern moss used in European and American moss gardens. Photo by Michael Lüth, with permission.

Figure 17. *Neckera crispa*, a common species in Europe, where it is used in moss gardens. Photo by Michael Lüth, with permission.

Figure 18. *Plagiomnium undulatum*, a common species in Europe, where it is used in moss gardens. Photo by Michael Lüth, with permission.

Figure 19. *Polytrichum commune*, a common species that is used in moss gardens in Europe and the USA. Photo by David Holyoak, with permission.
In the Netherlands, a Japanese garden at the estate of Clingendael has become a moss garden. It sports several locally rare species [the leafy liverworts *Odontoschisma denudatum* (Figure 25) and *Plagiochila asplenioides* (Figure 26)] among its 57 taxa. Schoenmakers (1985) speculates that several of the species that are restricted to paths are the inadvertent contributions of visitors.
Mossery

In the 19th Century, a number of British and Americans joined the fad of moss collecting (Wikipedia 2017). This interest led to the establishment of mosseries in a number of both British and American gardens. Mosseries are typically made with slatted wood, with a flat roof. They are open to the north, permitting the entrance of light while maintaining shade. Moss samples were installed in the cracks between the wooden slats. Regular moistening of the entire structure helped to maintain growth.

Garden Variety

In the United States, mosses are being used as a means of exploring new garden themes (Massie 1996). A number of web sites give instructions for planting moss gardens, often supplying pictures of very small ones to the large ones of Japan. Even in the highly settled New Jersey, one anthropologist maintains an entire acre of moss (Whiteside 1987). And the prestigious journal Horticulture sports one article titled "Even a rolling stone could get some moss here" (Atkinson 1990).

In spite of the presence of moss gardens in the United States at least as early as the 1930's (at Cutting Estate, Great River, Long Island, N.Y.; Grout 1931), few suppliers provide a selection of mosses. Atkinson (1990) complained that when inquiring of the editor of a horticulture magazine where one could obtain mosses for gardens he was referred to Carolina Biological Supply! Nevertheless, more recently a quick search on the web revealed several sources for Atrichum (Figure 27), Callicladium (Figure 28), Dicranum scoparium (Figure 15), Campylopus (Figure 29), Hypnum imponens (Figure 12), Thuidium delicatulum (Figure 30), Leucobryum (Figure 10), Climacium dendroides (Figure 31), Dicranella heteromalla (Figure 13-Figure 14), and Plagiomnium cuspidatum (Figure 32). One site sold sheet moss that had been cleaned, spread on a backing, glued down, and dyed green! No, thank you! Another source offers a complete garden, including 400 sq feet of moss, for $US 399.99.
Figure 30. *Thuidium delicatulum*, a moss that does well in American moss gardens. Photo by Janice Glime.

Figure 31. *Climacium dendroides*, a moss often used in American moss gardens. Photo by Janice Glime.

Figure 32. *Plagiomnium cuspidatum*, a common species in American moss gardens, often as a volunteer. Photo by Janice Glime.

**Seasons**

To maintain variations in color through the growing season, one needs to pay attention to the phenological changes among the mosses, just as in planting a flower garden. This can provide highlights in different places as the garden changes through the growing season.

Mosses have life cycles that change their appearance. Spring is a typical season for the production of antheridial splash cups. In some species these are reddish (Figure 20); in others, especially splash platforms, they are green, but look like green flowers (Figure 33). Others have colorful setae (Figure 34, Figure 36) and capsules (Figure 35-Figure 37), and these can appear throughout the summer and autumn, depending on the species.

Figure 33. *Rhizomnium punctatum* males showing splash platforms that look like green flowers. Photo by Michael Lüth, with permission.

Figure 34. *Ceratodon purpureus* showing red-tipped setae in early spring. Photo by Hermann Schachner, through Creative Commons.

Figure 35. *Ceratodon purpureus*, showing red capsules in early summer. Photo by Michael Lüth, with permission.
Figure 36. Moss with ice on capsules, showing colorful setae even in early winter. Photo by J. Paul Moore, with permission.

Figure 37. *Pottia lanceolata* with contrasting capsule color. Photo by Michael Lüth, with permission.

**Water Gardens**

Many bryophytes like a damp habitat (Figure 38). And some of these habitats are very poor in nutrients. Hence, the bryophytes are naturals for water gardens (Figure 39-Figure 40) (Freiland 2017).

Among the many aquatic species, one of the best for a garden is *Philonotis fontana* (Figure 41). It has a fresh, pale green color and tolerates partial submersion or soggy ground.

Figure 38. Water garden and moss where a pipe has been repurposed for creating a garden. Photo from pxhere, through Creative Commons.

Figure 39. Water garden with mosses and waterfall. Photo by David Spain, with permission.
Bog Garden

Gardeners such as Case (1994) have found Sphagnum (Figure 42) bog gardens to be a viable alternative in the Great Lakes area, avoiding high maintenance problems of woodland species unsuited for residential living. These require special conditions devoid of limestone rock and chlorine.

The RaisingRarities website <http://raisingrarities.com/bog-garden/> provides instructions for preparing a bog garden. The pond is excavated and a pond liner is used to cover the shape (Figure 43). It can have a pool attached, as in the diagram, but will require a shallow section for the bog (Figure 44). The lining at the lip of the bog area keeps sand from entering the deeper pool and should go up the bog side of the stones and under them (Figure 45). The bog shelf should be filled 2.5-5 cm deep with pure silica sand. Plant Sphagnum (Figure 42) on the bog shelf and fill the entire shelf with it. Pitcher plants and sundews can be added for interest, planted among the Sphagnum. Collect rainwater and use it to keep the pond and bog at a constant level.

Figure 40. Water garden with mosses on rocks. Photo from pxhere, through Creative Commons.

Figure 41. Philonotis fontana with capsules, a suitable moss for water gardens. Photo by Michael Lüth, with permission.

Figure 42. Colorful Sphagnum that could be used in a bog garden. Photo by Janice Glime.

Figure 43. Bog basin and liner in cross section. Redrawn from RaisingRarities.

Figure 44. Bog basin and liner showing important dimensions. Redrawn from RaisingRarities.

Figure 45. Bog basin shape showing retaining rocks. Sphagnum will be located on top of the sand. Redrawn from RaisingRarities.
My Personal Garden

For my own moss garden, I managed to rescue *Marchantia polymorpha* (Figure 46; with gemmae cups) that was being overtaken by lawn grass on the university campus. It started as a small clump, but one day only a few weeks later I found tiny grey-green specks all over my bare soil (I was just starting the garden). On closer inspection, I found these to be germinating gemmae – the liverwort had spread all over the bare surface and was invading my dying *Leucobryum* (Figure 10) cushion as well. By the second year, I had several forests of archegoniophores (Figure 47), but it seems I didn't get any males.

![Figure 46. My moss garden initially had a small patch of Marchantia polymorpha, about 10 cm in diameter. Within a month, it spread by gemmae, extending about a half meter in each direction. Photo by Michael Lüth, with permission.](image)

![Figure 47. The second year these Marchantia plants produced archegoniophores in abundance. After a few years, I had to remove some of the Marchantia to provide space for mosses. Photo by Janice Glime.](image)

Added to that were *Fissidens* (Figure 48), *Brachythecium* (Figure 49), *Climacium dendroides* (Figure 31), *Dicranum scoparium* (Figure 15), *Leucobryum glaucum* (Figure 10), *Plagiomnium cuspidatum* (Figure 32), *Polytrichum juniperinum* (Figure 50), *Rhytidadelphus triquetris* (Figure 51), *Barbula* (Figure 52), *Thuidium delicatulum* (Figure 30), and *Ceratodon purpureus* (Figure 34) that I was able to collect locally, mostly in places where they were doomed to be overgrown or destroyed by traffic. Of these, *Fissidens*, *Plagiomnium cuspidatum*, and *Thuidium delicatulum* (Figure 30) were the most successful.

![Figure 48. Fissidens taxifolius with capsules; some species of Fissidens grow easily in moss gardens in North America. Photo by Keith Bowman, with permission.](image)

![Figure 49. Brachythecium salebrosum, a species that can occur in large mats usable for moss gardens. Photo by Michael Lüth, with permission.](image)

![Figure 50. Polytrichum juniperinum with capsules in moss garden in Michigan, USA. Photo by Janice Glime.](image)
Figure 51. *Rhytidiadelphus triquetrus*, a species that often grows well in moss gardens in North America. Photo by Janice Glime.

Figure 52. *Barbula unguiculata*, a hardy species that adds a contrasting color in the moss garden, preferring a sunny site. Photo by Michael Lüth, with permission.

The *Leucobryum glaucum* (Figure 10) was a gift from a friend, and it fared well the first year. It looked bad when winter ended and stains of tannic acid from leaf litter discolored it. It survived, but not well, so the next year I made sure it was not covered with litter for the winter, but it did not make it. I replaced it with a really nice hummock of *L. glaucum*. This time I put it on a bed of pine needles, a substrate it often has in nature. But it wasn't long before the chipmunks decided that made a nice entrance to their tunnel.

Some night-active animal also tore up all the *Dicranum scoparium* (Figure 15) and *Thuidium delicatum* (Figure 30) the first night, and once dismembered from their normal growth habit, both failed to thrive. However, later introductions have survived winter and both have produced new growth, so there is hope. Some rodent decided that the *Thuidium* patch was the best place to enter its underground passage, but I seem to have thwarted that hole by stepping on it and filling it in. Alas, now there is a hole in the *Polytrichum* patch.

Most of the *Polytrichum juniperinum* (Figure 50) is doing fine (Figure 53). It is only the large patch that didn't have good structural integrity that looks like a fallen forest. But even there a few die-hards are putting up new shoots.

The real winners [Marchantia (Figure 46-Figure 47) aside] are *Fissidens* (Figure 48) and *Plagiomnium cuspidatum* (Figure 32), with the latter looking a luscious bright green. To my surprise, the *Rhytidiadelphus triquetrus* (Figure 51) did well, whereas *Hylocomium splendens* (Figure 16) didn't like its transplant at all. One patch of *Climacium dendroides* (Figure 31) had mostly brown plants with a few new green shoots arising, but the second patch eventually sprang to life, producing a solid cushion of plants of a most vital green. The old, weedy *Ceratodon purpureus* (Figure 34) seems not to like my gardens much and disappears rather rapidly.

A new patch of the liverwort *Conocephalum conicum* (Figure 54) seems to be doing well. It, and *Fissidens* (Figure 48), also fared well in my indoor garden. That is, they fared well until the birds ate the *Conocephalum*. I found it with triangular cuts around the edge. Each day it grew smaller until it disappeared. The *Fissidens* diminished and ultimately disappeared after the box turtle died. Apparently the turtle had been an effective dispersal agent for both species because they kept appearing in new places until after the turtle died.

I attribute my success, after several failures, to the installation of a sprinkling system. It comes on about 4 am for 20 minutes each night. (We usually don't get much rain in spring or summer.) That makes it hydrated and ready to
take advantage of the cool morning sun. It seems to have made all the difference.

I have learned that leaf litter apparently creates more problems than just deprivation of light during the growing season. The tannic acid seems detrimental to several species, because even when I remove the litter the day the snow retreats from its surface, the mosses that were covered with it seem to have suffered. When I removed most of the leaves before winter, the mosses seemed to fare much better.

**Mountain Moss Enterprises**

The Mountain Moss Enterprises is located near Revard, North Carolina, USA, and is owned by Annie Martin. Known as Mossin’ Annie, this entrepreneur has dedicated her life to rescuing bryophytes that are in the path of destruction due to construction or other human activities. These mosses she either plants in one of her many projects, both public and private, or in her own garden where she cares for them until they meet their destiny in a moss garden somewhere.

One of the frequent sources of her bryophytes is from overgrown blacktop. This seemingly unlikely habitat can be a good source for large patches of bryophytes that come in large sheets. Others come from roofs where the owners are convinced they are harmful.

Martin lives in an area of the Appalachians that receives 150-200 cm rainfall per year (Tortorella 2014). Nevertheless, she waters her moss gardens three times each day. She claims that with 3-4 minutes of supplemental water per day the mosses will grow year-round in "nearly any temperature." (I can't imagine that watering when they are under snow is helpful. It would most likely create ice that could actually dry them out more.)

Mosses can dry out or freeze, and easily survive, green up when once again getting wet, but during that dry period they don't look nice. This ability to dry makes them easy to ship, so the distance to a moss supplier is not a real problem. But obtaining mosses from elsewhere does present ecological problems. In addition to the raping of the landscape by some moss collectors, it introduces non-native species.

Martin makes a variety of designs in her gardens, sometimes using differences in colors of leaves to create designs (Figure 55). In other cases, she may use colorful lichens (Figure 56) or furniture to create highlights (Figure 57).

**Moss and Stone Gardens**

David Spain is the owner of Moss and Stone Gardens in Raleigh, North Carolina, USA (Tortorella 2014). Spain presented moss gardening on the Martha Stewart Show, reporting that "she was a big moss fanatic." Spain recounts his early attempts to grow mosses, bemoaning the lack of teachers or sources appropriate for the area. One of these early attempts, following online advice, was to make a mix of mosses in a blender with buttermilk. This slurry was
Painted onto rocks or soil. Instead of a moss garden, he got a mold garden. His garden designs tend to mimic nature (Figure 85-Figure 87).

Dale Sievert's Garden

Dale Sievert is a landscape gardener in Wisconsin. He became enamored with mosses and now his property is adorned with 60 species of bryophytes. Some of these species arrived by themselves. Among the more common ones in the garden are *Bryum caespiticium* (a widespread species; Figure 59), *Thuidium delicatulum* (a species that spreads rapidly; Figure 60), *Rhodobryum ontariense* (an interesting species that resembles miniature palm trees; Figure 61), *Plagiomnium cuspidatum* (a species that commonly volunteers; Figure 62), *Leucobryum glaucum* (a cushion moss that prefers acidic soil; Figure 64), and *Anomodon rostratus* (a very common species locally and in his garden; Figure 76).

Sometimes Sievert lets the mosses determine their own successional pathway. As is typical, pleurocarpous mosses often overrun the acrocarpous mosses (Figure 63). But acrocarpous mosses can invade tight acrocarpous moss cushions as well, as is a common event in which *Polytrichum* invades a *Leucobryum* cushion (Figure 64). A series of pictures demonstrates some of the changes through time, 2011-2015 (Figure 65-Figure 67).
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Figure 63. Nature has her own ideas about what belongs where. Here *Atrichum* is being invaded by pleurocarpous mosses. Photo courtesy of Dale Sievert.

Figure 64. *Leucobryum glaucum* with invading *Polytrichum*. Photo courtesy of Dale Sievert.

Figure 65. Moss and cat statues in 2011 showing well-established but still thin mat of mosses. Photo courtesy of Dale Sievert.

Figure 66. Moss and cat statues in 2013 showing thick mat and capsules. Photo courtesy of Dale Sievert.

Figure 67. Moss and cat statues in 2015. The original moss has been replaced with *Thuidium delicatulum* dominating the scene. Photo courtesy of Dale Sievert.

Sievert has a number of special features to highlight the various areas of his garden. A bamboo fountain pours into a small pool surrounded by mosses (Figure 68). A bird bath is adorned by colorful rocks and moss-covered rocks (Figure 69). As in many gardens, including my own, a Japanese lantern adds interest (Figure 70). Small to large boulders can add diversity to the scene and may add their own beauty (Figure 71-Figure 72). Stumps provide flat platforms for miniature gardens (Figure 73-Figure 74) or depressions that have their own interest and are great bryophyte substrates (Figure 75). Statuary peers at the visitors or posesplayfully among mosses (Figure 74-Figure 75). Ferns provide changes in texture (Figure 76). Pools can attract frogs (Figure 77).
Figure 68. Bamboo fountain in mossy garden, creating a refreshing pool that raises the humidity for the nearby mosses. Photo courtesy of Dale Sievert.

Figure 69. Birdbath garden in Dale Sievert's moss garden. Photo courtesy of Dale Sievert.

Figure 70. Dale Sievert's moss garden, adorned by a Japanese lamp. Photo courtesy of Dale Sievert.

Figure 71. Rocks and a bit of wood enhance this scene with mostly *Anomodon rostratus*, a common moss in Dale Sievert's garden. Photo courtesy of Dale Sievert.

Figure 72. *Thuidium delicatulum* and rocks in Dale Sievert's moss garden. Photo courtesy of Dale Sievert.

Figure 73. Here a miniature garden grows on a stump in Dale Sievert's moss garden. Photo courtesy of Dale Sievert.
Figure 74. Statuary can add interest or even bring a laugh. Here *Anomodon rostratus* grows with bunnies on a stump. Photo courtesy of Dale Sievert.

Figure 75. Raccoon statues in tree stump bring a smile in the moss garden. Photo courtesy of Dale Sievert.

Figure 76. Even a fern can provide a highlight, seen here hovering over *Anomodon rostratus*. Photo courtesy of Dale Sievert.

Figure 77. Pools can provide habitat and a welcome drink for wildlife. Here the Green Frog *Rana clamitans* sits on a mossy rock. Photo courtesy of Dale Sievert.

Fungi (Figure 78-Figure 79) are willing participants in Dale Sievert's garden. The mosses help to keep the soil moist longer, permitting the fungal threads to thrive. In the right conditions, the fruiting bodies emerge, adding color to the garden.

Figure 78. The pore fungus *Boletus* sp. and moss. Photo courtesy of Dale Sievert.

Figure 79. *Coprinus* with the moss *Anomodon rostratus*. Photo courtesy of Dale Sievert.

Dale has been fortunate to have some of his mosses exhibit prolific "fruiting." The setae and capsules often add brilliant colors to the landscape.
Later red capsules will develop. Photo courtesy of Dale Sievert.

Figure 81. *Amblystegium varium* with capsules, a colorful addition in a rock garden. Photo courtesy of Dale Sievert.

Figure 82. This patch of mixed mosses will soon have capsules to change the color scheme. Photo courtesy of Dale Sievert.

Figure 83. *Plagiomnium cuspidatum* with capsules, adding a fresh shade of green to the scene. Photo courtesy of Dale Sievert.

The beauty of a Japanese garden captures the admiration of many moss gardeners. And Dale Sievert’s garden has its own Japanese garden section. It is complete with a small pond, bridge, and Japanese lantern (Figure 84).

Figure 84. In the Japanese garden portion, a pool, moss, rocks, and raked sand give the feel of a Japanese garden. Photo courtesy of Dale Sievert.

**New Methods in Moss Gardening**

Rick Smith (2009) has written one of the North American guides to moss gardening, *New Methods in Moss Gardening*. Smith provides his personal experiences around the world where he has created moss gardens or been a consultant. He provides instructions for growing twelve of the most common mosses, accompanied by pictures (Figure 85-Figure 87).
Harvesting Ban

In 2006, a moratorium was declared on moss harvesting in the national forests around Asheville, North Carolina, USA (Tortorella 2014). This ban was based on a study of the moss trade. Local collectors would sell sheet moss for as little as $0.50 per pound to members of the floral trade. But stripping a log of all its moss requires 20 years for a new crop, despite all the local rainfall. Gary Kauffman, an ecologist and researcher on the study, determined that if a third of the moss was left on the log, the mosses would grow back in ten years. One of the dangers of collecting the mosses is what fishermen call "bycatch." Unintended species come along with the desired ones, and some of these are rare and endangered. Including these bycatch species, studies indicate that more than 70 species are harvested in the Appalachian moss industry.

Because of these conservation concerns, it is best to do as Annie Martin has done – rescue mosses and liverworts that are scheduled for destruction. In many of these locations, the moss "invaders" are hardy species and ones likely to survive in a garden.

Summary

Private moss gardens tend to serve the same purpose as the larger moss gardens. Rocks, pebble paths, lamps, and other items add interest, and the limited color gives them a peaceful appeal. Outside of Japan, fewer moss gardens exist, in part because the climate is often not suitable. Another difference seems to be the love of color in other parts of the world.

Mossories are an older form of growing mosses. The moss gardens themselves have a wide variety, using artistic designs, Japanese styles, natural styles, and mixed with flowering plants. They vary by season, changing colors when producing reproductive structures and between wet and dry states. Water gardens require different species, but running water can add sound to the landscape. Bog gardens can be used to grow insectivorous plants and other bog plants.

Worldwide, mosses such as *Polytrichum* and *Leucobryum* seem to be popular choices for these gardens. Species like *Thuidium delicatulum*, *Fissidens* sp., and *Plagiomnium cuspidatum* spread easily and may overtake acrocarpous mosses nearby. *Plagiomnium cuspidatum* can often arrive by itself.

Harvesting mosses should only be done on your own property or other private property where you have permission. The best way to get plants is to rescue them where they are scheduled for destruction.

Acknowledgments

I appreciate the email discussions with Nancy Church, Annie Martin, Rick Smith, and David Spain. Most recently, I spent an afternoon discussing mosses and moss gardening with Dale Sievert, leading me to include additional topics in an attempt to answer his questions.
Literature Cited


