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## Small Urban Landscaping With Native Species Common Pitfalls (What Goes Wrong)

By Inger Lamb



**WHAT NOT TO DO** This bed was planted at a city hall to show off the potential of native landscaping, but unfortunately the result was a weedy, unattractive flowerbed. Messy, jumbled, and too tall, the plants just flop over and result in a jumbled, undifferentiated mess of vegetation sprouting from the center of a parking lot. Tall plants, such as cup plant (*Silphium perfoliatum*), big blue stem (*Andropogon gerardii*), and sweet coneflower (*Rudbeckia subtomentosum*) grow so tall they should only be used in very large areas. Also, showy tick trefoil (*Desmodium canadense*) is famous for its production of "stick tights," and is not a good ambassador for native plants – and the water-loving monkey flower (*Mimulus ringens*) and cardinal flower (*Lobelia cardinalis*) will be lost in the first drought.

*I owe many thanks to Wild Ones member, Scott Woodbury, St. Louis (MO) Chapter, and the Shaw Nature Reserve (a division of the Missouri Botanical Garden), for introducing me to the use of native plants for landscaping. I broke my tedious, constant-watering cycle when I began working as a volunteer for Scott: One of my first activities was to help plant a native-landscaping demonstration area. The concept of using native species to establish low-maintenance flowerbeds (that provide habitat) made so much sense that I was an immediate convert.*

*I jumped in head first, planting anything that was native, and making many painful mistakes along the way. I hope my article will help readers avoid some of those mistakes, and streamline the process of establishing attractive native-plant gardens.*

*A terminology note: My native-landscaping experience is based mostly in Iowa, and consequently I tend to use the phrase "prairie species" interchangeably with "native species."*

If the right (native) plants are used, and the site is managed properly until the native species re-seed and fill in any bare ground, an attractive, low-maintenance, low-input, cottage-garden style flowerbed of native wildflowers will result. Unfortunately, many

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attempts at establishing native plantings in small-scale urban settings have not gone well, often resulting in overgrown, weedy, and generally unattractive flowerbeds. These failed plantings give native landscaping a bad name, and set back other efforts to use native plants in urban landscapes by providing “naysayers” an excuse to promote mowed grass and traditional landscaping. This is especially unfortunate because not only are native plantings low input, and lead to better soil and water quality, they also provide much-needed habitat for native birds, butterflies, pollinators, and other animals.

Many things can and do go wrong with native landscaping projects. As part of my native-landscaping consulting business I have spent a considerable amount of time deciphering what went wrong in failed sites. Here are a few of my observations.

### Site Preparation and Design

*The site is not properly readied for planting:* A couple applications of herbicide and/or tilling won't kill brome, crown vetch, red clover, and many other species that are problematic if present in a native planting. Time spent monitoring the re-appearance of problem species after herbicide treatment, prior to planting, is critical to success.

*Inexperienced site designers:* Many standard landscape designers will specify a native seeding or planting with no basic knowledge, and often with no direct personal experience, related to what it takes to establish a native-species flowerbed or prairie planting. These sites are usually doomed from the outset – by the time someone realizes things have gone awry, the site is a weedy mess (quite possibly including undesirable native species) that would be an enormous, if not impossible job to correct. Additionally, inappropriate species mixes are often selected by inexperienced designers (see “Plant Selection Problems”). A good way to “weed out” inexperienced designers is to request photos of their successful (year three or older) native-landscaping projects.



The dominant flowers in this bed, in late May, are prairie smoke (*Geum triflorum*) and wild geranium (*Geranium maculatum*). The “smoke” (elongated styles) aspect is visible in the plants in the lower left of this photo.

*Design Issues 1:* In some cases the reputation for ruggedness attributed to native species can be a detriment. While it is true many native plants can withstand remarkably harsh environmental conditions, they nevertheless do require a specific set of growth parameters. Conditions created in some engineered sites (e.g., biocells, rain gardens) are not typical of a natural system, and may not support some species that would

thrive in the same locale if in a natural soil system. In particular, soils engineered to drain rapidly may be too dry for even a drought-adapted prairie species if there is a prolonged summer hot/dry spell, and too wet for the same species if there is a prolonged cool/wet spring. Similarly, underground rock chambers connected to storm drains may freeze at depths not experienced in a natural soil system and negatively affect the root system of the plants growing above. These engineered systems are still quite new and need to be evaluated for plant survival on an ongoing basis.

*Design Issue 2:* Each site is different (shade, slope, soil, etc.), and must be designed to fit site conditions. The most obvious variables are distribution of sun/shade, and availability of moisture. Attempts to use a one-size-fits-all approach to native plantings are generally not successful, particularly when it comes to species selection. Plants need to be carefully selected to suit the environmental conditions and size of each bed.

### Plant selection problems

*Plants are too tall:* It's essential to stick with shorter plants in small plantings. (See a list of my recommendations by height: [http://prcd.org/inl/recommended\\_plants.htm](http://prcd.org/inl/recommended_plants.htm).) Sometimes even people who know natural areas well don't realize how big the native species are relative to typical landscape plants – establishing small prairie beds is not a case of just using the same mix of species found in “real” prairies. Many – actually, most – commonly available prairie species get five or more feet tall, and even

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four-foot tall is getting pretty big in a small flowerbed. (See a link to my lists of recommended prairie species sorted by height and sun exposure at the end of this article). Also, plant species are often described with a height range, so it's important to use the maximum height when deciding on suitability. This is particularly relevant if you are converting a traditionally tended flower bed to native open-field plants – the soil will be extravagantly rich.

Native species in a new flowerbed often reach or exceed their maximum described height, due to lack of competition for root space and nutrients. Once the bed fills in, and as competitive conditions develop, the plants will grow to a more typical height.

*Wrong seed mix:* A custom seed mix developed specifically for a site is always preferable, as it can be tailored to the site conditions and goals of the landowner. A custom seed mix enables you to avoid these pitfalls:

- A seed mix that is designed for a large scale will include plants that are overly tall, rank, and often not selected for attractiveness.
- A mix designed for a specific water regime being put in the wrong place, so the only species that survive long term are the weedy component of the mix.
- Seed mixes labeled “wildflower” or “meadow” that often look great the first year, but contain non-native species that quickly die out, leaving the more weedy, and often unattractive, species behind.

*Species substitutions may happen:* When plant materials are ordered, substitutions must be carefully monitored. Another species in the same genus may seem like a reasonable substitute, but often this is not the case. If the person placing the order is not familiar with native species, care should be taken that, if necessary, assistance is sought in selecting appropriate substitute species.

*Sun exposure not accounted for:* Most prairie species do not do well in shade, but variations in the light regime on a specific site are frequently ignored (trees, buildings, sculpture, fences, etc.). Full-sun-requiring species planted in the shade, even dappled shade, will lean toward the brightest light in an unattractive manner, or they will become overly “leggy,” and flop over or die.

Savanna or woodland species need to be planted on the north side of shade-producing objects (plants on the south side of objects get a lot more sun), or in areas of dappled shade. This is a good opportunity to increase species diversity, and use some of the many attractive native species that welcome a little shade.

#### Management Problems and how to avoid them

*Lack of monitoring and timely maintenance during establishment and beyond:* There are many people, businesses and agencies that will assist in the design and installation of a native planting, but very few who offer to ensure that the site is managed properly both during establishment and later. It only takes one round of weeds being allowed to set seed before a site becomes a real challenge to

recover. Let it go for a couple of years, and it can be almost impossible to bring it back to an attractive and functional state. A new native planting needs to be checked routinely for at least two growing seasons, and management (usually weed-pulling, sometimes introduction of new species based on success/failure of initial selection) must be done in a timely fashion (i.e., before weeds drop any seed or invade bare ground). After the bed has been filled in by a selection of successful species that have re-seeded into the empty spots, occasional monitoring for weeds is still needed. Monitoring is also needed after extremes of weather that may stress or kill selected species, even after several years of growth.

Also, unexpected soil conditions (draining faster or slower than predicted, non-uniform clay layers, etc.) or changes in environmental conditions (shade trees installed nearby post-planting, water flow changes, etc.) may cause some species to establish poorly. *Continued on page 4*



In June, the bed is highlighted by the bright yellow flowers of black-eyed Susan (*Rudbeckia hirta*), offset by the bright orange butterfly milkweed (*Asclepias tuberosa*), and purple leadplant (*Amorpha canescens*). The long thin leaves of prairie dropseed (*Sporobolus heterolepis*) blow in the wind. As planned, nothing in this bed will grow taller than thirty inches.

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These are reasons why an experienced ecologist should repeatedly evaluate plant establishment in the first years after planting, and recommend new species (based on those that are thriving) to be planted in a timely manner. This monitoring should begin within a month of initial planting. Allowing bare or sparsely covered ground to remain only provides opportunity for weeds to establish.

*Poor weed control:*

Weed management needs to be understood and agreed upon before the site is established, long before weeds show significant growth. In an area with a heavy weed-seed bank (common on construction sites), a remarkable number of weeds usually develop the first year or two. This can also be true in fairly clean planting sites.

Once the native species are mature they provide enough competition for moisture, light, and nutrients that the weeds decline dramatically – at that point occasional spot weeding is sufficient for management.

In smaller beds the weeds need to be pulled or treated with herbicide until the native species self-seed and fill in all bare ground. This extremely important aspect of bed establishment is often delegated to grounds-maintenance staff, who don't know the native plants (especially immature ones), and don't want to pull weeds. Volunteers or others may be willing to weed, but usually don't know native species well enough to know what to leave and what to remove. The latter problem may be solved by spraying "sample" weeds with paint as a reference for weeders. Also, glyphosate treatment is especially effective in early spring and late fall when the native species are dormant. During the growing season a sponge on the end of a tank sprayer nozzle can be used to treat individual plants with herbicide.

In areas too large to weed by hand, routine mowing is needed until the prairie species establish. Native species are usually quite spindly the first year or two – mowing reduces weed competition for light and nutrients in addition to reducing weed vigor and seed set. Mowing high (six to eight inches left standing) when weeds



A close-up taken in late July shows the bed in yet another seasonal transition. The nodding onion (*Allium cernuum*) is in serious nodding mode, just about to burst open, as is the common milkweed.

become dominant during the first, and sometimes the second, growing seasons is essential. Also, if the site is in a high-visibility urban area, complaints about the weedy appearance can be reduced by mowing (*see note about signage below*).

*Including non-native plants:*

Usually a mistake, because non-native species nearly always will require irrigation and fertilization. This short-circuits the low input benefit of using native species, and also

has a negative impact on the native plants (*see next section*). Of course the natives too will require some watering during the early establishment phase, usually not more than four to six weeks (depending on rainfall).

*Fertilizers and irrigation are routinely applied:* Traditional landscape companies and gardeners sometimes assume that fertilizer and irrigation are required, or will make the planting "better" somehow. Routine watering and fertilizing will cause native species to grow inordinately large (sometimes double normal size), fall over, and/or die.

*Germination inhibitors are applied:* Use of seed germination inhibitors such as "Preen" to control weeds is not recommended. These products do not kill weed seeds, they merely prevent them from germinating for a short period after which the product must be re-applied or the weeds germinate. It is better to break the weed cycle by letting the weeds begin to grow, and then killing them in some manner (pulling, herbicide treatment, mowing). Furthermore, the long-term goal of the establishment phase is to get the native species to self-seed, and obviously seed germination inhibitors will interfere with that process.

*Unrealistic expectations of the landowner:* Often a landowner or group of people will become enthusiastic about the benefits of native landscaping without any knowledge of the challenges inherent in the establishment phase of these sites, and have additional fairly unrealistic expectations. Designers accustomed to establishing native species plantings may

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not realize the extent of this lack of understanding. When the realities of weed-pulling and mowing set in, along with a season or two of less-than-ideal landscape appearance, it can be uncomfortable for all involved. Extensive pre-planting emphasis on what to expect is very important, as is inclusion of a few species that can be counted on to germinate and bloom readily (e.g., partridge pea, black-eyed Susan, purple prairie clover).

*Lack of annual inspection:* A mature native planting will be quite stable and require little maintenance, but some desirable species may decline and be lost over time or after extreme weather events. It's good practice to monitor a site for the need to add/replace a few species. This is especially important if the site was compacted during construction, as the soils will loosen over time and drainage rate often increases, which in turn may affect plant growth.

*Weed "tolerance":* Land managers experienced in large-scale prairie establishment will sometimes adopt a nonchalant attitude toward mowing weeds. They allow a longer time period between mowings than is ideal because they know the native plants will eventually establish, and the weeds will decline naturally. This leads to a protracted unattractive establishment phase. If the site is in a highly visible urban area it needs timely "cosmetic" mowing or spot string-trimming during establishment to help avoid negative reactions from the public.

### Public Education Issues

*Signage is essential:* Letting people know what's going on is an important way to avoid complaints during vegetation establishment, and to educate at the same time. This is especially important if a site is challenging, and may take longer to establish – many urban native landscaping areas are old building sites, construction sites, parking lots, etc., with soils that are compacted and/or weedy, and consequently will have a protracted "ugly duckling" phase. In some cases, describing such a site in terms of a "traumatized landscape" may help convey the concept that it's not just a native planting being established, it's a natural landscape in the process of recovery.

*Borders:* A fence or a mowed area around the site conveys the message that a native planting is there on purpose, and being tended. This helps gain acceptance by the edgy public. Similarly, prairie plants hanging over a sidewalk, or blocking a line of vision for cars, don't win many converts to native landscaping.



By mid-August the black-eyed Susan (*Rudbeckia hirta*) flowers have faded and been replaced by orange cone-flower (*Rudbeckia fulgida*), and joined by a canopy of blooming nodding onion.

*Additional education through a range of media:* Articles in the local newspaper, tours of native plantings, local lectures and workshops, and hands-on days all help get the word out about the benefits and possibilities of native landscaping.

### Final Thoughts

There are many styles of flowerbed design, ranging from very formal and highly managed to a prairie/native plant "cottage garden" where the plants are allowed to re-seed with minimal human interference. To establish the latter style of landscaping I recommend putting in a selection of carefully chosen, attractive species, planted in drifts across a gradient (moisture or light) where they are expected to do well (additional species may be introduced using seed) – then allowing them to self-seed until the site is filled with native species. In this situation even a bed established with only already rooted plants (as opposed to seed) should be considered a seeding, since full establishment depends on self-seeding by the planted species. Once completely filled in, this style of native flower bed is very low maintenance – watering beyond the brief, early establishment phase, and fertilizing are not needed, and very few weeds can compete with established prairie species.

There are almost always surprises: The soil will hold more or less water than expected, has a different clay content than first thought – one species mysteriously does much better or worse than anticipated, and so on. The best way to counter this is to pay attention to what is happening: Monitor (and weed) the bed as the plants establish, and fill in with additional

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species based on observations of what did and didn't do well. The more diversity you can introduce, the better. It will help ensure that something will do well even in years of extreme weather events – you will be lending sustainability to your site.

By the end of the second growing season, and certainly during the third season, the native species will begin self seeding (obviously, using seed germination inhibitors like "Preen" is not recommended). This is another indicator of what species are doing best, and is generally a good thing. Occasionally some species may reproduce more than desired, and need thinning (or transplanting) to allow other species room to establish. The vegetation should be mowed or burned annually in late winter, and spot-checked for weeds in early spring, and occasionally during the growing season.

I generally do not recommend trying to maintain bare/mulched ground in prairie-landscaped beds. Many of our prairie species are adapted to compete for bare ground, and will routinely self-seed. Maintaining open areas leads to the need to routinely deal with volunteer native seedlings along with actual weeds, circumventing the reduced maintenance benefit of native landscaping. If permanently unvegetated areas are desired, species that re-seed prolifically should be avoided, and routine weeding incorporated into long-term management plans.

In the end, native landscaping is "just" establishing a self-sustaining perennial flowerbed. Done correctly the resulting landscape cannot only be attractive and low input, but can offer something that non-native landscapes can't: Habitat. This opens the doors to gaining a greater appreciation for our remarkable historic prairie landscape and native natural areas, and provides rewards beyond the mere enjoyment of a flowerbed. \*

[http://prcd.org/inl/recommended\\_plants.htm](http://prcd.org/inl/recommended_plants.htm): My lists of recommended native plants (including plants to avoid), compiled to help people have a successful start with native landscaping.

[www.pizzo.info/](http://www.pizzo.info/): Examples of successful urban, native-plant projects:

[www.for-wild.org/download/GrowItDontMowIt.pdf](http://www.for-wild.org/download/GrowItDontMowIt.pdf): Five steps toward minimizing potential conflicts with neighbors.

For more photos of Inger Lamb's work:

<http://picasaweb.google.com/Prairie.Landscapes.of.Iowa.LLC/WhatNotToDoWithNativeLandscaping?authkey=Gv1sRgCPy2j5eHp5D2IA#>

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