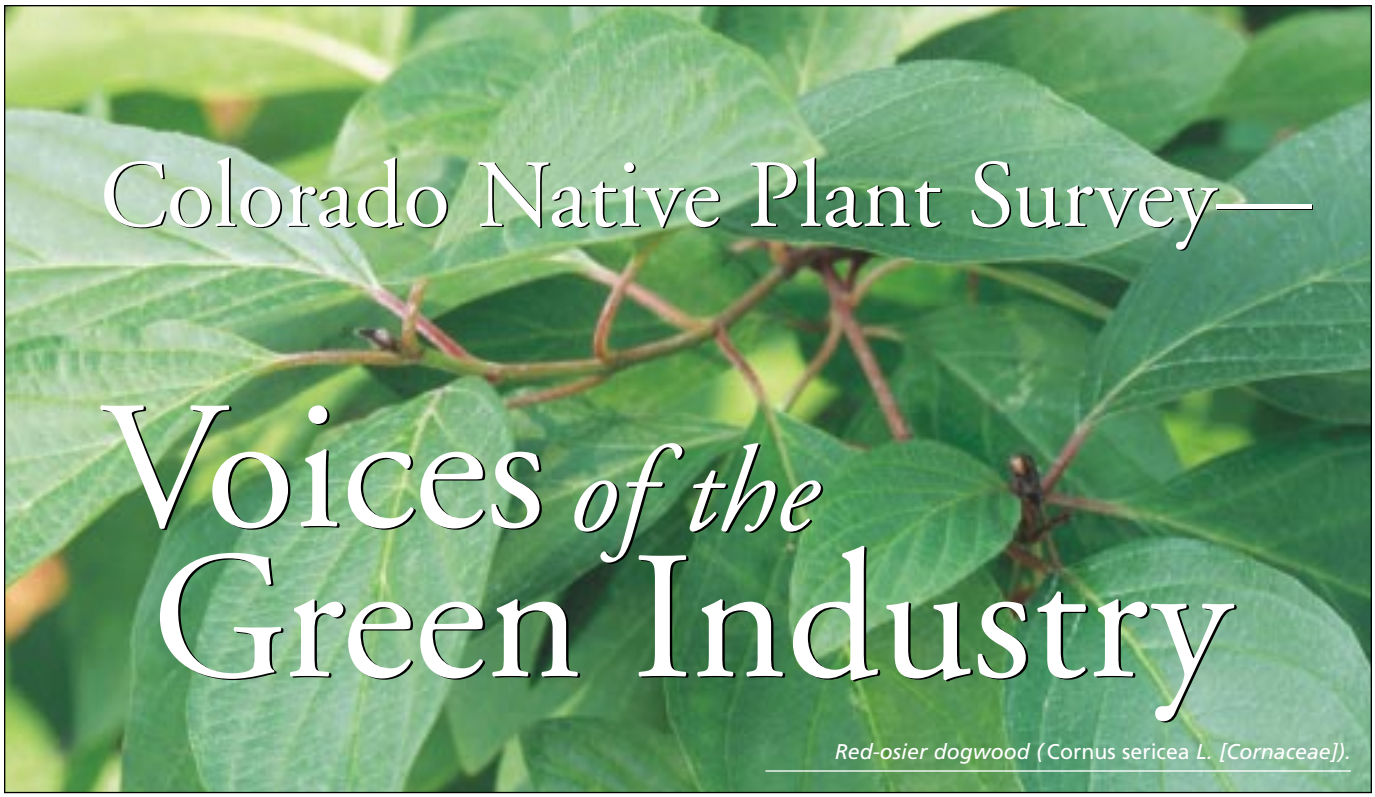

Colorado Native Plant Survey—Voices of the Green Industry

*Red-osier dogwood (*Cornus sericea *L. [Cornaceae]).*

Photo by Brent Flint

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ABSTRACT

We interviewed 33 companies to understand the current status of Colorado's Green Industry's native plant sector. Most responses to the survey referred to problems with native plant work and the great need for more information, education, and research. The respondents' top concerns included: propagation, issues of genetic variability, availability of retail-quality native plant material, cultural and other information to aid in the marketing of native plants, lack of commercially available seeds, maintenance in landscapes and on restoration sites, and finally, public perceptions that often hinder acceptance of projects that incorporate native plants. Respondents agreed overwhelmingly that the native plant sector is growing slowly, and the growth is being driven primarily by water conservation concerns.

KEY WORDS: native plant sector, rural-to-urban continuum, restoring disturbed areas, native plant materials, environmental stewardship, cultured landscapes, perception differences

NOMENCLATURE: ITIS (2001)

We questioned members of Colorado's native plant industry to better understand the current status of native plant use in the state. Our suspicions were that the native plant sector had untapped potential, was small and fragmented, and had needs that were perhaps unique within the Green Industry and worthy of better definition. Our objectives were to gather information, determine areas of need, bring industry leaders together to facilitate a more effective support network, and ultimately, to develop solutions to respondents' concerns, whether they were research oriented or educational in nature.

Survey results combined information from a variety of industries with specific needs: nurseries, garden centers, seed companies, landscape architects and designers, as well as consumers. The survey also addressed problems associated with native plants in all landscape uses and types. Our survey information can be a useful tool for growers, researchers, educators, planners, designers, and consumers and could help promote native plant use along the rural-to-urban continuum.

The role of native plants in cultured landscapes and restoration has been validated now that supportive legislation exists (PEO 1999; SCEO 1999). This legislation advocates using native plants to manage alien (invasive) species and to achieve desirable plant communities.

The primary uses for native plants are to preserve natural environments and restore disturbed areas. Native plants can restore habitat; provide food, shelter, and other ecological processes for wildlife; delay or reduce species extinction; and stabilize species richness (Smith 1996).

In terms of preservation and restoration, native plants are invaluable in dealing with the impacts of noxious weeds on native plant communities. They can ameliorate or eliminate the potential loss of biodiversity from ecosystems disrupted or displaced by

Photo by Brent Flint

*Indian paintbrush (*Castilleja *spp. Mutis ex L. f. [Scrophulariaceae]).*

noxious weeds. Noxious weeds reduce genetic and structural diversity, increase soil erosion, decrease available soil moisture, change the dynamics of organic matter accumulation, reduce nutrient availability, increase fire frequency, slow the rate of succession, and reduce land values (Rosentreter 1994; Sheley and Petroff 1999). Although more research is needed to corroborate many of these claims, the increasing need and demand for native plants and functional ecosystems will positively impact companies such as those we surveyed. The native plant sector has the opportunity to collaborate with their communities to identify land management practices that will ensure our environment's biodiversity. Ensuring biodiversity while meeting the demands of society is critical (Lubchenco and others 1991).

Other benefits for using native plants are their ability to help cultured landscapes transition into natural areas, and to create greenways and buffer strips between different land use types and habitats (Anella 2000). In addition, there is a growing movement in Colorado and elsewhere to create a regional sense of place, and native species can be used as a unique design element to accomplish this. In creating landscapes that are more authentic to a region, we must be concerned with ecological structure and function, not merely horticultural aesthetics (Beatty 1981; Nassauer 1988).

Native plants are being assigned a new value as a philosophy of environmental stewardship and responsibility evolves. The need for a more sustainable approach to horticulture is a natural outgrowth of increased ecological understanding of landscapes, the process of manipulating or creating landscapes, and the desire to conserve and reduce resource use. The sustainable system "serves people, sustains or improves the environment, and enhances the economy on the scale of the entire planet and over the next hundred or several hundred years" (Doxon 1991). Nevertheless, arguments that promote using native plants on the theory they are lower maintenance, more adaptive, and more resistant to pests are less conclusive. The result of moving native species into cultured landscapes is not adequately observed or reported. Research into this area is particularly needed to measure the true benefits of native plantings in cultivated environs. Poor land management decisions can be avoided by proper site evaluation and plant selection, regardless of a plant's native status.

THE SURVEY

We conducted 33 interviews. Our participants covered a wide geographic range within Colorado and included nurseries and garden centers (16), seed companies (9), landscape architects and designers (6), a nature center, and a sales organization. Twenty-seven interviews were conducted on-site and 6 by telephone. Most interviews lasted several hours and often included a tour of the facilities. The survey also queried participants about trends and common issues in the native plant sector. Interview questions were broad in scope to elicit diverse responses and truly flesh out the main issues involved (Table 1).

RESULTS AND DISCUSSION

Participants were generous with their time and in providing information. Their receptivity to the survey was encouraging and suggests that the issues we identified are overdue in being addressed. Participants agreed that the native plant sector is growing slowly, determined largely by water conservation concerns despite that water is currently available at a comparatively low cost. An increased interest exists, however, because native plants are widely unknown and provide a new array of plants for the gardening public. Native plants constitute a largely unfilled market niche with unfulfilled market potential. Consumers are motivated to purchase native plants not because they are native or because of their appearance, but rather to provide habitats for wildlife, xeriscape or water-smart gardens, low maintenance gardens, and firewise landscapes.

Landscape restoration and its associated fields are still the largest factors in determining native plant material supply and demand, with wholesale and landscaping outlets as the next determinants. There is much less causality between retail sales and the sector's growth or decline. Availability of plant material, especially for larger plant sizes, is still an occasional problem. The industry, however, has made good progress in increasing supply to keep up with current demand.

Our survey respondents were chosen to represent, as much as possible, different sizes of businesses that work with native plant propagation, production, and sales, as well as those that consult in restoration, reclamation, revegetation, and planning and design that involves native plants. Of the 16 nurseries and garden centers we interviewed, we characterized 5 as large wholesale nurseries, 6 as retail nursery and garden centers, and 5 as small wholesale or retail nurseries. In further characterizing our respondents, 2 of the 5 large wholesale nurseries and 1 of the retail nursery and garden centers are major suppliers of material for restoration, reclamation, and revegetation projects. The number of respondents who propagate most of their own material include all 5 of the large wholesale nurseries and all 5 small wholesale or retail nurseries, but only 1 of the 6 retail nursery and garden centers. Retail nursery and garden centers are more likely to purchase native plant materials than to seed their own, especially those species that are challenging to propagate and produce. Businesses with a high degree of success in propagating and producing natives have an interested, committed, and knowledgeable propagator or production manager. These businesses are also willing to devote resources to experimenting with propagation for a reasonable period or even for the long-term.

We placed the 9 seed companies into size categories: 2 are large; 2 are medium; and 5 are small (including 1 seed farmer). The largest consumers of native seeds include USDI Bureau of Land Management and National Park Service; USDA Forest Service; state departments of transportation, parks and recreation, and open space; reclamation projects on mined land; ski areas; and federal programs such as the Conservation Reserve Program. Native seeds are also sold to nurseries and other seed companies on a wholesale basis, and a small amount is sold on a retail basis through mail order and the packet trade to garden centers and other specialty stores.

We surveyed 2 landscape designers, 2 independent landscape architects, and 2 landscape architect firms. Landscape architects do not limit their use of native plants to cultured landscapes. They are contracted to design natural areas, state and federal parks and recreation sites, to create and mitigate wetlands, and to restore various habitats and ecosystem projects. Landscape designers, however, typically work with residential contracts that incorporate native plantings into cultivated landscapes.

TABLE 1

Condensed questionnaires used in survey

Nurseries, garden centers, seed companies	Landscape architects and designers
1 How is your company involved with native plants? (respondent profile)	1 What type of designs/plans/projects do your clients most often request that involve native plants or communities?
2 What proportion of your revenue is derived from native plant sales and services?	2 What proportion of your revenue is derived from native plant designs/plans/projects?
3 What are the problem areas (including problem plants) you have identified in your work?	3 What are the problem areas you have identified in your work?
4 What are your best-selling native plants?	4 What native plants do you most often specify in your designs/plans?

Each company had a general idea as to the percentage of their business that involves sales of or services in native plants. Data reflecting the exact amount of revenue generated was unavailable. We organized general revenue data according to the category of respondent and into ranges expressing the percentage of revenue derived from sales of and services in native plants. The ranges were then assigned the values of minor, moderate, or significant sales (Table 2). The nature center and the sales organization were not included in Table 2 because the revenue data did not apply. We found it informative to examine the levels of sales for nursery and garden centers and seed companies and compare these values to the category or size of the companies (Table 2).

The amount of revenue each company derives from sales of native plants and consulting services varied tremendously. Four of the five nurseries and garden centers reporting minor sales of native plants were retail nursery and garden centers. Though retail nurseries and garden centers are seeing a slow increase in interest in native plants and corresponding sales, respondents reported that gains are disappointing. Not surprisingly, for both the nursery and garden centers and seed companies, significant sales were reported by small

Photo by Brent Flint

*Blooming serviceberry (*Amelanchier alnifolia *(Nutt.) Nutt. ex M. Roemer [Rosaceae]) with the trunk of* Pinus ponderosa *P. & C. Lawson (Pinaceae).*

TABLE 2

Type of business and percentage of revenue derived from native plant sales and services

Business types	Minor 0 to 10	Moderate 11 to 49	Significant 50 to 100
Nurseries and garden centers			
Large wholesale nursery	1	3	1
Retail nursery or garden center	4	2	0
Small wholesale or retail nursery	0	1	4
Total	5	6	5
	Minor 0 to 20	**Moderate 21 to 50**	**Significant 51 to 100**
Seed companies			
Large	0	2	0
Medium	0	1	1
Small	0	1	4
Total	0	4	5
Landscape architects and designers	0	3	3

businesses that opted to choose native plants as a niche. We intentionally interviewed seed companies and landscape architects and designers who were identified as having a moderate to strong interest in and commitment to native species and communities. Hence, it is not surprising that our respondents in these categories reported moderate or significant sales and zero in the ≤ 20% minor sales range.

During our interviews, we focused on problem areas in a company's work with native plants, and on identifying issues most in need of research, education, and information. Respondents mentioned many different and interesting issues. However, this article reports only those issues mentioned by multiple respondents. In the following section, the problem areas are identified by varying percentages of respondents. Further exploration of the issues and possible remedies offered by the respondents are included.

Nursery and Garden Center Concerns (16 total respondents)

50% of the respondents discussed propagation requirements: specifically, 25% mentioned poor germination (inconsistency and viability issues), and 13% cited extremely slow germination rates. Though research on the successful propagation of many native species is being done on a limited basis, most nursery respondents expressed that the time and resources required for the research limits their further involvement with the more difficult to propagate species. Specific propagation guidelines would be extremely valuable for nurseries and other green industry professionals.

19% mentioned a need for more planting media and production research. Information is needed about evaluating soilless mixes, including components other than peat, perlite, and vermiculite, such as coir and native soil. Container production limitations were mentioned, including poor overwintering, and the relationship between different potting media and establishment success upon outplanting.

13% discussed provenance and other issues of genetic variability. Respondents discussed genetic differences that affect the ability of native species to successfully establish in regions with varying altitude, latitude, and precipitation and how inherent genetic variation affects wildland seed collecting and outplanting issues.

13% mentioned the use of mycorrhizae in container production.

13% of nursery and garden center respondents, and 33% of landscape architects and design respondents, wanted to see improvements in retail quality native plant material. Better consistency of product (more than "sticks in a pot") in addition to meeting the increasing demand for larger-sized native plant material was reported.

13% reported the need for more cultural and other information to aid in the marketing of native plants. Respondents suggested that the industry produce more information to help nurseries and garden centers better market native plants (training sessions and workshops for staff and the public, signage, brochures, posters, pot tags, and demonstration gardens). The industry also needs to provide consumers (including landscape contractors and associated trades) with information about how to use and care for native plantings.

Seed Company Concerns (9 total respondents)

33% of the respondents reported the lack of commercially available seeds for many species.

Landscape Architect and Design Concerns (6 total respondents)

87% of the respondents cited perception differences as a limitation to their work with native plants. There is a need to educate clients and the public that native plantings often take longer to establish. Native plantings and natural areas often look unkempt. This problem can be solved through creativity and signage that indicates "evidence of care," for example, "this prairie restoration project is designed to reduce water use and attract wildlife." Education will lead to better public acceptance. We should strive to move beyond judging a project's virtue solely based on what it looks like and allow ecological function to play an equally vital role when choosing plant material.

67% cited problems with maintenance of native plants in landscapes and restoration sites. This issue causes many problems and is often the reason why a project is not adopted in the first place or is not successful over time. Clients, facility managers, and the maintenance industry need to be educated about the differences in maintaining traditional versus native landscapes. The tendency to overwater and overfertilize should be resisted, however, native plantings still need care in the establishment phase regardless of the project (for example, residential landscape versus mineland restoration site).

33% mentioned the need for long-term experimentation over broad bioregions. Created landscapes can be used as "living laboratories" and may help develop sustainable landscape solutions along various gradients (elevation, latitude, and precipitation), and along the rural-to-urban continuum.

Challenging and Desired Species

If applicable to their type of business, each respondent listed those native species most challenging to propagate and produce, as well as their "best selling" native species, for example, those which are being successfully propagated, produced, sold, or used in planning and design.

The most challenging problem plants to propagate and produce, in the order most frequently mentioned:

Beardtongue (*Penstemon* spp. Schmidel [Scrophulariaceae])

Manzanita (*Arctostaphylos* spp. Adans. [Ericaceae])

Indian paintbrush (*Castilleja* spp. Mutis ex L. f. [Scrophulariaceae])

Juniper (*Juniperus* spp. L. [Cupressaceae])

Singleleaf ash (*Fraxinus anomala* Torr. ex S. Wats. [Oleaceae])

Mexican cliffrose (*Purshia mexicana* (D. Don) Henrickson [Rosaceae])

Scarlet gilia (*Ipomopsis aggregata* (Pursh) V. Grant [Polemoniaceae])

Barberry (*Mahonia* spp. Nutt. [Berberidaceae])

Columbianum monkshood (*Aconitum columbianum* Nutt. [Ranunculaceae])

Antelope bitterbrush (*Purshia tridentata* (Pursh) DC. [Rosaceae]).

The top 4 best sellers for each respondent category, in the order most frequently mentioned:

Nurseries and Garden Centers

Beardtongue (*Penstemon* spp.)

Serviceberry (*Amelanchier* spp. Medik. [Rosaceae])

Red-osier dogwood (*Cornus sericea* L. [Cornaceae])

Skunkbush sumac (*Rhus trilobata* Nutt. [Anacardiaceae])

Seed Companies

Beardtongue (*Penstemon* spp.)

Prairie flax (*Linum lewisii* Pursh [Linaceae])

Colorado blue columbine (*Aquilegia caerulea* James [Ranunculaceae])

Western wheatgrass (*Pascopyrum smithii* (Rydb.) A. Löve [Poaceae])

Landscape Architects and Designers

Sagebrush (*Artemisia* spp. L. [Asteraceae])

Currant (*Ribes* spp. L. [Grossulariaceae])

Mountain mahogany (*Cercocarpus* spp. Kunth [Rosaceae])

Buffaloberry (*Shepherdia* spp. Nutt. [Elaeagnaceae]).

CONCLUSION

Our survey defined the current status of Colorado's Green Industry's native plant sector. Many problems were identified, which can guide efforts to develop solutions. These solutions may come through the Land Grant University system, other state or county agencies, and private efforts. Although the pace of growth is slow, interest is definitely increasing in regionally appropriate landscape materials and in creating a regional sense of place by using native plants as a unique design element. Industry leaders and associated entities should join in a collaborative effort to share information and experiences that will help meet the increasing demand for native plants and create pertinent information, education, and research.

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