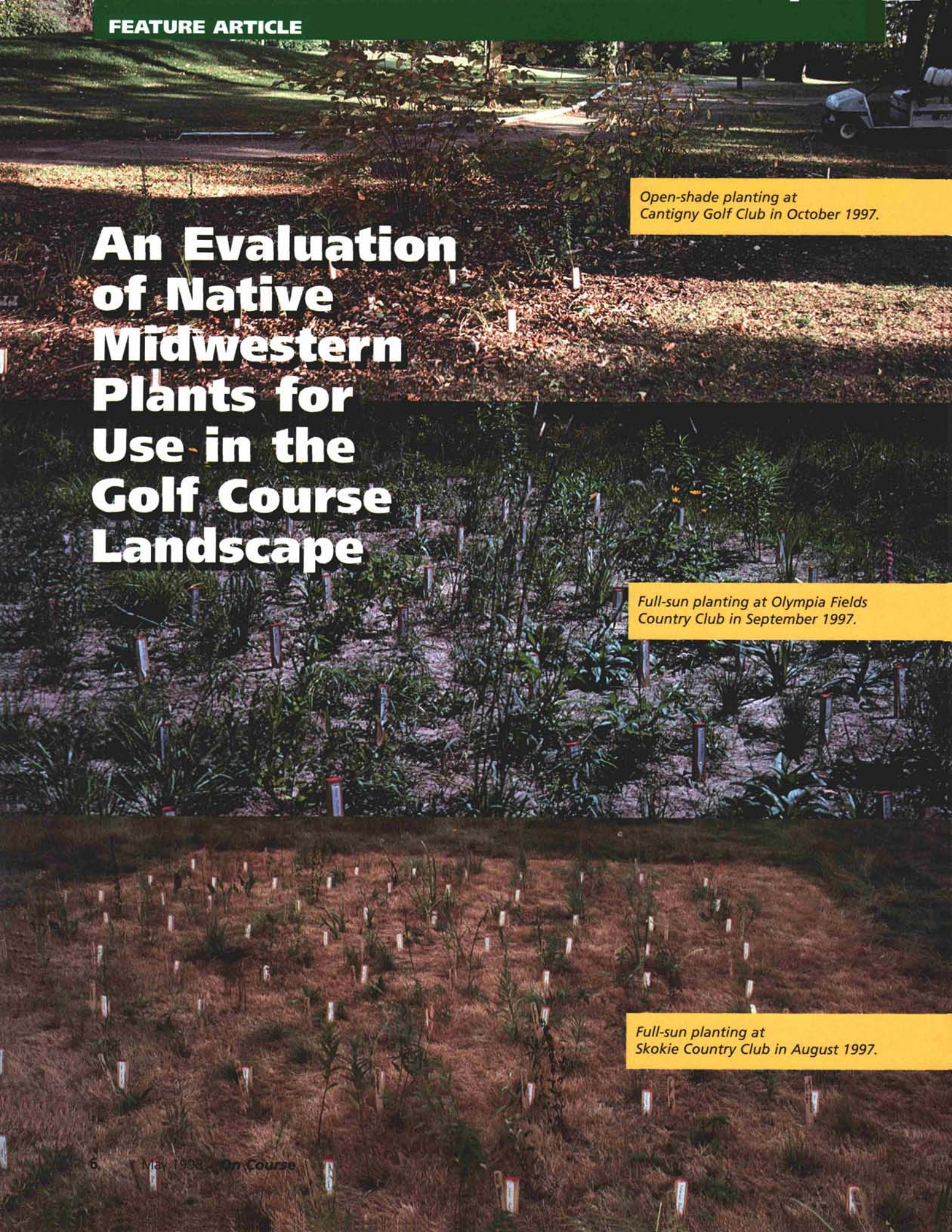

An Evaluation of Native Midwestern Plants for Use in the Golf Course Landscape

Open-shade planting at Cantigny Golf Club in October 1997.

Full-sun planting at Olympia Fields Country Club in September 1997.

Full-sun planting at Skokie Country Club in August 1997.

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Introduction

Superintendents at many Illinois golf courses have taken far-rough areas out of mowing. In fact, in a recent survey responded to by 110 Chicagoland superintendents, more than 8.5 percent of the 18,608 golf course acres represented in the survey were covered by unmowed grasslands, meadows, or prairies. Moreover, 89.8 percent of survey respondents agreed or strongly agreed with the statement, "Reducing golf course maintenance by not mowing out-of-play areas is a good idea." Not mowing out-of-play areas reduces maintenance inputs, provides wildlife habitat, adds to the golfing experience, and often improves public relations among golfers and other groups.

In some cases, the existing exotic vegetation has been allowed to grow untended; in other areas, existing plants have been replaced by plant species native to the region. There are, however, several questions regarding the use of native plant species. Specifically, what plants will perform well in unmowed rough areas, how should these plants be established, and how should these areas be maintained?

This article reports on the first year of a three-year study funded by the Midwest Association of Golf Course Superintendents, the Golf Course Superintendents Association of America, and the Illinois Turfgrass Foundation. There are three purposes for this study. First, in this study, I am evaluating native grasses, sedges, and forbs to determine their usefulness in unmowed areas of Midwestern golf courses. Second, results of this study will be used to develop a database of native Midwestern plant information that can be used to produce an encyclopedic manual of native plants suitable for use on Midwestern golf courses. Finally, this study will explore management options for native plants (e.g., different soil preparation methods at establishment, weed control options during establishment, etc.)

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Potential Benefits of This Study

Results of this study will assist Chicago-area golf courses in several ways. First, this work is identifying native plants suitable for use in unmowed, far-rough areas and will add to the existing body of information about these plants. Information about these plants will be useful to these and other superintendents with unmowed areas on their courses.

As these plants are evaluated in the on-site golf environment, any information derived will be particularly useful to the golf audience. The plants used in this evaluation have been selected specifically to fit golf course needs. Based on information collected about these species, they are all relatively short (less than six feet tall), relatively pest free, adapted to more than one soil setting, and native to the northern portions of the U.S. Of particular interest will be evaluating plants in open-shaded areas of each course. Selecting species with ornamental appeal for these settings can be particularly difficult.

The golf industry will also benefit from this work. At the conclusion of this research, a publication will be produced. This publication will provide an overview of this project, evaluation results, and information about the landscape uses and management of the native plants in the study. This publication will be made available in both hard and electronic forms.

This evaluation will also benefit the golf industry by providing public relations value. Studying these native plants allows golf

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courses to draw upon the rich botanical heritage of Chicagoland. It goes hand-in-band with participation in the Audubon Cooperative Sanctuary Program by establishing information about natives capable of providing sources of wildlife food and habitat. This program is extremely popular among Chicago area superintendents; in the survey mentioned earlier, 57.3 percent of the respondents are currently anticipating in the Audubon Cooperative Sanctuary Program and another 32.7 percent plan to begin participating in the future. Employing native Midwestern landscape plants and participating in these wildlife programs reinforces the idea that golf courses are environmentally friendly places.

Finally, this research will be valuable to the golf industry because replacing maintained areas with unmowed native vegetation can reduce golf course fertilizer, pesticide, and labor inputs. While costs for preparing and planting areas with native plants can be substantial, management savings can be realized once the areas are established. Follow-

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Table 1. Native plants established in full sun plantings at three Chicago area goif courses in 1997.

1.	*Allium cernuum*	Nodding Wild Onion	
2.	*Andropogon hallii cv. U.I.*	U. of I. Sand Bluestem	
3.	*Asclepias sp.*	Milkweed	
4.	*Aster azureus*	Sky blue Aster	
5.	*Bouteloua curtipendula*	Side-oats Grama	
6.	*Bromus kalmii*	Prairie Brome Grass	
7.	*Carex antherodes*	Hairy-leaved Lake Sedge	
8.	*Carex bicknelli*	Bicknell's Sedge	
9.	*Carex crus-corvi*	Crowfoot Fox Sedge	
10.	*Coreopsis palmata*	Prairie Coreopsis	
11.	*Coreopsis tripteris*	Tall Coreopsis	
12.	*Deschampsia caespitosa*	Tufted Hair Grass	
13.	*Desmodium canadense*	Showy Ticktrefoil	
14.	*Elymus canadensis*	Canadian Wild Rye	
15.	*Eryngium yuccifolium*	Rattlesnake Master	
16.	*Hierochloe odorata*	Vanillagrass	
17.	*Heliopsis helianthoides*	False Sunflower	
18.	*Iris virgincia shrevei*	Wild Blue Iris	
19.	*Koeleria cristata*	June Grass	
20.	*Liatris aspera*	Rough Blazing Star	
21.	*Lythrum alatum*	Winged Loosestrife	
22.	*Monarda fistulosa*	Wild Bergamot	
23.	*Penstemom digitalis*	Foxglove Beard Tongue	
24.	*Pycnanthemum virginianum*	Common Mountain Mint	
25.	*Ratibida pinnata*	Yellow Coneflower	
26.	*Sanguisorba canadensis*	American Burnet	
27.	*Silphium terebinthinaceum*	Prairie Dock	
28.	*Solidago rigida*	Stiff Goldenrod	
29.	*Vernonia fasciculata*	Common Ironweed	
30.	*Veronicastrum virginicum*	Culver's Root	

Table 2. Native plants established in open shade plantings at three Chicago area golf courses in 1997.

1.	*A1lium cernuum*	Nodding Wild Onion	
2.	*Aster macrophyllus*	Big Leaved Aster	
3.	*Aster novae-angliae*	New England Aster	
4.	*Carex crinita*	Fringed Sedge	
5	*Carex frankii*	Bristley Cattail Sedge	
6.	*Carex grayi*	Common Bur Sedge	
7	*Carex muskingumensis*	Swamp Oval Sedge	
8	*Carex pensylvanica*	Common Oak Sedge	
9.	*Carex radiata (rosea)*	Straight-styled Wood Sedge	
10.	*Deschampsia caespitosa*	Tufted Hair Grass	
11.	*Diarrhenna americana*	Beak Grass	
12.	*Dodecatheon meadia*	Shooting Star	
13.	*Elymus riparius*	Riverbank Rye	
14.	*Elymus villosus*	Silky Wild Rye	
15.	*Elymus virginicus*	Virginia Wild Rye	
16.	*Eupatorium purpureum*	Purple Joe Pye Weed	
17.	*Festuca obtusa*	Nodding Fescue	
18.	*Hystrix patula*	Bottlebush Grass	
19.	*Iris virginica shrevei*	Wild Blue Iris	
20.	*Juncus tenuis*	Path Rush	
21.	*Lobella siphilitica*	Great Blue Lobelia	
22.	*Phlox divaricata*	Blue Phlox	
23.	*Rudbeckia triloba*	Brown-eyed Susan	
24.	*Solidago flexicaulis*	Broad Leaved Goldenrod	
25.	*Solidago ulmifolia*	Elm Leaved Goldenrod	
26.	*Thallctrum dioicum*	Meadowrue	
27.	*Uniola latifolia*	Spike Grass	
28.	*Zizia aurea*	Golden Alexander	

Table 3. Native plants flowering at three Chicago area golf courses in 1997.

1.	*Allium cernuum*	Nodding Wild Onion	
2.	*Andropogon hallii cv. U.L.*	U. of I. Sand Bluestem	
3.	*Aster azureus*	Sky blue Aster	
4.	*Bouteloua curtipendula*	Side-oats Grama	
5.	*Elymus canadensis*	Canadian Wild Rye	
6.	*Elymus riparius*	Riverbank Rye	
7.	*Elymus villosus*	Silk Wild Rye	
8.	*Elymus virginicus*	Virginia Wild Rye	
9.	*Eryngium yuccifolium*	Rattlesnake Master	
10.	*Hystrix patula*	Bottlebush Grass	
11.	*Heliopsis helianthoides*	False Sunflower	
12.	*Liatris aspera*	Rough Blazing Star	
13.	*Lobella siphilitica*	Great Blue Lobelia	
14.	*Lythrum alatum*	Winged Loosestrife	
15.	*Monarda fistulosa*	Wild Bergamot	
16.	*Rudbeckia triloba*	Brown-eyed Susan	
17.	*Solidago flexicaulis*	Broad Leaved Goldenrod	
18.	*Solidago ulmifolia*	Elm Leaved Goldenrod	
19.	*Veronicastrum virginicum*	Culver's Root	
20.	*Vernonia fasciculata*	Common Ironweed	

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ing establishment, these areas receive little or no fertilizer. In fact, excessive nitrogen fertilization of many of these plants can produce rank, unattractive growth.

While chemical weed control may be useful during early stages of development, it is hoped that little weed control will be necessary following establishment. Chemical insect and disease controls are almost never employed in plantings of this type. These species have co-evolved with local pests and are commonly resistant to their attacks.

When areas on golf courses are planted to native species, routine labor can be reduced. Large amounts of financial resources dedicated to golf course maintenance are normally budgeted to mowing grassed areas. In areas where these natives are growing, frequent mowing on a predetermined schedule does not occur. Reducing these inputs obviously translates into financial savings.

The Study

During the summer of 1997, full sun and open shade areas were planted and established with native grasses, sedges, and forbs at three golf courses in the Chicago area. Olympia Fields Country Club in the south suburbs, Cantigny Golf Club in the west suburbs, and Skokie Country Club in the north suburbs were chosen to provide representation for the entire metropolitan area. Thirty native species were planted in the full sun areas (Table 1), and twenty-eight species were planted in the open shade areas (Table 2). For all but two species, plugs, 2-1/4 by 2-1/4 inches were purchased and planted. In the full sun installations at each course, plots 2 feet by 3 feet were planted with three plants each of the thirty species of native plants except for the one *Andropogon hallii* in which one, one-gallon potted plant was planted per plot and *Hierochloe odorata* in which two, 4-inch potted plants were planted per plot. The plots were replicated three times. In the open shade, three to five plugs of each species were grouped and planted. The open shade plots were not replicated. Plantings at each site were irrigated as necessary to ensure establishment.

At each site, plantings were handled differently. At Cantigny Golf Club, the full sun site was planted on 2 and 3 July into the far rough. Site preparations included removal of the existing vegetation to one inch (mostly cool season grasses) using a string trimmer. In the open shade, an area was treated with glyphosate, and three plugs of each species were planted on 18 July. The site was visited 7 August, 4 September, 17 September, and 22 October to evaluate plant conditions.

At Olympia Fields Country Club, both the full sun and open shade sites were planted on 11 July. The full sun site was mowed to two inches, rotary tilled to approximately five inches, and planted. Following planting, the site was broadcast with Preen at the labeled rate to deter invasion of annual grasses and broadleaved weeds. In the open shade, five plugs of each species were grouped and planted into the existing vegetation. The site was visited 15 July, 1 August, 4 September, and 19 October to evaluate plant conditions.

At Skokie Country Club, both the full sun and open shade sites were planted on 23 July. Both the full sun and open shade settings were treated with glyphosate and mowed to less than two inches prior to planting. The site was visited 6 August, 24 September, and 22 October to evaluate plant conditions.

Results and Discussion for Year One

At visits to each site during this initial year, plant survival and flowering was recorded. As of the last visit to each site, it appeared that most plants have become established and are in good condition going into winter. Table 3 lists those species that flowered during this establishment season. In future years, data on several criteria, including flower color and effective period of appeal; plant height, silhouette, and spacing; and overall ornamental potential

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will be collected and used to develop an encyclopedic listing of native plants for Chicagoland.

Invasion of exotic weed species appears to be the greatest threat to success with this project. Broadleaf weeds, including chicory, Canada thistle, and wild carrot, and grassy weeds such as various foxtails, quackgrass, and reed canarygrass have appeared in unmowed areas at these courses and others in the Chicago area. Evaluating control methods of these and other weeds will be one aspect of this study over the next two years.

In conclusion, this research will be of value to the Chicago-area golf industry. As more and more golf course areas are going unmowed, this study will provide information about native plants and their roles on Midwestern golf courses. Moreover, this study can potentially identify methods that reduce chemical and labor inputs and conserve golf course financial resources. Finally, this evaluation might provide an opportunity to create public good will and wildlife habitat through the use of native plants in unmowed areas. All of these things can be accomplished without sacrificing golf quality.

In this, the first year of this three-year evaluation, native grasses, sedges, and forbs have been selected and planted and rudimentary data collected. Over the next two years, more information will be compiled which can assist us in developing a useful group of plants and management schemes. Watch this space in early 1999 for the next update of this work. ■

Adolph Bertucci
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people he knew from judges, his peers in the turf industry countywide, to golfers great and a few not so great, and even a few bartenders.

My memories of our epic wintertime lunches I still value. His golf course was the love of his life and the turfgrass in top playing condition was his passion.

Over the forty plus years I knew Adolph, his Christmas parties were an institution attended by this great cross section of people whom he cared for. I was fortunate to be at the very first ones where only his grounds crew and three or four of his fellow superintendents attended.

Everyone who knew "Bert" has a lot of Adolph stories, and he will be missed but remembered long into the future as a great human being.

Fred Opperman
Editor, On Course

What is my fondest recollection of Adolph? His greeting every time he saw me was "Hey, 'Roomy,' what's happening?" The "Roomy" bit came from the time Adolph and I shared a room in San Francisco in 1995 during the GCSAA convention. During that trip, we walked around Fisherman's Wharf sightseeing. We came upon a black street entertainer who had display board pictures of himself with all of the famous people of Hollywood, politics and the sporting world. This entertainer could sing in several languages, and when he started singing in Italian, Adolph just joined in and sang along. Adolph had a crowd gathering that day to listen and then toss money into the violin case. I'll miss Adolph and his many stories, plus that greeting, "Hey, Roomy!" ■