

## Wildflowers and Ferns Along the Acton Arboretum Wildflower Trail and In Other Gardens

Updated to July 12, 2017 by Bruce Carley

### FERNS (including those occurring naturally along the trail and both boardwalks)

- Royal fern (*Osmunda regalis*): occasional along south boardwalk, at edge of hosta garden, and elsewhere at Arboretum
- Cinnamon fern (*Osmunda cinnamomea*): naturally occurring in quantity along south boardwalk
- Interrupted fern (*Osmunda claytoniana*): naturally occurring in quantity along south boardwalk
- Maidenhair fern (*Adiantum pedatum*): several healthy clumps near north boardwalk, a few in other Arboretum gardens
- Common polypody (*Polypodium virginianum*): 1 small clump near north boardwalk
- Hayscented fern (*Dennstaedtia punctilobula*): aggressive species; naturally occurring along north boardwalk
- Bracken fern (*Pteridium aquilinum*): occasional along wildflower trail; common elsewhere at Arboretum
- Broad beech fern (*Phegopteris hexagonoptera*): up to a few near north boardwalk; also in rhododendron and hosta gardens
- New York fern (*Thelypteris noveboracensis*): naturally occurring and abundant along wildflower trail
- \* Ostrich fern (*Matteuccia pensylvanica*): well-established along many parts of wildflower trail; fiddleheads edible
- Sensitive fern (*Onoclea sensibilis*): naturally occurring and abundant along south boardwalk
- Lady fern (*Athyrium filix-foemina*): moderately present along the trail and south boardwalk
- Common woodfern (*Dryopteris spinulosa*): 1 patch of 4 plants along south boardwalk; occasional elsewhere at Arboretum
- Marginal woodfern (*Dryopteris marginalis*): up to 2 mature plants along the trail; occasional elsewhere at Arboretum
- Male woodfern (*Dryopteris filix-mas*): uncommon species; up to 15 plants along trail with 3 different forms represented
- Goldie's giant woodfern (*Dryopteris goldiana*): uncommon in MA and in most of native range; about 11 plants along trail
- Braun's holly fern (*Polystichum braunii*): rare species, endangered in MA; 14 plants counted along trail in 2011
- Christmas fern (*Polystichum acrostichoides*): a few clumps and small plants along trail; occasional elsewhere at Arboretum

### MAGNOLIIDS (Order Piperales)

#### Birthwort family (Aristolochiaceae)

- \* Wild ginger (*Asarum canadense*): many patches of various sizes along and near north boardwalk and along trail

### MONOCOTS (Orders Alismatales, Asparagales, Liliales, and Commelinales)

#### Arum family (Araceae)

- Jack-in-the-pulpit (*Arisaema triphyllum*): abundant along trail; naturally occurring and frequent throughout Arboretum
- Green dragon (*Arisaema draconitum*): threatened in MA; 2 counted in 2017, near north boardwalk and near understory study

#### Onion family (Alliaceae)

- Wild leek (*Allium tricoccum*): 4 planted along trail in late 2016: future uncertain

#### Stargrass family (Hypoxidaceae)

- Yellow stargrass (*Hypoxis hirsuta*) 2 plants near understory study observed flowering in 2017; future uncertain

#### Iris family (Iridaceae)

- Crested dwarf iris (*Iris cristata*): 1 thriving patch near sun meadow; also present in understory study and other gardens
- \* Blue-eyed grass (*Sisyrinchium montanum*): abundant in sun meadow; rarely present along trail edges, and at NARA

#### Orchid family (Orchidaceae)

- Large yellow lady slipper (*Cypripedium pubescens*): 2 along north boardwalk, one with at least 6 flowering stems in 2017
- Small yellow lady slipper (*Cypripedium parviflorum*): endangered in MA; up to 3 along north boardwalk, 2 observed in 2017
- Pink lady slipper (*Cypripedium acaule*): a few naturally occurring near trails and in woods within Arboretum
- Helleborine (*Epipactis helleborine*): non-native but worth encouraging; occasional along trail and throughout Arboretum

#### Lily family (Liliaceae)

- Canada lily (*Lilium canadense*): naturally occurring and moderately present in open meadow along wildflower loop
- \* Trout-lily (*Erythronium americanum*): numerous patches along north boardwalk and trail, occasionally flowering
- Bluebead-lily (*Clintonia borealis*): 1 healthy patch along wildflower trail, plus 2 planted nearby in late 2016

#### Bunchflower family (Melanthiaceae)

- \* Great white trillium (*Trillium grandiflorum*): at least 50 along north boardwalk and trail, 43 of which flowered in 2017
- Double-flowered white trillium (sterile form of *T. grandiflorum*): 1 plant along north boardwalk (flowered in 2017)
- \* Red trillium (*Trillium erectum*): about 60 along north boardwalk and trail, 33 of which flowered in 2017
- Albino red trillium (white form of *T. erectum*): 7 plants located individually along trail, 1 of which flowered in 2017
- \* Toadshade trillium (*Trillium sessile*): at least 25 in 6 patches counted in 2016 along north boardwalk and trail

Yellow trillium (*Trillium luteum*): at least 5 plants in 2 patches along wildflower trail, all of which flowered in 2017  
Drooping trillium (*Trillium flexipes*): 2 plants in 1 patch along trail, both flowering in 2017  
Nodding trillium (*Trillium cernuum*): a few 2 plants along north boardwalk and trail; many more near understory study

#### Lily-of-the-valley family (Convallariaceae)

Solomon's-seal (*Polygonatum biflorum*): many healthy patches, some planted and some naturally occurring  
Great Solomon's-seal (*Polygonatum canaliculatum*): several healthy patches along north boardwalk and wildflower trail  
False Solomon's-seal (*Maianthemum racemosum*): occasional in thickets not far from trail and elsewhere at Arboretum  
Starry false Solomon's-seal (*Maianthemum stellata*): 1 planted along trail in late 2016; future uncertain  
Wild lily-of-the-valley (*Maianthemum canadense*): abundant at south end of wildflower trail and throughout Arboretum

#### Bellwort family (Colchicaceae)

Nodding mandarin (*Disporum maculatum*): 1 plant along north boardwalk, thriving in 2017  
Large-flowered bellwort (*Uvularia grandiflora*): 1 clump along north boardwalk, thriving in 2017  
Wild oats (*Uvularia sessilifolia*): occasional along wildflower trail and in nearby woods; frequent elsewhere at Arboretum

#### Dayflower family (Commelinaceae)

Ohio spiderwort (*Tradescantia ohioensis*): 1 thriving clump near south boardwalk, plus a few at south end of swale garden

### BASAL EUDICOTS (Orders Ranunculales and Buxales)

#### Buttercup family (Ranunculaceae)

Wood anemone (*Anemone quinquefolia*): occasional along wildflower trail, frequent elsewhere at Arboretum  
Thimbleweed (*Anemone virginiana*): 27 planted near north boardwalk in 2017, likely to thrive and to spread  
Canada anemone (*Anemone canadensis*): aggressive species mostly warranting exclusion; may be present near sun meadow  
Marsh marigold (*Caltha palustris*): a few plants in north swale garden; may be present along south boardwalk  
\* Black cohosh (*Actaea racemosa*): endangered in MA; well-established in several spots along trail and both boardwalks  
\* White baneberry (*Actaea pachypoda*): at least 20-30 plants plus many seedlings along wildflower trail; occasional elsewhere  
Red baneberry (*Actaea rubra*): at least 5 mature plants and probably some seedlings along north boardwalk and wildflower trail  
White-fruited red baneberry (variety of *A. rubra*): 1 plant near north boardwalk in 2017; seedlings may turn out to be this variety  
Spring larkspur (*Delphinium tricorne*): 1 plant observed flowering along trail in 2017; future uncertain  
\* Wild columbine (*Aquilegia canadensis*): abundant at parking exit, sun meadow, and rhododendron garden; occasional along trail  
False rue-anemone (*Isopyrum biternatum*): several plants in 2 patches along trail, mostly thriving in 2016  
Early meadow-rue (*Thalictrum dioicum*): at least 6 thriving plants along north boardwalk  
Rue-anemone (*Thalictrum thalictroides*): at least 1 healthy plant along wildflower trail in 2017; future uncertain  
Shrub yellowroot (*Xanthorhiza simplicissima*): a few healthy plants near north boardwalk; also present in parking area  
Goldenseal (*Hydrastis canadensis*): rare species, endangered in MA; at least 6 well-established patches along wildflower trail

#### Barberry family (Berberidaceae)

\* May-apple (*Podophyllum peltatum*): aggressive species; well-established in several patches along north boardwalk and trail  
Blue cohosh (*Caulophyllum thalictroides*): about 9 located individually along trail; may also be present in north woods  
Twinleaf (*Jeffersonia diphylla*): at least 15 located individually along north boardwalk and trail, spreading somewhat

#### Poppy family (Papaveraceae)

\* Bloodroot (*Sanguinaria canadensis*): abundant along boardwalk and trail; established along trails elsewhere at Arboretum  
Double-flowered bloodroot (sterile form of *S. canadensis*): at least 11 patches along trail with many plants established  
\* Wood poppy (*Stylophorum diphyllum*): abundant along trail; aggressive to other species, requiring yearly management

#### Bleeding-heart family (Fumariaceae)

\* Dutchman's-breeches (*Dicentra cucullaria*): well-established along north boardwalk and wildflower trail  
\* Squirrel-corn (*Dicentra canadensis*): present along north boardwalk; moderately well-established along wildflower trail  
Wild bleeding-heart (*Dicentra eximia*): present along north boardwalk and wildflower trail, and at grape arbor  
Albino wild bleeding-heart (white form of *D. eximia*): present along stone wall near understory study

#### Box family (Buxaceae)

Allegheny-spurge (*Pachysandra procumbens*): a few healthy clumps along boardwalk and trail, and near understory study

### CARYOPHYLLIDS (Order Caryophyllales)

#### Miner's-lettuce family (Montiaceae)

\* Virginia spring-beauty (*Claytonia virginica*): endangered in MA; abundant along north boardwalk and wildflower trail

## SAXIFRAGIDS (Order Saxifragales)

### Saxifrage family (Saxifragaceae)

False goat's-beard (*Astilbe biternata*): 1 plant near north boardwalk, healthy in 2017

\* Foamflower (*Tiarella cordifolia*): well-established along north boardwalk and wildflower trail

Clumping foamflower (*Tiarella wherryi*): present at base of a central tree along wildflower trail, surviving in 2017

Swamp saxifrage (*Saxifraga pensylvanica*): naturally occurring and frequent (though inconspicuous) near south boardwalk

## ROSIDS (Orders Geraniales, Malpighiales, Fabales, Rosales, and Brassicales)

### Geranium family (Geraniaceae)

Wild geranium (*Geranium maculatum*): frequent along many parts of trail; non-aggressive and harmless in wooded areas

### Violet family (Violaceae)

\* Yellow violet (*Viola pensylvanica*): abundant along north boardwalk and wildflower trail, and in north woods

\* Cream violet (*Viola striata*): abundant along north boardwalk and wildflower trail

\* Largeleaf white violet (*Viola blanda* var. *palustriformis*): abundant along north boardwalk; also present in swale garden

Canada violet (*Viola canadensis*): several plants near north boardwalk and along wildflower trail; present at grape arbor

Labrador violet (*Viola labradorica*): several small patches and individual plants near north boardwalk and along trail

Wood violet (*Viola palmata*): 3 plants near north boardwalk observed in 2017

Common blue violet (*Viola papilionacea*): Aggressive species naturally occurring in many places; largely tolerable with caution

### Bean family (Fabaceae)

Groundnut (*Apios americana*): 2 planted along south boardwalk in late 2016; future uncertain

Western lupine (*Lupinus polyphyllus*): present in sun meadow, butterfly garden, and parking lot exit

### Rose family (Rosaceae)

\* Purple-flowering raspberry (*Rubus odoratus*): well-established in several patches along trail; abundant in north woods

Barren strawberry (*Waldsteinia fragarioides*): special concern in MA; occasional at north boardwalk and understory study

Common strawberry (*Fragaria virginiana*): well-established in 1 patch along north boardwalk

Goat's-beard (*Aruncus dioicus*): at least 1 plant along north boardwalk, 4 plants along south boardwalk

### Mustard family (Brassicaceae)

Spring cress (*Cardamine pratensis*): 1 naturally occurring plant flowering profusely along wildflower trail in 2017

Toothwort (*Dentaria diphylla*): a few healthy clumps along wildflower trail

## ASTERIDS (Orders Ericales, Boraginales, Gentianales, Lamiales, Apiales, and Asterales)

### Heath family (Ericaceae)

Aromatic wintergreen (*Gaultheria procumbens*): naturally occurring in woods near trail, occasional elsewhere at Arboretum

Round-leaved pyrola (*Pyrola rotundifolia*): naturally occurring in woods near trail, frequent elsewhere at Arboretum

Spotted wintergreen (*Chimaphila maculata*): naturally occurring in woods near trail, frequent elsewhere at Arboretum

### Phlox family (Polemoniaceae)

\* Blue wood phlox (*Phlox divaricata*): abundant along north boardwalk and wildflower trail

Albino wood phlox (white form of *P. divaricata*): present in up to 4 clumps representing 2 different cultivars

Creeping phlox (*Phlox stolonifera*): occasional along wooded and open sections of wildflower loop trail

Albino creeping phlox (white form of *P. stolonifera*): occasional along wooded and open sections of wildflower loop trail

Jacob's-ladder (*Polemonium van-bruntiae*): present and mostly thriving along north boardwalk and wildflower trail

### Primrose family (Primulaceae)

Shooting-star (*Dodecatheon meadia*): at least 4 plants along stone wall near understory study

Starflower (*Trientalis borealis*): occasional along trail, often with wild lily-of-the-valley; common elsewhere at Arboretum

### Forget-me-not family (Boraginaceae)

\* Virginia bluebells (*Mertensia virginica*): well-established along north boardwalk and wildflower trail

### Gentian family (Gentianaceae)

\* Closed gentian (*Gentiana clausa*): 29 in north swale garden, 2 in butterfly garden, a few in rain garden; about 70 at NARA

Andrews' bottle gentian (*Gentiana andrewsii*): present in north swale garden, sun meadow, grape arbor; at least 1 at NARA

### Milkweed family (Asclepiadaceae)

- \* Butterfly milkweed (*Asclepias tuberosa*): well-established in sun meadow, butterfly garden, and at NARA
- Swamp milkweed (*Asclepias incarnata*): present in sun meadow; at least 1 plant known at NARA
- Common milkweed (*Asclepias syriaca*): present in sun meadow and parking area exit, and at NARA

Bedstraw family (Rubiaceae)

Partridgeberry (*Mitchella repens*): naturally occurring and occasional at south end of trail; frequent elsewhere at Arboretum

Mint family (Lamiaceae)

Variegated wild mint (variegated form of *Mentha arvensis*): thriving in sun meadow

Mountain mint (*Pycnanthemum muticum*): 1 vigorous clump in sun meadow; also present at NARA

Snapdragon family (Scrophulariaceae)

White turtlehead (*Chelone glabra*): 1 healthy plant along trail near farm ponds; present and growing well in north swale garden

Parsley family (Apiaceae)

\* Golden alexanders (*Zizia aurea*): many thriving plants along wildflower trail; abundant uphill from north boardwalk

Sweet cicely (*Osmorhiza longistylis*): 4 planted along trail in late 2016; future uncertain

Aster family (Asteraceae)

Whorled wood aster (*Oclemena acuminatus*): occasional at south end of wildflower trail and elsewhere at Arboretum

White wood aster (*Eurybia divaricatus*): occasional at south end of wildflower trail and elsewhere at Arboretum

Heart-leaved aster (*Symphotrichum cordifolius*): 1 small patch uphill from north boardwalk

Sweet goldenrod (*Solidago odora*): 1 planted in rain garden in late 2016; future uncertain

Catfoot (*Antennaria neglecta*): present near north boardwalk, near understory study, and in sun meadow

Green-and-gold (*Chrysogonum virginianum*): present near north boardwalk, along trail, and in other Arboretum gardens

Lobelia family (Lobeliaceae)

\* Cardinal flower (*Lobelia cardinalis*): well-established in several gardens in sunny parts of Arboretum, and at NARA

Albino cardinal flower (white form of *L. cardinalis*): a few likely interspersed with red-flowered plants in some gardens

Great lobelia (*Lobelia siphilitica*): endangered in MA; present in swale garden and sun meadow, and at NARA

Albino great lobelia (white form of *L. siphilitica*): present in sun meadow, probably pending elsewhere; occasional at NARA

\* among the relatively large-scale propagation success stories at the Acton Arboretum

The following native species have been attempted at various times with no lasting success as yet:

Goldthread (*Coptis groenlandica*): A few plantings from previous years failed to reappear in 2012

Sharp-lobed hepatica (*Hepatica acutiloba*): A few plants along boardwalk and trail failed to reappear in 2017

Umbrella-leaf (*Diphylleia cymosa*): 1 plant along trail failed to reappear in 2017

Galax (*Galax aphylla*): 1 plant along trail failed to reappear in 2017

Tall bellflower (*Campanula americana*): Annual species; seedling crops consistently failed to perpetuate

Tassel-rue (*Trautvetteria carolinensis*): Plants in north swale garden failed to reappear in 2016

Fringed polygala (*Polygala paucifolia*): 2 patches planted in 2011 failed to reappear in 2012

Spreading globeflower (*Trollius laxus*): Patch in north swale garden failed to reappear in 2013

Twinflower (*Linnaea borealis*): Small patch along trail perished in 2011

Miterwort (*Mitella diphylla*): 1 plant along south end of trail failed to reappear in 2014

Trailing arbutus (*Epigaea repens*): Repeated attempts to establish this plant have failed consistently

Bunchberry (*Cornus canadensis*): Repeated attempts to establish this plant have failed consistently

Birdfoot violet (*Viola pedata*): 2 planted in 2015 failed to reappear in 2016

Rose twisted-stalk (*Streptopus roseus*): 1 plant along north boardwalk failed to reappear in 2017

Downy rattlesnake-plantain (*Goodyera pubescens*): 3 planted in 2015 failed to reappear in 2016

Showy lady slipper (*Cypripedium reginae*): 1 planted in 2015 failed to reappear in 2016

Pink lady slipper (*Cypripedium acaule*): Naturally occurring in places, but plants rescued in 1993 did not survive longer than 2 years

The following native species have not been attempted but could be viable possibilities:

Wood lily (*Lilium philadelphicum*): If available, may be workable in shady areas

Harebell (*Campanula rotundifolia*): May be workable in sunny areas

Wild monkshood (*Aconitum noveboracense* or *A. uncinatum*): May be workable in moist shaded areas

Virginia meadow-beauty (*Rhexia virginica*): Promising selection for moist parts of various gardens

Wild calla (*Calla palustris*): If available, may be workable in moist garden areas, or at NARA

Swamp-pink (*Helonias bullata*): May be workable in moist garden areas, or at NARA

Pearly everlasting (*Anaphalis margaritacea*): May be workable in dry open areas

Painted trillium (*Trillium undulatum*): If seeds become available, may be workable with careful effort in damp, acidic woods

Fringed gentian (*Gentianopsis crinita*): Biennial species; may be workable with consistent, careful effort in moist open areas

The following native species are becoming established in dry meadow areas at NARA:

Butterfly milkweed (*Asclepias tuberosa*): Well-established in NARA meadows and formal garden areas  
Dense blazing-star (*Liatrix spicata*): Several prolific patches in NARA meadows and formal garden areas  
New England aster (*Symphotrichum novae-angliae*): Abundant in interior meadow in several color forms including albino  
Purple coneflower (*Echinacea purpurea*): Prolific in interior meadow; also present in formal garden areas  
Yellow coneflower (*Rudbeckia fulgida*): Present in interior meadow and in formal garden areas  
Black-eyed Susan (*Rudbeckia hirta*): Frequent in dry open areas throughout NARA  
Lance-leaved coreopsis (*Coreopsis lanceolata*): 1 patch established in interior meadow  
New York ironweed (*Vernonia noveboracensis*): Many singles planted in interior meadow since 2012; other *Vernonia* species also present here  
Culver's-root (*Veronicastrum virginicum*): A few plants in 1 patch in interior meadow; also present in formal garden areas  
Western lupine (*Lupinus polyphyllus*): Moderately present in interior meadow and in formal garden areas  
Sundrops (*Oenothera fruticosa*): 1 clump in formal garden; may be present in interior meadow  
Bee-balm (*Monarda didyma*): 1 patch in interior meadow; also present in formal garden areas  
Willow amsonia (*Amsonia tabernaemontana*): At least a few plants established at east end of interior meadow  
Smooth aster (*Symphotrichum laeve*): A few small, scattered patches in interior meadow

The following native species are becoming established in wet meadow, shore, and pond habitats at NARA:

Cardinal flower (*Lobelia cardinalis*): Established in formal gardens; seedlings may survive in wet meadow areas near bridge; more pending  
Great lobelia (*Lobelia siphilitica*): Several small patches in shore areas throughout NARA, including some albino; 2 patches in formal garden  
Closed gentian (*Gentiana clausa*): At least 70 plants counted in shore areas around pond; seeded extensively  
Andrews' bottle gentian (*Gentiana andrewsii*): At least 1 healthy plant known at NARA, along shore just northeast of bridge  
Swamp milkweed (*Asclepias incarnata*): 1 large plant observed in meadow behind smaller pond; also seeded extensively  
Blue flag (*Iris* sp.): 1 patch at west end of bridge; may or may not be a native variety  
White water-lily (*Nymphaea odorata*): Well-established in smaller pond behind bridge  
Bullhead-lily (*Nuphar variegatum*): Well-established in smaller pond behind bridge, and amid boulders at east end of larger pond

The following native species also have been observed occurring naturally at NARA in recent years:

Small purple gerardia (*Gerardia paupercula*): Frequent near shoreline at many sites around NARA pond  
Golden hedge-hyssop (*Gratiola aurea*): Abundant on wet sands within beach enclosure and many other shore areas around pond  
Bluecurls (*Trichostema dichotomum*): Occasional on exposed sandy soils in open areas along hiking trail  
Venus's looking-glass (*Specularia perfoliata*): Occasional on sandy soils in open areas along trail and lower parking lot  
Yellow screwstem (*Bartonia virginica*): Related to gentians; occasional among rocks bordering bath house  
Blue vervain (*Verbena hastata*): Occasional in wet meadows and sandy soils  
Round-headed bush-clover (*Lespedeza capitata*): Occasional in dry meadow areas near lower parking lot  
Yellow loosestrife (*Lysimachia terrestris*): Occasional in wet meadow areas near bridge and along pond edges  
Fringed loosestrife (*Lysimachia ciliata*): Occasional in wet meadow areas near bridge  
Water-horehound (*Lycopus virginicus*): Suggestive of wild mint; occasional along shores near bridge  
Humped bladderwort (*Utricularia gibba*): Frequent in smaller pond just north of bridge  
Nodding ladies'-tresses (*Spiranthes cernua*): Rarely but definitely observed in two separate places along trail edges in 2013  
Lance-leaved goldenrod (*Euthamia graminifolia*): Our only flat-topped goldenrod; frequent in meadow areas  
Stout goldenrod (*Solidago squarrosa*): Clublike inflorescences; occasional in thicket areas along park edges  
Downy goldenrod (*Solidago puberula*): Wandlike with flowers arranged in a terminal spike; occasional in woods and along wooded edges  
Blue-stemmed goldenrod (*Solidago caesia*): Wandlike with flowers in leaf axils; occasional in woods and along wooded edges  
Gray goldenrod (*Solidago nemoralis*): Short with one-sided plumes; occasional in meadow areas and thicket edges  
Early goldenrod (*Solidago juncea*): Probably our finest and showiest goldenrod; plumelike; frequent in meadow areas throughout the park  
Rough-stemmed goldenrod (*Solidago rugosa*): Our weediest and least showy goldenrod; plumelike, branching; abundant throughout the park  
Late goldenrod (*Solidago gigantea*): Weedy species, whitish bloom on stems; plumelike, leaves parallel-veined; abundant in meadow areas  
Canada goldenrod (*Solidago canadensis*): Plumelike, leaves parallel-veined, smooth, sharply toothed; abundant in meadow areas  
Tall goldenrod (*Solidago altissima*): Plumelike, leaves parallel-veined, rough, bluntly or barely toothed; abundant in meadow areas  
Panicked aster (*Symphotrichum lanceolatum*): Tall, smooth-stemmed, willowlike leaves, flowerheads white; occasional in thickets near pond  
Purple-stemmed aster (*Symphotrichum puniceum*): Stems bristly, usually purplish, flowerheads light purple; abundant in meadow areas  
Bushy aster (*Symphotrichum dumosum*): Stems branching with numerous leafy bracts, flowerheads white; abundant in meadow areas  
Small white aster (*Symphotrichum racemosum*): Leaves small and linear, flowerheads white; abundant in meadow areas