

TOWN OF WOODSTOCK

INTEGRATED PEST MANAGEMENT

GENERAL PLAN

Policy statement: As a municipality, one of our landscaping goals is to manage pests and their damage at tolerable levels; eradication of the pest will typically not be necessary or desirable. The Woodstock Integrated Pest Management (IPM) Plan sets forth practices to achieve this goal. We will avoid harmful effects on beneficial and non-target organisms (people, animals, beneficial insects and plants). Our management actions will cause minimal disturbance in the built and natural environments. We will promote plant health, structural integrity and an overall healthy plant appearance in the actions we take to control pests. We will try to prevent pest problems through proper planning and installation of landscapes.

Pest Management Roles: Through monitoring (see Appendix A), this plan as a general reference, and the use of the ANSI A300 (Part 10) Integrated Pest Management Standard, the Town's Arborist will make control action decisions to apply to the specific locations/landscapes. The Arborist will then perform these actions, direct other Town staff in performing the actions and/or contract with the correct professional (see Appendix B) to perform the actions.

Action Thresholds & Guidelines: Action Threshold is defined as the point at which pest control action must be taken to prevent unacceptable damage. Unacceptable damage will be defined on a case by case basis by using the following guidelines:

- Identification of pest (see Appendix C)
- location of the plant
- economical value of plant
- health of plant prior to infestation (other stress factors present)
- age of plant
- time of plant development (how recently was the plant installed)
- stage of infestation at time of discovery
- time of year
- history of the plant and infestations
- percentage of the plant infested
- number of pests counted on the plant

Management Methods: When action is needed to manage the pest, a combination of two or more of the following methods will be implemented to provide a more effective control.

- **Cultural Control** – modifications made to planting and maintenance activities to reduce or prevent pest problems. Examples include but not limited to: layout of trees/shrubs based on site conditions, proper planting techniques, correcting improper mulch or irrigation
- **Mechanical Control** – the use of labor, materials not to be considered pesticides and machinery to reduce the number of pests. Examples include but not limited to: removing

weeds with string trimmer, pruning out single branch containing infestation, removing pests by hand, rake up foliage containing infection, soil additives to treat nutrient deficiencies

- **Physical Control** – methods to prevent pest infestations by altering temperature, light and humidity. Examples include but not limited to: thinning plant canopies, trunk wraps
- **Biological Control** – use of competitors, pathogens, parasites and predators to control pests; solely used to control insect and mite pests. Some cultural methods aid in breeding of naturally occurring predators; for example, planting trees and shrubs will be used to provide habitat for those predators. The most common implementation of this method is the periodical release of commercially available natural enemies (where natural enemies is defined as the use of natural predators in various life cycles to be released into the area of the pest which is to be controlled).
- **Chemical Control** – use of pesticides which are chemicals designed to kill, prevent or repel pests and reduce pest damage. Chemical control should be the last resort for disease management and shall only be done by a licensed pesticide applicator. Labels of pesticides shall be read carefully and all instructions followed strictly to avoid any health hazards. If more than one chemical application on a pest is needed for effective control, it is recommended to alternate between 2 or more pesticides to avoid pesticide resistance developing within the pest population.

Action Evaluation: Once a control method has been applied, follow up monitoring shall occur to ensure the effectiveness of the method. Documentation of changes in pest levels and status of the plant and site shall be made and determination of further action shall be determined.

Adopted by the Woodstock Tree Board, February 8, 2022

IPM PLAN Appendix A – Monitoring

Monitoring – a program of regular landscape inspections to make observations and collect information to aid in making decisions about the management of pests and other disorders. Information that shall be collected during inspection: site information, plant information and disorder information.

- Site Information
 - recent weather trends
 - landscape management practices
 - changes in drainage
 - addition or removal of plants
 - any recent construction
- Plant Information
 - Leaf number, size and color
 - Twig growth
 - Symptomatic reactions
 - Signs of any disorders
- Disorder Information
 - A description or identification of the pest or other disorder
 - Population level
 - Life stage(s) present
 - Potential for natural control

Monitoring cannot be solely done by visual inspections, as a pest may only be active during a certain time or current damage does not provide enough information. The use of trapping devices and a phenology calendar will aid in the management choices once a pest is discovered.

IPM PLAN Appendix B – How to choose a pest control professional

Key factors to take into consideration when contracting with an outside pesticide applicator:

- The company's insurance and documentation of insurance
- Licensure of the company and documentation of their license
- Company's affiliation with a professional association
- Reputation of the company, references of previous work
- Knowledge the company displays in regards to IPM

IPM PLAN Appendix C – List of plants and common disorders

The list below is divided into two groups: Herbaceous Perennials and Woody Ornamental Plants and within each group it is arranged alphabetically by the common name of the host plant with its scientific name in parentheses. The plants listed are what is commonly found in Town of Woodstock gardens and parks.

Herbaceous Perennials

Black-eyed Susan (*Rudbeckia fulgida*) – Pythium root rot, Rhizoctonia stem rot, Septoria leaf spot, downy mildew

Carnation (*Dianthus caryophyllus*) – Alternaria leaf spot, bacterial spot, Botrytis blight, Fusarium stem rot, powdery mildew, Rhizoctonia stem rot, rust

Coneflower (*Echinacea purpurea*) – aster yellows, foliar nematodes, Pythium root rot, viral disease

Coral bells (*Heuchera sanguinea*) – Pythium root rot

Daylily (*Hemerocallis fulva*) – anthracnose, rust, leaf streak, Southern blight

Geranium (*Pelargonium graveolens* and *Geranium sanguineum*) – bacterial blight, bacterial leaf spot, bacterial wilt, Botrytis blight, oedema, Pythium root rot/blackleg, Rhizoctonia root rot, rust, viral disease

Hellebore (*Helleborus orientalis*) – black leaf spot, Botrytis blight, Pythium root rot, Rhizoctonia root rot, southern blight

Hosta (*Hosta* spp.) – anthracnose, Botrytis blight, leaf spot, root rot, soft rot, Southern blight, virus X

Impatiens (*Impatiens walleriana*, *Impatiens sultanii*) – Alternaria leaf spot, bacterial fasciation, Botrytis blight, downy mildew, Fusarium crown rot, powdery mildew, Pythium root/stem rot, Rhizoctonia root/stem rot, root knot nematodes, verticillium wilt, viral diseases

Iris (*Iris germanica*) – Botrytis blight, Heterosporium leaf spot, soft rot

Leucanthemum or Shasta Daisy (*Leucanthemum x superbum*, *Leucanthemum lacustre*) – Phytophthora root rot, Rhizoctonia root rot

Lilyturf (*Liriope muscari*) – anthracnose, foliar nematodes, Fusarium wilt, Mycosphaerella leaf spot, Phytophthora root rot, viral disease

Lobelia (*Lobelia erinus*) – Pythium root rot, viral disease

Ornamental grass, or Maiden grass (*Miscanthus sinensis*) – anthracnose

Pachysandra (*Pachysandra terminalis*) – leaf spot, Pythium root rot, Southern blight, Volutella blight

Pansy (*Viola tricolor* subsp. *hortensis*) – anthracnose, black root rot, Botrytis blight, Cercospora leaf spot, Phytophthora root/crown rot, Pythium root/crown rot

Petunia (*Petunia* spp.) – Botrytis blight, Fusarium root/crown rot, Phytophthora root/crown rot and foliage blight, Pythium root/crown rot, Rhizoctonia root/stem rot, viral disease

Phlox (*Phlox* spp.) – bacterial leaf spot, black root rot, Colletotrichum stem canker, powdery mildew, Pythium root rot, southern blight, viral disease, web blight

Salvia (*Salvia* spp.) – bacterial leaf spot, downy mildew, Pythium root rot, Rhizoctonia stem rot

Stone crop (*Sedum* spp.) – anthracnose, bacterial soft rot, bacterial stem rot, Diplodia stem rot, leaf spot, Phytophthora stem rot, Pythium root rot, Rhizoctonia root/stem rot, root knot nematodes, web blight

Tickseed (*Coreopsis verticillata*) – Botrytis blight, Rhizoctonia root/stem rot, rust, viral disease

Tulip (*Tulipa* spp.) – Botrytis blight, Fusarium basal rot

Woody Ornamental Plants

Arborvitae (*Thuja occidentalis*, *Thuja plicata*) – Arborvitae leaf miner, Armillaria root/stem rot, bag worms, Cytospora canker, Kabatina tip blight, Phomopsis twig/needle blight, Phytophthora root rot, Pythium root rot, scales, Seiridium twig canker, web blight

Ash (*Fraxinus americana*, *Fraxinus pennsylvanica*) – anthracnose, ash yellows, Botryosphaeria canker, Emerald Ash Borer, Fall webworm rust

Azalea (*Rhododendron* spp.) – anthracnose, Armillaria root rot, Botryosphaeria dieback, Botrytis blight, Cercospora leaf spot, Colletotrichum leaf spot, leaf and flower gall, lace bugs, lesion nematodes, oedema, Pestalotia leaf spot, petal blight, Phomopsis dieback, Phyllosticta leaf spot, Phytophthora dieback, Phytophthora root/stem rot, powdery mildew, web blight

Barberry (*Berberis thunbergii*) – Anthracnose, Barberry webworm Phytophthora root rot, scale

Beautyberry (*Callicarpa* spp.) – leaf spots, mildew, stem diseases

Beech (*Fagus grandifolia*, *Fagus sylvatica*) – anthracnose, aphids, Beech scale, Botryosphaeria canker, Hypoxylon canker, viral disease

Birch (*Betula* spp.) – anthracnose, borers, Botryosphaeria dieback, Botrytis blight, red heart, Septoria leaf spot

Black gum (*Nyssa sylvatica*) – anthracnose, Botryosphaeria dieback, leaf spot, Tupelo leaf miner and scale

Black Locust (*Robinia pseudoacacia*) – borers, cankers, leaf spots, powdery mildew, scale

Black Walnut (*Juglans nigra*) – borers, Thousand Cankers Disease

Boxwood (*Buxus* spp.) – Botryosphaeria dieback, boxwood blight, boxwood decline, Boxwood psyllid, leaf miners, lesion nematode, Macrophoma leaf spot, Volutella blight

Buckeye (*Aesculus* spp.) – Bacterial leaf scorch, Guignardia blotch, Japanese Beetle

Butterfly Bush (*Buddleia davidii*) – mites, Phytophthora root rot, Rhizoctonia root rot

Buttonbush (*Cephalanthus occidentalis*) – leafhoppers, thrips

Carolina Silverbell (*Halesia tetraptera*) – leaf spots

Catalpa (*Catalpa speciosa*) – bacterial wetwood, Verticillium wilt

Cephalotaxus (*Cephalotaxus harringtonia*) – mites

Cherry laurel (*Prunus laurocerasus*) – anthracnose, bacterial leaf spot, bacterial shot hole, Botryosphaeria dieback, Phomopsis dieback, leaf spots, Phytophthora root rot, Pythium root rot, zonate leaf spot

Chokeberry (*Aronia arbutifolia*, *Aronia melanocarpa*) – leaf spots, Pythium root rot, twig blight

Clethra (*Clethra alnifolia*) – mites

Cotoneaster (*Cotoneaster* spp.) – leaf spot, Phytophthora root rot, web blight

Crabapple (*Malus* spp.) – Aphids, borers, Coniothyrium leaf spot, fire blight, frog-eye leaf spot, Japanese Beetle, powdery mildew, rust, scab, scale

Crape myrtle (*Lagerstroemia indica*) – aphid, Japanese Beetle, leaf spot, powdery mildew, scale sooty mold

Cypress (*Cupressus arizonica*) – Botryosphaeria dieback, Kabatina dieback, tip blights, Phytophthora root rot, Seiridium canker

Dawn Redwood (*Metasequoia glyptostroboides*) – Dothiorella canker, needle blight

Deutzia (*Deutzia gracilis*) – aphids, leaf miners, leaf spots

Dogwood (*Cornus* spp.) – anthracnose, Armillaria root rot, Botryosphaeria dieback/canker, Botrytis blight, Discula anthracnose, Fusarium canker, leaf spot, Phomopsis dieback, powdery mildew, Pythium root rot, Septoria leaf spot, spot anthracnose, viral disease

Eastern red cedar (*Juniperus virginiana*) – Bagworms, Cercospora blight, Kabatina tip blight, Pestalotia blight, Phomopsis tip blight, rust, bacterial leaf scorch, Botryosphaeria canker, Cytospora canker, Dutch elm disease, Verticillium wilt

Elm (*Ulmus* spp.) – bacterial wetwood root rot, Dutch Elm Disease, powdery mildew, Pythium root rot

Euonymus (*Euonymus alatus*) – powdery mildew, scale

Falsecypress (*Chamaecyparis* spp.) – Phytophthora root rot, Seiridium canker, web blight

Fir (*Abies* spp.) – Botrytis blight, Cytospora canker, oedema, Phytophthora root/crown rot

Firethorn (*Pyracantha coccinea*) – Aphids, Botryosphaeria dieback, fire blight, Phomopsis dieback, scab

Flowering apricot/cherry/peach/plum (*Prunus*) – bacterial blossom blight, bacterial leaf spot, bacterial shot hole, bacterial scorch, black knot, blossom blight/brown rot, Cytospora canker, Lacebug, Nectria canker, peach leaf curl, Phomopsis canker, scale, white rot

Flowering Cherry (*Prunus* spp.) – black knot, blights, borers, tent caterpillars

Flowering pear (*Pyrus calleryana*) – Botryosphaeria canker, Entomosporium leaf spot, fire blight, rust

Forsythia (*Forsythia x intermedia*) – Botryosphaeria dieback, crown gall, Phomopsis gall, Phytophthora root rot, ringer nematodes, Sclerotinia twig blight, web blight

Fringe tree (*Chionanthus retusus, Chionanthus virginicus*) – borers, leaf spot, scale

Ginkgo (*Ginkgo biloba*) – leaf spots

Glossy Abelia (*Abelia x grandiflora*) – aphids, leaf spots, mildew, root rot

Goldenrain Tree (*Koelreuteria paniculata*) – cankers, leaf spots, root rot, wilt

Hawthorn (*Crataegus viridis*) – Cercospora leaf spot, Entomosporium leaf spot, rust, tent caterpillar

Heavenly bamboo (*Nandina domestica*) – Cercospora leaf spot, Phytophthora root rot, Pythium root rot

Hickory (*Carya* spp.) – anthracnose, bark beetles, downy leaf spot, Gnomonia leaf spot, Phomopsis gall, powdery mildew, zonate leaf spot

Holly (*Ilex* spp.) – anthracnose, bacterial blight, black root rot, Botryosphaeria dieback, leaf spot, root knot nematodes, oedema, Phomopsis dieback, Phytophthora root rot, Pythium root rot, Rhizoctonia root rot, rust, scale, tar spot, web blight

Honeylocust (*Gleditsia triacanthos*) – Botryosphaeria canker, spider mites, Thyronectria canker, webworm

Hornbeam (*Carpinus betulum, Carpinus caroliniana*) – Pythium root rot

Honeysuckle (*Lonicera* spp.) – Botryosphaeria dieback, Botrytis blight, Herpobaisdium leaf blight, powdery mildew

Hydrangea (*Hydrangea* spp.) – anthracnose, aphids, Armillaria root rot, bacterial leaf spot, Botrytis blight, Cercospora leaf spot, Phytophthora root rot, Pythium root rot, powdery mildew, scale

Inkberry (*Ilex glabra*) – black root rot, Phytophthora root rot

Itea (*Itea virginica*) – Phyllosticta leaf spot

Japanese cedar (*Cryptomeria japonica*) – bag worms, needle blight, Phomopsis twig blight, Phytophthora root rot

Japanese pieris (*Pieris japonica*) – Botryosphaeria dieback, lace bug Phomopsis canker, Phytophthora root rot

Juniper (*Juniperus* spp.) – bag worms, Kabatina tip blight, Pestalotia dieback, Phytophthora root rot, Pythium root rot, rust

Leyland Cypress (*Cupressocyparis x leylandii*) – bag worms, phytophthora root rot

Lilac (*Syringa reticulata*, *Syringa vulgaris*) – anthracnose, bacterial blight, Botrytis blight, Cercospora leaf spot, Lilac borer, Phytophthora root rot, powdery mildew

Linden (*Tilia americana*) – Japanese Beetle, leaf miners, mite, scale, spot anthracnose, white rot

Magnolia (*Magnolia* spp.) – bacterial leaf spot, powdery mildew

Maple (*Acer* spp.) – Anthracnose, bacterial scorch, bacterial wetwood, Botryosphaeria dieback, borers, Cytospora canker, Ganoderma root rot, leaf spot, Nectria canker, Phomopsis dieback, purple-eye leaf spot, tar spot, Valsa canker, Verticillium wilt, zonate leaf spot

Mulberry (*Morus alba*, *Morus rubra*) – berry blight, mites, scales

Ninebark (*Physocarpus opulifolius*) – powdery mildew, Rhizoctonia root rot

Oak (*Quercus* spp.) – anthracnose, Armillaria root rot, bacterial scorch, bacterial wetwood, borers, Botryosphaeria canker, Cylindrocladium root rot, Discula anthracnose, Hypoxylon canker, leaf blister, Oak worms, Phomopsis dieback, powdery mildew, rust, smooth patch, spot anthracnose, Tubakia leaf spot

Pine (*Pinus* spp.) – Armillaria root rot, Atropellis twig canker, Cenangium dieback, Cytospora canker, Diplodia tip blight, Dothistroma needle blight, Eastern gall rust, Fusiform rust, needle cast, needle rust, Phacidiopycnis canker, Phytophthora root rot, Pine needle scale pinewood nematodes

Pistache (*Pistacia chinensis*) – Verticillium wilt

Poplar (*Populus* spp.) – Aphids, borers, Botryosphaeria canker, caterpillars, leaf spot

Purple Leaf Plum (*Prunus cerasifera*) – aphids, black knot, borers, canker, leaf spots, scale, tent caterpillars

Redbud (*Cercis* spp.) – Botryosphaeria dieback, botrytis blight, Fusarium canker, leaf spot, scale, Verticillium wilt

Rose (*Rosa* spp.) – anthracnose, black spot, Botryosphaeria dieback, Botrytis blight, crown gall, downy mildew, Japanese Beetle, Phomopsis canker, powdery mildew, Pythium root rot, rose rosette disease, viral disease

Rose-of-Sharon (*Hibiscus syriacus*) – aphids, Japanese Beetles, leaf spot, scale

Russian arborvitae (*Microbiota decussata*) – Phytophthora root rot

Serviceberry (*Amelanchier arborea*) – Powdery Mildew, rust, Entomosporium leaf spot

Silverbell (*Styrax japonicus*) – Ambrosia Beetle, borers, leaf spot

Smoke bush (*Cotinus coggygria*) – anthracnose, scale, Verticillium wilt

Snowball bush (*Viburnum* spp.) – spot anthracnose, bacterial scorch, Botryosphaeria dieback, Botrytis blight, phoma leaf spot, Phytophthora root rot, Rhizoctonia root rot

Spiraea (*Spiraea* spp.) – aphids, leaf spot

Spruce (*Picea* spp.) – Cytospora canker, Phytophthora root rot, Pythium root rot, needle blight, tip blight

St Johnswort (*Hypericum* spp.) – Phytophthora stem/root rot, rust, Rhizoctonia root rot

Sumac (*Rhus aromatica*) – aphids, leaf spots, mites, rusts, scales, wilts

Sweetgum (*Liquidambar styraciflua*) – caterpillars, Cercospora leaf spot, Endothia canker, scale, Sphaeropsis gall

Sycamore (*Platanus occidentalis*) – anthracnose, aphids, bacterial scorch, borers, Botryosphaeria dieback, powdery mildew

Tulip tree (*Liriodendron tulipifera*) – aphids, powdery mildew, scale, Verticillium wilt

Weigela (*Weigela florida*) – Phytophthora root rot, Pythium root rot

Willow (*Salix* spp.) – aphids, Armillaria root rot, Botryosphaeria dieback, Botrytis blight, black canker, Cercospora leaf spot, crown gall, rust, scab, white rot

Winterberry Holly (*Ilex verticillata*) – leaf spots, powdery mildew

Witchhazel (*Hamamelis* spp.) – Botryosphaeria dieback, leaf spot, powdery mildew

Yellow wood (*Cladastris kentukea*) – anthracnose, Verticillium wilt

Yew (*Taxus* spp.) – Botryosphaeria dieback, Phytophthora root, Taxus scale

Zelkova (*Zelkova serrata*) – root rots