



IPM (Integrated Pest Management) of Midwest Landscapes



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Center

IPM (Integrated Pest Management) of Midwest Landscapes

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Front cover photos

Peachtree borer adult female <i>David Laughlin</i>	
Whitemarked tussock moth caterpillar attacked by soldier bug adult <i>David Laughlin</i>	Brown form of oystershell scale <i>John Davidson</i>
	Cottonwood leaf beetle adult <i>Vera Krischik</i>

Table of Contents

I. Indexes to Insects Found in This Book	5	
Pests of Trees and Shrubs	7	
Pests of Turf	9	
Beneficial Insects, Mites and Spiders	9	
II. Supplemental Information	11	
Host Plants and Associated Pests	13	
Functional Ecology of How Pests Feed	16	
Taxonomic Groups of Insects, Mites and Spiders	17	
III. Tactics and Tools for IPM	21	
Chapter 1: Integrated Pest Management (IPM) of Midwest Landscapes	23	
<i>Vera Krischik, University of Minnesota</i>		
Chapter 2: How to Use Landscape IPM in Your Business	25	
<i>Clifford S. Sadof, Purdue University</i>		
Chapter 3: Tips for Using Biological Control in the Landscape	27	
<i>Clifford S. Sadof, Purdue University</i>		
Chapter 4: Symptom Categories of Pest Damage	28	
<i>John Davidson, University of Maryland</i>		
Chapter 5: Tree Injections and Implants	32	
<i>Mark Harrell, University of Nebraska-Lincoln</i>		
Chapter 6: Mites in the Landscape	35	
<i>James E. Appleby, University of Illinois</i>		
Chapter 7: Management of Insect-Vectored Diseases	37	
<i>Raymond A. Cloyd, University of Illinois</i>		
Chapter 8: Pesticide Characteristics and Use	40	
<i>Raymond A. Cloyd, University of Illinois</i>		
Chapter 9: Classes of Pesticides Used in Landscape/Nursery Pest Management	42	
<i>Whitney Cranshaw, Colorado State University</i>		
Chapter 10: Relative Hazards of Turf and Ornamental Pesticides to Non-target Species	45	
<i>Whitney Cranshaw, Colorado State University</i>		
Chapter 11: Using Degree-Days and Plant Phenology to Predict Pest Activity	49	
<i>Daniel A. Herms, The Ohio State University</i>		
IV. Pests of Trees and Shrubs (A-Z)	61	
V. Turf Pests (A-Z)	229	
VI. Beneficial Insects	251	
VII. Pesticide Information	283	
Pesticide Compatibility with Biological Control	285	
Ornamentals: Information About Insecticides/Miticides	287	
Turf: Information About Insecticides/Miticides	290	
Pesticides for Home, Nursery, and Landscape	291	
Pesticides for Turf	295	
VIII. References	299	

I. Index to Insects



Pests of Trees and Shrubs	7
Pests of Turf	9
Beneficial Insects, Mites and Spiders	9



Pests of Trees and Shrubs



ambrosia bark beetle	<i>Xylosandrus germanus</i>
arborvitae leafminer	<i>Argyresthia thuiella</i>
ash flower gall mite	<i>Aceria fraxiniflora</i>
ash plant bug	<i>Tropidosteptes amoenus</i>
Asian longhorned beetle	<i>Anoplophora glabripennis</i>
azalea lace bug	<i>Stephanitis pyrioides</i>
bagworm	<i>Thyridopteryx ephemeraeformis</i>
balsam twig aphid	<i>Mindarus abietinus</i>
birch leafminer	<i>Fenusa pusilla</i>
black pineleaf scale	<i>Nuculaspis californica</i>
black vine weevil	<i>Otiorhynchus sulcatus</i>
boxelder bug	<i>Boisea trivittatus</i>
boxwood spider mite	<i>Eurytetranychus buxi</i>
bronze birch borer	<i>Agrilus anxius</i>
brownheaded ash sawfly	<i>Tomostethus multicinctus</i>
calico scale	<i>Eulecanium cerasorum</i>
cankerworms, fall and spring	<i>Alsophila pometaria</i> and <i>Paleacrita vernata</i>
clearwing borers	several species
clover mite	<i>Bryobia praetiosa</i>
Cooley spruce gall adelgid	<i>Adelges cooleyi</i>
cottonwood leaf beetle	<i>Chrysomela scripta</i>
cottony maple scale	<i>Pulvinaria innumerabilis</i>
cyclamen mite	<i>Phytonemus pallidus</i>
dogwood sawfly	<i>Macremphytus tarsatus</i>
dusky birch sawfly	<i>Croesus latitarsus</i>
Eastern pine shoot borer	<i>Eucosma gloriola</i>
Eastern spruce gall adelgid	<i>Adelges abietis</i>
Eastern tent caterpillar	<i>Malacosoma americanum</i>
elm bark beetle, European	<i>Scolytus multistriatus</i>
elm bark beetle, native	<i>Hylurgopinus rufipes</i>
elm borer	<i>Saperda tridentata</i>
elm casebearer	<i>Coleophora ulmifoliella</i>
elm eriophyid mite	<i>Aceria parulmi</i>
elm leaf beetle	<i>Pyrrhalta luteola</i>
emerald ash borer	<i>Agrilus planipennis</i>
eriophyid mites	several species
euonymus scale	<i>Unaspis euonymi</i>
European elm scale	<i>Gossyparia spuria</i>
European fruit lecanium	<i>Parthenolecanium corni</i>
European pine sawfly	<i>Neodiprion sertifer</i>
European pine shoot moth	<i>Rhyacionia buoliana</i>
European red mite	<i>Panonychus ulmi</i>
fall webworm	<i>Hyphantria cunea</i>
flatheaded appletree borer	<i>Chrysobothris femorata</i>
Fletcher scale	<i>Parthenolecanium fletcheri</i>
forest tent caterpillar	<i>Malacosoma disstria</i>
fourlined plant bug	<i>Poecilopsus lineatus</i>
gloomy scale	<i>Melanaspis tenebricosa</i>
gypsy moth	<i>Lymantria dispar</i>
hackberry nipple gall maker	<i>Pachypsylla celtidismamma</i>
hemlock rust mite	<i>Nalepella tsugifoliae</i>
hemlock woolly adelgid	<i>Adelges tsugae</i>
honeylocust plant bug	<i>Diaphnocoris chlorionis</i>
honeylocust spider mite	<i>Platytetranychus multidigituli</i>
honeysuckle witches' broom aphid	<i>Hyadaphis tataricae</i>
imported willow leaf beetle	<i>Plagiodera versicolora</i>

Pests of Trees and Shrubs (continued)



introduced pine sawfly	<i>Diprion similis</i>
Japanese beetle	<i>Popillia japonica</i>
juniper scale	<i>Carulaspis juniperi</i>
lace bugs	several species
leafhoppers	several species
linden borer	<i>Saperda vestita</i>
locust borer	<i>Megacyllene robiniae</i>
maple spindlegall mite	<i>Vasates aceriscrumena</i>
maple velvet erineum gall	<i>Aceria aceris</i>
mimosa webworm	<i>Homadaula anisocentra</i>
mountainash sawfly	<i>Pristiphora geniculata</i>
mourningcloak butterfly	<i>Nymphalis antiopa</i>
oak cynipid galls	several species
obscure scale	<i>Melanaspis obscura</i>
oystershell scale	<i>Lepidosaphes ulmi</i>
Pales weevil	<i>Hylobius pales</i>
pear sawfly	<i>Caliroa cerasi</i>
pine bark adelgid	<i>Pineus strobi</i>
pine engraver	<i>Ips pini</i>
pine needle scale	<i>Chionaspis pinifoliae</i>
pine root collar weevil	<i>Hylobius radialis</i>
pine shoot beetle	<i>Tomicus piniperda</i>
pine thrips	<i>Gnaphothrips</i> species
pine tortoise scale	<i>Toumeyella parvicornis</i>
planthopper	several species
poplar-and-willow borer	<i>Cryptorhynchus lapathi</i>
poplar tentmaker	<i>Clostera inclusa</i>
pubescent leaf kermes	<i>Nanokermes pubescens</i> and
and pin oak kermes	<i>Allokermes galliformis</i>
redheaded pine sawfly	<i>Neodiprion lecontei</i>
redhumped caterpillar	<i>Schizura concinna</i>
roundheaded appletree borer	<i>Saperda candida</i>
sawflies	several species
scurfy scale and elm scurfy scale	<i>Chionaspis furfura</i> and <i>Chionaspis americana</i>
spittlebugs	several species
smaller spruce bud scale	<i>Physokermes hemicryphus</i>
spruce budworm	<i>Choristoneura fumiferana</i>
spruce spider mite	<i>Oligonychus ununguis</i>
strawberry root weevil	<i>Otiorhynchus ovatus</i>
treehoppers	several species
tuliptree scale	<i>Toumeyella liriodendri</i>
twig girdler	<i>Oncideres cingulata</i>
twig pruner	<i>Anelaphus villosus</i>
twolined chestnut borer	<i>Agrilus bilineatus</i>
twospotted spider mite	<i>Tetranychus urticae</i>
ugly nest caterpillar	<i>Archips cerasivorana</i>
walnut caterpillar	<i>Datana integerrima</i>
white pine aphid	<i>Cinara strobi</i>
white pine sawfly	<i>Neodiprion pinetum</i>
white pine weevil	<i>Pissodes strobi</i>
whitemarked tussock moth	<i>Orgyia leucostigma</i>
whitespotted sawyer	<i>Monochamus scutellatus</i>
woolly alder aphid	<i>Paraprociphilus tessellatus</i>
woolly apple aphid	<i>Eriosoma lanigerum</i>
yellowheaded spruce sawfly	<i>Pikonema alaskensis</i>
yellownecked caterpillar	<i>Datana ministra</i>
Zimmerman pine moth	<i>Dioryctria zimmermani</i>



Pests of Turf

<i>Aphodius</i> beetle	<i>Aphodius granarius</i>
armyworm	<i>Pseudaletia unipunctata</i>
armyworm, fall	<i>Spodoptera frugiperda</i>
black turfgrass <i>Ataenius</i>	<i>Ataenius spretulus</i>
bluegrass billbug	<i>Sphenophorus parvulus</i>
chinch bugs	<i>Blissus</i> species
cutworm, black	<i>Agrotis ipsilon</i>
cutworm, bronzed	<i>Nephelodes minians</i>
cutworm, variegated	<i>Peridroma saucia</i>
false chinch bug	<i>Nysius raphanus</i>
false Japanese beetle	<i>Strigoderma arvicola</i>
green June beetle	<i>Cotinis nitida</i>
greenbug	<i>Schizaphis graminum</i>
Japanese beetle	<i>Popillia japonica</i>
leafhoppers	several species
May/June beetles	<i>Phyllophaga</i> species
Northern masked chafer	<i>Cyclocephala borealis</i>
Oriental beetle	<i>Anomala orientalis</i>
sod webworms	<i>Crambus</i> and <i>Parapdiasia</i> species



Beneficial Insects, Mites and Spiders

Class Arachnida, Spiders and mites

Order Acari, Mites and ticks

Family Phytoseiidae, Predatory mites
phytoseiid mites, *Phytoseiulus* species

Order Araneae, Spiders

Several families
spiders, many species

Class Insecta, Insects

Order Coleoptera, Beetles

Family Cantharidae, Soldier beetles
soldier beetle, *Chaliognathus pennsylvanicus*

Family Carabidae, Ground beetles
caterpillar hunter, *Calosoma sycophanta*

Family Cicindelidae, Tiger beetles
tiger beetle, several species

Family Coccinellidae, Lady beetles
convergent lady beetle, *Hippodamia convergens*
mealybug destroyer, *Cryptolaemus montrouzieri*
multicolored Asian lady beetle, *Harmonia axyridis*
pink, or twelve-spotted, lady beetle, *Coleomegilla maculata*
spider mite destroyer, *Stethorus picipes*
twicestabbed lady beetle, *Chilocorus stigma*
two-spotted lady beetle, *Adalia bipunctata*

Order Diptera, Flies, gnats, midges, and others

Family Asilidae, Robber flies
robber flies, several species

Family Cecidomyiidae, Gall and predatory midges
predaceous midge, *Aphidoletes aphidimyza*

Family Syrphidae, Syrphid, hover, or flower flies
hover flies, several species





Beneficial Insects, Mites and Spiders (continued)



Family Tachinidae, Tachinid flies
tachinid fly, several species

Order Hemiptera, True bugs

Family Anthracoridae, Pirate bugs
insidious flower bug, *Orius insidiosus*

Family Lygaeidae, Bigeyed bugs
bigeyed bug, *Geocoris* species

Family Miridae, Plant or leaf bugs
pirate bug, *Deraeocoris nebulosus*

Family Pentatomidae, Stink bugs
spined soldier bug, *Podisus maculiventris*
two-spotted stink bug, *Perillus bioculatus*

Family Reduviidae, Assassin bugs
adult assassin bug, several species
wheel bug, *Arilus cristatus*

Order Hymenoptera, Parasitic wasps, wasps, ants, and bees

Family Aphelinidae, Aphelinid wasps
whitefly parasitoid, *Encarsia formosa*

Family Braconidae, Braconid wasps
braconid wasp, several species
gypsy moth parasitoid, *Cotesia melanoscela*
imported cabbageworm parasitoid, *Cotesia glomerata*
tomato hornworm parasitoid, *Cotesia congregata*

Family Chalcididae, Chalcidid wasps or gall wasps
chalcidid wasp, several species

Family Encyrtidae, Encyrtid wasps
soft scale parasitoid, *Encyrtus fuscus*

Family Ichneumonidae, Ichneumonid wasps
ichneumonid wasp, several species

Family Scelionidae, Scelionid wasps
scelionid wasp, several species

Family Trichogrammatidae, Trichogrammid wasps

Family Vespidae, Wasps
paper wasp, *Polistes* species
potter wasp, several species
yellowjacket, several species

Order Neuroptera, Lacewings, mantids, and others

Family Chrysopidae, Green or common lacewings
common green lacewing, *Chrysoperla carnea*

Family Hemerobiidae, Brown lacewings
brown lacewing, several species

Family Mantispidae, Mantidflies
mantidfly, several species

Order Thysanoptera, Thrips

Family Aleoarthropidae, Predatory thrips
Family Phlaeothripidae, Predatory thrips
thrips, several species