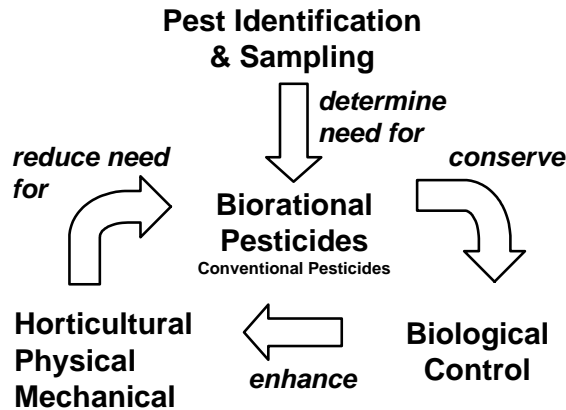


**COMMONLY ENCOUNTERED INSECTS
AROUND HOME LANDSCAPES & GARDENS**
14 March 2006 Master Gardener Seminar

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PART 1 – concepts of integrated pest management

“The single best way to control a pest is . . .”



IPM definition: common-sense-approach to pest control that combines alternatives to pesticides w/wise use of pesticides

IPM DECISION-MAKING & PEST CONTROL METHODS

pest identification & monitoring *Which species? How many? Where are they?*

alternatives to pesticides

Horticultural Controls

definition

“good gardening”
(alter normal horticultural practices for pest control)

strategies

prevent pest colonization & establishment
slow rate-of-increase

Physical Controls

deliberately alter physical environment
temperature / humidity / light / electric shock

Mechanical Controls

devices that interfere w/pest movement
(stop introduction or prevent spread)
traps & barriers / removal

Biological controls = living agents or their products
(predators, parasites, pathogens, antagonists, competitors)

predators often generalists
consume many prey
some require nectar & pollen

parasitoids insect parasite of another insect
(many parasitoids are wasps, some are flies)
usually specialists
require 1 host
parasitic larvae / free-living adults (nectar & pollen)

pathogens disease causing micro-organisms
usually highly specific
many fast acting & cause high mortality (microbial insecticides)

strategies commercially purchase & release
SEE: California Environmental Protection Agency
Department of Pesticide Regulation
www.cdpr.ca.gov/docs/ipminov/bensuppl.htm

conserve & enhance naturally occurring agents

pesticides chemicals that kill pests

insecticides pesticides that kill insects

conventional insecticides kill insects by poisoning the nervous system
= “broad-spectrum” control

potentially kill many unrelated species

biorational insecticides biologically rational “least-toxic”
= narrow, selective spectrum of pest control

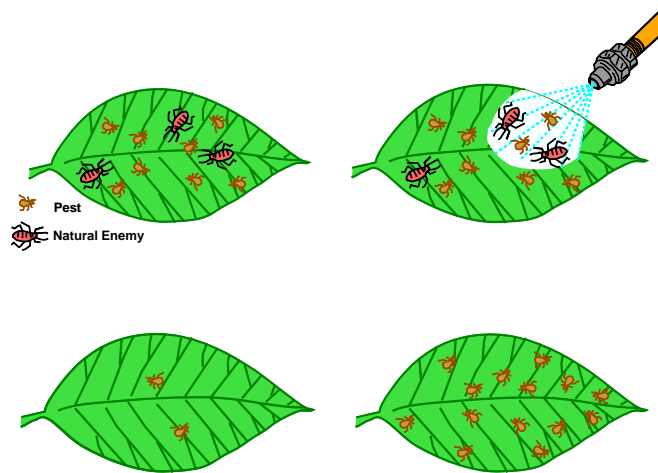
reduced hazards to vertebrates & other non-targets
many effective at extreme low doses

physiologically selective killing action targets unique insect physiology
(microbials, neem botanicals, Insect Growth Regulators)

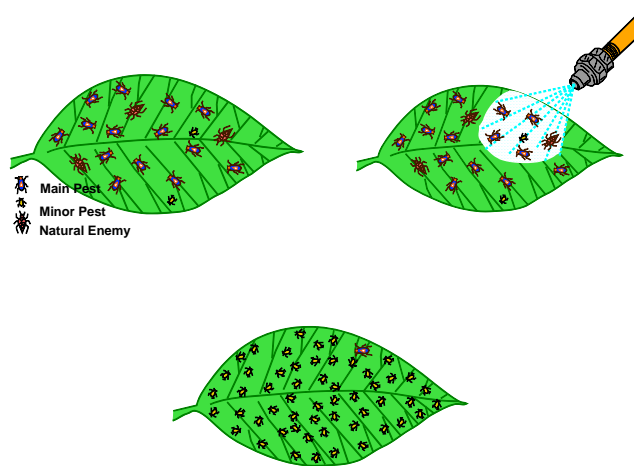
ecologically selective short-residual reduces exposure & decreases harm
(botanicals, soaps, oils, dusts)

When you kill the natural enemies, you inherit their work
= conserve & maintain predators, parasitoids, pathogens

PEST RESURGENCE: insect pest rebounds after application & recovers to pre-spray levels



PEST REPLACEMENT: resurgence of non-target pest (= secondary pest outbreak)



PART 2 – INTERNET TRUTH or FICTION: Formosan termites in garden mulch?

*“If you use mulch around your house be very careful about buying mulch this year. After the Hurricane in New Orleans many trees were blown over. These trees were then turned into mulch and the state is **trying to get rid of tons and tons of this mulch to any state or company who will come and haul it away. So it will be showing up in Home Depot and Lowes at dirt cheap prices with one huge problem; Formosan Termites will be the bonus in many of those bags.** New Orleans is one of the few areas in the country where the Formosan Termites has gotten a strong hold and most of the trees blown down were already badly infested with those termites. Now we may have the worst case of transporting a problem to all parts of the country that we have ever had. These termites can eat a house in no time at all and we have no good control against them, so tell your friends that own homes to avoid cheap mulch and know where it came from.”*

TRUTH:

- quarantine prohibits movement of wood out of 12 hurricane parishes (counties)
- near-zero probability termite queen could survive chipping + mulch-bag heating
NO OTHER life stage can establish colony
- inactive (non-feeding) <50 °F
lethal 2-wks at 34

TIPS for separating termites vs ants

BOTH can have winged and wingless forms

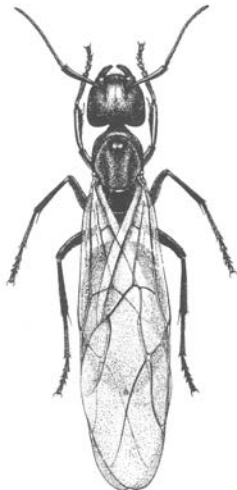
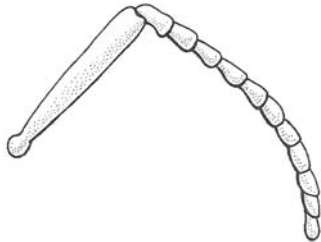
Order Isoptera
(termites)

- bead-like antennae (appear as pearls-on-a-string)
- abdomen broadly joined to thorax



Order Hymenoptera
(ants)

- elbowed antennae (bent at 90° angle)
- abdomen narrowly joined to thorax (thin “stem” between “chest” and “body”)



CARPENTER ANT: petiole with 1-node, ring of fine hairs around anus
thorax evenly-rounded in profile (vs uneven profile)

BORERS (beetles and moths), cont'd
species and identification:

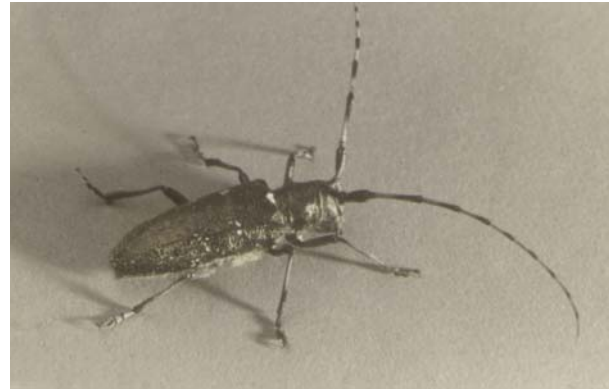
(1) longhorned beetles

EXOTIC PEST: **Asian longhorned beetle, *Anoplophora glabripennis***
 NOT KNOWN FROM IDAHO, believed unlikely to establish

DON'T CONFUSE WITH WHITESPOTTED SAWYER



Asian longhorned beetle
Anoplophora glabripennis



whitespotted sawyer
Monochamus scutellatus

| characteristic | ASIAN LONGHORNED BEETLE (exotic pest not known to occur in Idaho) | WHITESPOTTED SAWYER (native pest commonly occurs in Idaho) |
|-----------------------------|--|--|
| overall appearance | glossy jet-black very smooth w/microscopic dimples 3/4 to 1 1/4-inches long (without antennae) stout-bodied (heavier than sawyer) | bronze-black coarsely, roughly dimpled & bumpy 5/8 to 1 1/8-inches long (without antennae) thinner-bodied (more slender than ALB) |
| elytra (wing covers) | up to 20 irregularly-shaped but distinct white spots (both sexes) | females: usually mottled w/whitish patches males: usually completely bronze-black |
| scutellum | generally black | generally white (covered w/white-to-ash colored scales) |
| antennae | black w/distinct white bands on each segment females: about 1.5-times body length males: about 2.5-times the body length | females: faint gray & black banding slightly longer than body males: all black; much longer than body |
| legs | bluish-white (both sexes), esp. upper surface | dark to grayish black |

BORERS (beetles and moths), cont'd
species and identification:

(2) metallic wood boring beetles Family: Buprestidae, Order: Coleoptera (beetles)

larvae = flat-headed borers
 creamy-white flattened legless grubs, broad at head and taper to rear



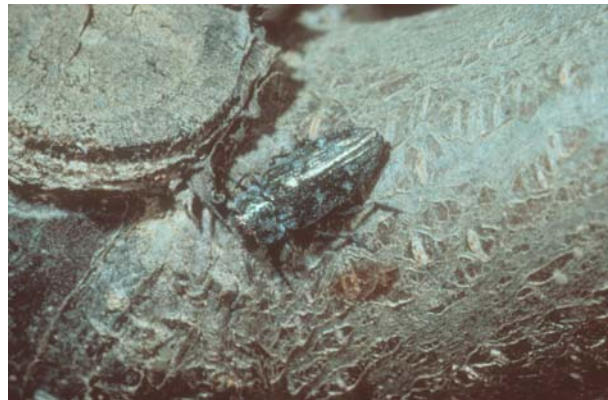
flat-headed borer larvae →
metallic wood boring beetle adults

adults robust medium to large size (up to 1 ½-inches)
 flattened, stream-lined bullet-shaped body (often tapers to point at rear)
 often shiny metallic coppery blue, black or green (esp. lower body surface)
 longitudinal grooves on elytra (= wing covers)
 short antennae, usually sawtoothed (sometimes thread-like or comb-like)
 tarsi 5-5-5

KEY PESTS: bronze birch borer, *Agrilus anxius*
 Pacific flatheaded borer, *Chrysobothris mali*



bronze birch borer
Agrilus anxius



Pacific flatheaded borer
Chrysobothris mali

EXOTIC PESTS: emerald ash borer, *Agrilus planipennis*
 NOT KNOWN FROM IDAHO, unlikely to establish

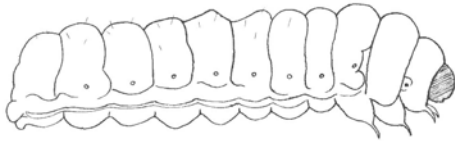
BORERS (beetles and moths), cont'd
species and identification:

(3) clearwinged moths

Family: Sesiidae, Order: Lepidoptera (butterflies & moths)

larvae cream-colored caterpillars w/brown head capsule + obvious legs; up to 1-inch long

adults resemble paper wasps (narrow, nearly transparent wings w/dark veins)
many w/vividly banded body colors, bodies fringed w/hair-like projections
1 ¼-inch wingspan



KEY PESTS: poplar clearwing, *Paranthrene robiniae*
peachtree borer, *Synanthedon exitiosa*
Sequoia pitch moth, *Synanthedon sequoiae*

host plants:

landscape trees & shrubs, esp. broadleaves

ash, birch, cottonwood, lilac, locust, rhododendron, poplar, sycamore, willow
native conifers (Douglas-fir, pine, spruce, true firs)

fruit trees & caneberries

peach trees
currants, gooseberries, raspberries,

highly specific (narrow) host ranges – no single species attacks all hosts

symptoms:

sawdust frass at entry point & on soil surface around infested plant
sappy, stained wet spots on trunk & branches
cracked, roughened, weather-beaten bark
sinuous tunnels may be visible on thin-barked trees (birch) just below outer bark
wilting, yellow flagging and dead branches, limb breakage, plant death

biology:

generally long-lived as larvae (1-2 years per generation)
seldom successfully attack vigorous plants
drought-stressed plants, diseased trees most susceptible
freshly-pruned trees & shrubs often preferred egg-laying sites
eggs laid in/near wounds & cracks, rough areas on bark
damaging as larvae
– some feed on inner bark (sap-conducting phloem tissue) & girdle plant
– others tunnel through sapwood (water conducting xylem) & heartwood

BORERS (beetles and moths), cont'd

MANAGEMENT OPTIONS

cultural: site-selection planning when planting new trees & shrubs
avoid areas where foot traffic compacts soil or driveway/sidewalks limit roots

maintain vigorous plant growth & health via watering & fertilization

minimize accidental wounding
esp lawn mower injury around base

cultivar selection (bronze birch borer)
ornamental cut-leaf birches MOST susceptible

highly susceptible

| | |
|---------------------------------|--|
| <i>Betula jacquemontii</i> | Jacquemonti Birch, Whitebarked Himalayan Birch |
| <i>Betula pendula</i> | European White Birch, Silver Birch |
| <i>Betula pendula</i> 'Youngii' | European Weeping Birch, Young's Weeping Birch |

moderately susceptible

| | |
|--|--|
| <i>Betula alleghaniensis</i> | Yellow Birch |
| <i>Betula lenta</i> | Sweet Birch, Black Birch, Cherry Birch |
| <i>Betula papyrifera</i> | Paper Birch, White Birch, Canoe Birch |
| <i>Betula platyphylla japonica</i> 'Whitespire' | Whitespire Birch |

very low susceptibility

| | |
|--------------------------------|--------------------------------------|
| <i>Betula nigra</i> | River Birch, Red Birch |
| <i>Betula nigra</i> 'Heritage' | Heritage Birch, Heritage River Birch |

SOURCE: Minnesota Extension Bulletin FS-1417-A

physical: treat tree & shrub wounds w/pruning compounds or grafting wax to prevent egg laying

prune-off isolated infested branches & limbs
destroy by burning, chipping, burying

“worming” (esp. shallow-tunneling clearwinged moth larvae)
dig-out larvae w/pocket knife, ream-out w/stiff sharp wire

biocontrol: conserve & maintain natural enemies (woodpeckers, predators, parasites)
– but often NOT abundant in urban landscapes

BORERS (beetles and moths), cont'd

conventional insecticides: generally ineffective after larvae present

± systemic insecticides (+ phloem-feeders ? – sapwood & heartwood feeders)

tree implant formulations

acephate *Bonide Systemic Insecticide Bullets*

imidacloprid *Pointer Insecticide*

soil applications

imidacloprid *Bayer Tree & Shrub Insect Control*

preventive trunk sprays

- apply as protectant spray to tree trunks to kill adults BEFORE they lay eggs
 - bronze birch borer – June/July
 - locust borer – Aug/Sep
 - peachtree borer – July/Aug
 - Pacific flatheaded borer – May/June
- monitor flight timing & intensity of clearwing moths w/pheromone traps
 - apply insecticide sprays – at 1st capture
 - 3-wks after 1st capture if moth flight continues

SEE: www.gemplers.com

- spray trunk to saturation (not run-off)
- homeowner products
 - carbaryl insecticide (only certain formulations)
 - permethrin insecticide (*Bonide Borer-Miner Killer Concentrate* [2.5% a.i.]

ALWAYS READ THE LABEL!

Never recommend a product unless both pest and target site (plant) are listed