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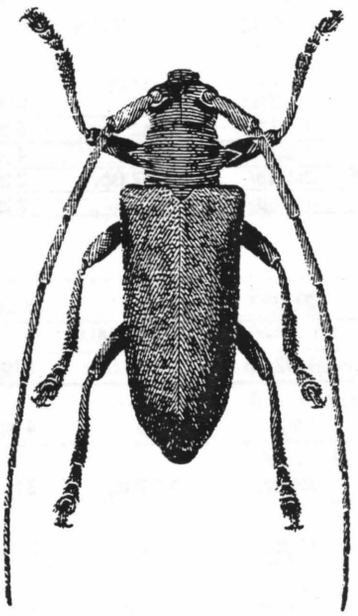
INSECT NOTES

WOOD-INFESTING BEETLES - THE FIRST ENCOUNTER

Toward the end of the wood-burning season (hope springs eternal) is the time when homeowners frequently encounter some wood-infesting beetles in the house, flying at the window, or in the firewood they brought in this fall and stored for an extended period. One of the most common beetle groups to become active afetr a few weeks to months indoors are the long-horned beetles, Family Cerambycidae. The antennae of the adult beetles are usually very long, sometimes much longer than the body--this is the origin of the name "long-horned", the antennae are the horns. The normal life cycle of most of these insects is to overwinter in the larval or pupal stage, complete development and emerge in the spring to mate and lay eggs. This normal schedule can be altered when they are exposed to some cold temperatures, then brought indoors and exposed to warm temperatures.

The "sawyers" are probably the most common of the long-horned beetles. They are usually found attacking softwoods (pine, spruce, fir), but may be found in hardwoods. The adult females lay eggs within the bark or in the space between the bark and the outer layer of wood of standing dead trees or down logs. The early stage larvae feed on the outer layer of wood and bark. After about two weeks of feeding on this highly nutritious wood, the larve begin making a gallery into the center of the wood. Once in the center of the wood, away from predators and parasites, the larva pupates. The pupal period may last for a month or more, and the adult beetle may have to chew its way out of the wood to the surface. Usually this is not a long distance, and the adults have very effective mandibles.



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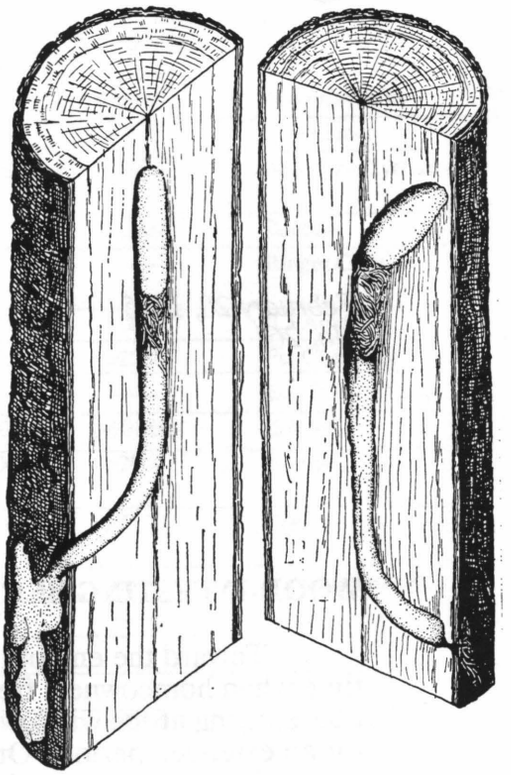
The larvae can be heard quite clearly when they are feeding immediately below the surface of the bark, and sometimes they can be heard when they are tunneling into the center fo the log. The name "sawyer" comes from the fact that the larvae feeding sounds are similar to a saw cutting the wood.

The important point to remember about "sawyers" is that they DO NOT infest structural wood, or any other wood indoors. These beetles are adapted to feeding on wood with a certain moisture content and usually with a bark covering. Structural wood is usually much too dry for these beetles to feed on and survive. It is very unlikely that they would even attempt to re-infest the wood logs kept indoors. For these reasons there is no need for any control measures to be used on the few beetles (or other insects) that may be found associated with firewood. Removing the bark after logs are cut can help to reduce the attack by "sawyers", and storing wood for only a limited time indoors will help keep ants, wasps, and other critters from leaving winter harborages and crawling around the house.



Pesticide Dilution Table

(Amount of pesticide formulation for each gallon of water)

Pesticide Formulation	Percentage of Actual Chemical Wanted								
	.0313%	0.0625%	0.125%	0.25%	0.5%	1%	2%	3%	5%
Wettable Powder (WP)									
15% WP	2 1/2 tsp.	5 tsp.	10 tsp.	7 tbsp.	1 cup	2 cups	4 cups	6 cups	10 cups
25% WP	1 1/2 tsp.	3 tsp.	6 tsp.	12 tsp.	8 tbsp.	1 cup	2 cups	3 cups	5 cups
40% WP	1 tsp.	2 tsp.	4 tsp.	8 tsp.	5 tbsp.	10 tbsp.	1 1/4 cups	2 cups	3 1/4 cups
50% WP	3/4 tsp	1 1/2 tsp.	3 tsp	6 tsp.	4 tbsp.	8 tbsp.	1 cup	1 1/2 cups	2 1/2 cups
75% WP	1/2 tsp	1 tsp.	2 tsp.	4 tsp.	8 tsp.	5 tbsp.	10 tbsp.	1 cup	2 cups
Emusifiable Concentrate (EC)									
10% to 12% EC 1 lb actual/gal	2 tsp.	4 tsp.	8 tsp.	16 tsp.	10 tbsp.	2/3 pt.	1 1/8 pt.	1 qt.	3 1/4 pt.
15% to 20% EC 1.5 lb. actual/gal	1 1/2 tsp.	3 tsp.	6 tsp.	12 tsp.	7 1/2 tbsp.	1/2 pt.	1 pt.	1 1/2 pt.	2 1/2 pt.
25% EC 2 lb. actual/gal.	1 tsp.	2 tsp.	4 tsp.	8 tsp.	5 tbsp.	10 tbsp.	2/3 pt.	1 pt.	1 3/4 pt.
33% to 35% EC 3 lb. actual/gal.	3/4 tsp.	1 1/2 tsp.	3 tsp.	6 tsp.	4 tbsp.	8 tbsp.	1/2 pt.	3/4 pt.	1 1/8 pt.
40% to 50% EC 4 lb. actual/gal.	1/2 tsp.	1 tsp.	2 tsp.	4 tsp.	8 tsp.	5 tbsp.	10 tbsp.	1/2 pt.	4/5 pt.
57% EC 5 lb. actual/gal	7/16 tsp.	7/8 tsp.	1 3/4 tsp	3 1/2 tsp.	7 tsp.	4 3/8 tbsp.	9 tbsp.	14 tbsp.	1 1/2 cups
60% to 65% EC 6 lb. actual/gal.	3/8 tsp.	3/4 tsp.	1/2 tbsp.	1 tbsp.	2 tbsp.	4 tbsp.	8 tbsp	12 tbsp.	1 1/2 cups
70% to 75% EC 8 lb. actual/gal.	1/4 tsp.	1/2 tsp.	1 tsp.	2 tsp.	4 tsp.	8 tsp.	5 tbsp.	71/2 tbsp	13 tbsp.

gal. = gallon lb. = pound pt. = pint tbsp. = tablespoon tsp. = teaspoon
3 level teaspoons = 1 level tablespoon 2 tablespoons = 1 fluid ounce 8 fluid ounces or 16 tablespoons = 1 cup
2 cups =1 pint 1 quart = 2 pints or 32 fluid ounces 1 gallon = 4 quarts or 128 fluid ounces

Pesticide Toxicity

The toxicity of a pesticide is expressed through the terms "oral" and "dermal" LD_{50}. The lower the LD_{50} value, the more toxic the material. LD_{50} is the dosage of poison that kills 50 percent of the test animals (usually rats or rabbits) with a single application of the "pure" pesticide for a given weight of animal (mg/kg of weight). Oral LD_{50} is the measure of the toxicity of pure pesticide when administered internally to test animals. Dermal LD_{50} is the measure of the toxicity of pure pesticide when applied to the skin of test animals.

Pesticide Information

Common Name	Trade Name	Chemical Class	Oral LD_{50} (mg/kg) Rat	Dermal LD_{50} (mg/kg) Rabbit	Manufacturer
abamectin B1	Avert	microbial toxin	>5000	>2000	Merck
acephate	Orthene	organophosphate	700	>10,250	Valent
ammonium phenate bromide	Microban	disinfectant	——	——	Microban Germicidal Co.
amorphous silica gel	Drione, Tri-Die	desicant & botanical	>5000	——	Roussel Uclaf, Whitmire
Bacillus thuringiensis	Acrobe, Bactimos	biological (bacteria)	none	none	Novo-Nordisk, Abbott
Berliner var. *israelensis* (B.t.i.)	Dunks, Teknar, Vectobac				Summit
bendiocarb	Ficam	carbamate	40	>1000 (Rat)	Nor-Am
bendiocarb + pyrethrins	Ficam Plus	carbamate + botanical	40	>1000 (Rat)	Nor-Am
bifenthrin	Biflex	pyrethroid	375	>2000	FMC
borate	Bora-Care, Mop-Up, Tim-Bor	boron compound	>5000	>2000	Nissus, Waterbury, U.S. Borax
boric acid	Boric Acid, Borid, Blue Diamond Paste, Drax, Niban, Perma-Dust	boron compound	>3160	>2000	numerous
carbaryl	Apicide, Sevin	carbamate	246	——	Mystic, Rhone Poulenc
chlorpyrifos	Duration, Dursban, Empire, Engage, Equity, Killmaster II, Ortho-Chlor, Tenure	organophosphate	96	2000	Whitmire, DowElanco, Positive Formulators
chlorpyrifos + fenoxycarb	Ultraban	organophosphate + insect growth regulator	>5000	>2000	Whitmire
chlorpyrifos + pyrethrins	Dual Use	organophosphate + botanical	>1500	>1800 (Rat)	Roussell Uclaf
cyfluthrin	Optem, Tempo	pyrethroid	826	>5000	Whitmire, Miles
cypermethrin	Cynoff, Cyper-Active, Demon, Prevail, Vikor	pyrethroid	250	>2000	FMC, Roussell Uclaf
d-Limonene	Flea-Stop	monocyclic terpene	——	——	Farnam
d-phenothrin	Steri-Fab	disinfectant	10,000	10,000 (Rat)	Noble Pine Products
deltamethrin	Suspend	pyrethroid	>15,000	>10,000	DowElanco
diatomaceous earth	Answer, Organic Plus	inorganic silica	——	——	Eaton, Organic Plus
diatomaceous earth + pyrethrins	Organic Plus	inorganic silica + botanical	——	——	Organic Plus
diazinon	Diazinon, Knox Out	organophosphate	300	3600	Ciba Geigy, Whitmire
esfenvalerate	Conquer	pyrethroid	458	>2000	Paragon
fenoxycarb	Torus, Ultra Guard	insect growth regulator	>5000	>2000	Ciba Geigy, Whitmire
fenvalerate	Tribute	pyrethroid	451	2500	Roussel Uclaf
fluvalinate	Mavrik, Yardex	pyrethroid	261	>20,000	Zoecon

Pesticide Information (continued)

Common Name	Trade Name	Chemical Class	Oral LD_{50} (mg/kg) Rat	Dermal LD_{50} (mg/kg) Rabbit	Manufacturer
hexaflumuron	Sentricon System	insect growth regulator	——	——	DowElanco
hydramethylnon	Combat Maxforce, Siege	amidinohydrazone	>5000	>2000	American Cyanamid
hydroprene	Gentrol	insect growth regulator	>5100	>2100	Zoecon
insecticidal soap + pyrethrin	Safer Flea & Tick Killer	fatty acid salts + biological	——	——	Ringer Corp.
lambdacyhalothrin	Commodore	pyrethroid	167	>2000	ICI Americas
linalool	Demize	botanical	>5000	>2000	Pet Chemicals
Metarhizium anisopliae	Bio-Path	biological (fungus)	——	——	Eco Science Corp.
methomyl	Flytek, Muscamone	carbamate	3000	>10,000	Zoecon
methoprene	Altosid, Pharorid, Precor	insect growth regulator	>5000	>2000	Zoecon
methoprene + permethrin	Precor Plus Fogger, Precor 2000	insect growth regulator	>5500	>5100	Zoecon
methoxychlor	Marlate	chlorinated hydrocarban	6000	——	Kincaid Enterprises
methyl bromide	——————	alkyl bromide	214	——	Great Lakes
naphthalene	Napthalene	——————			
para-Dichloro-benzene	PDB	——————			
permethrin	Astro, Dragnet, Ectiben, Flee, Nix, Permanone, Prelude, Torpedo	pyrethroid	430	>2000	FMC, Roussel Uclaf, Zeneca
propetamphos	Safrotin	organophosphate	119	2825 (Rat)	Zoecon
propoxur	Baygon	carbamate	50	>5000 (Rat)	Miles
pyrethrum	Exciter, Kicker, Microcare, Pyrenone, Pyrethrins, Safer, Synerol, Uld, X-Clude	botanical	1500	>1800 (Rat)	Prentiss, Roussel Uclaf, Whitmire, Gold Crest, Safer, MicroGen
resmethrin	Vectrin	pyrethroid	>5000	>2000	Velsicol
rotenone	——————	botanical	132	——	numerous
Steinernema carpocapsae	Bio Safe, Exhibit, Vector	biological (nematodes)	——	——	Ortho, Ciba Geigy, Lesco
sulfluramid	Pro-Control	sulfonamide	——	——	MicroGen
sulfuryl fluoride	Vikane	formamidine	——	——	DowElanco
temephos	Abate	organophosphate	4204	2000	American Cyanamid
tetramethrin	——————	pyrethroid	>5000	>5000 (Rat)	numerous
tralomethrin	Saga	pyrethroid	350	>2000	Roussel Uclaf
trichlorfon	Larva-Lur	organophosphate	250	>2100	Prentiss
Repellents:					
citronella oil	Skin So Soft	——————	——	——	Avon
deet	Cutters, Diethyl-toluamide Off	——————	2000	——	numerous
permethrin	Permanone	pyrethroid	430	>2000 (Rat)	Roussel Uclaf