

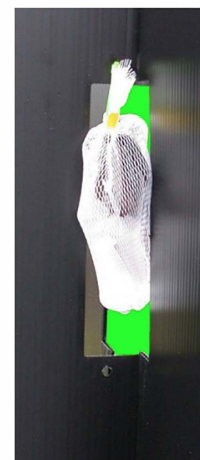


PANEL TRAP - A UNIVERSAL TRAP FOR SURVEYING AND DETECTION OF BARK AND AMBROSIA BEETLES, LONGHORN BEETLES, WOOD WASPS, AND OTHER FORESTRY AND TROPICAL PESTS.



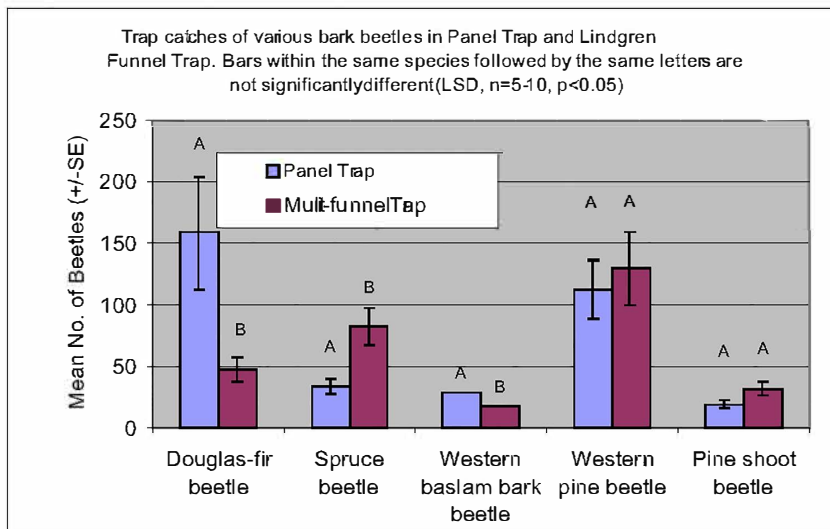
PANEL TRAP

The Panel Trap (PT) is an effective tool for monitoring Scolytids, Cerambycids, Buprestids, and other forest Coleoptera and Hymenoptera. PT are very robust under rigorous field conditions. They are lightweight, easy to carry, weather- and water-proof, and easy to install. PT disassemble rapidly, store flat, and use less storage space than Funnel traps.



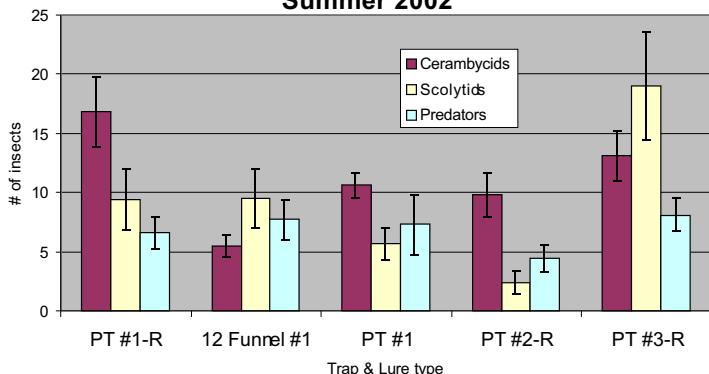
LURE ON HANGER

Field trials demonstrated feasibility of the trap for effective monitoring of various Scolytid species (Fig. 1).

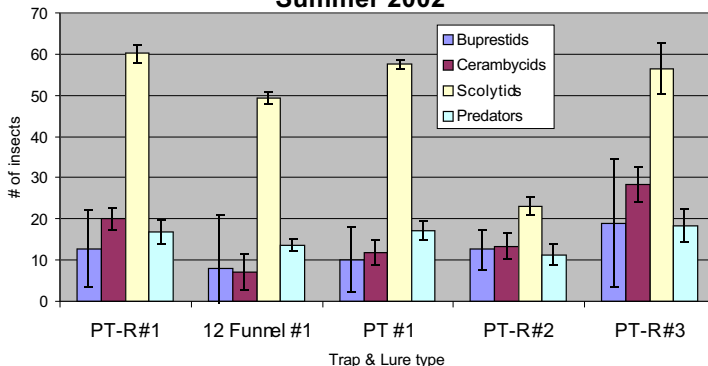


Panel Trap is commercially available for monitoring bark beetles, longhorn beetles, wood wasps, and other timber infesting pests.

Comparative Trapping of Forest Coleoptera, PT and Multi-Funnel Trap, Cranberry Lake, NY, Summer 2002

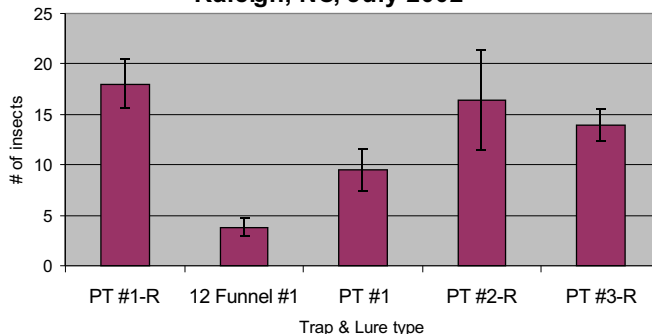


Comparative Trapping of Forest Coleoptera, PT and Multi-Funnel Trap, Duluth, MN, Summer 2002

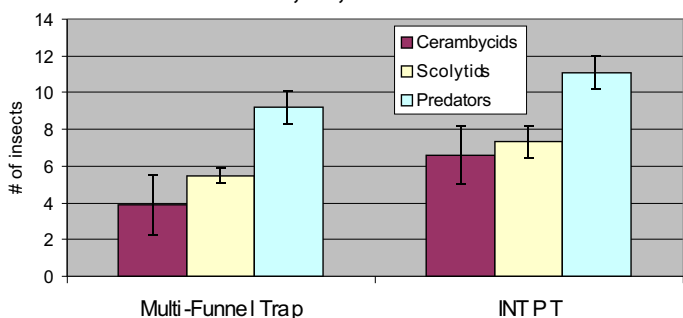


Three types of traps were tested: PT treated with Rain-X, PT untreated (PT), and Multi-Funnel Trap (Phero-Tech, Inc.). The traps were baited with three lure prototypes: (1) standard lure (alpha-pinene (ap), ipdienol (id), ipsenol (ie)), (2) turpentine lure (turpentine, id, ie), and (3) ethanol lure (ethanol, ap, id, ie).

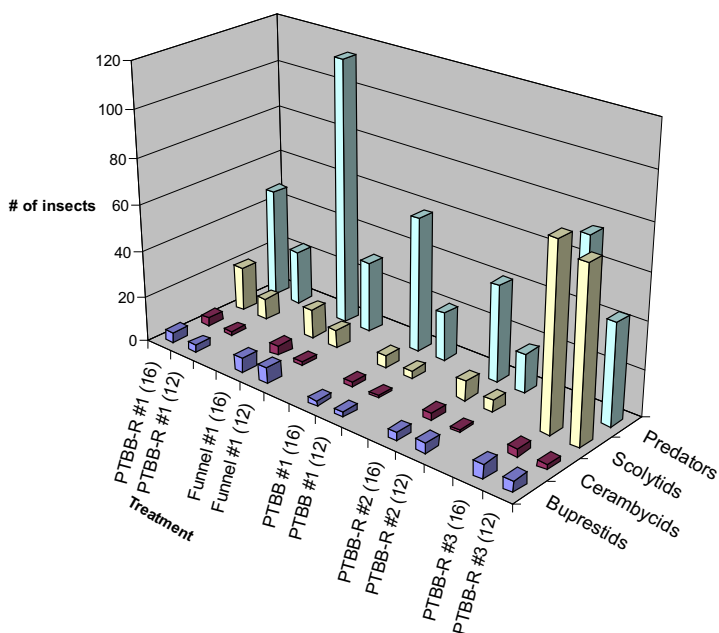
Comparative Trapping of Cerambycids, PT and Multi-Funnel Trap, Raleigh, NC, July 2002



Comparative Trapping of Forest Coleoptera, PT and Multi-Funnel Trap, Mirror Lake State Park, WI, Summer 2002



Comparative Trapping of Forest Coleoptera, PT and Multi-Funnel Trap, Forest Grove, OR, Summer 2002



The Panel Trap is an effective tool for monitoring Cerambycids, as well as Scolytids, Buprestids, and other forest Coleoptera. It also captures fewer beneficial insects. The PT outperformed Phero Tech's Multi-Funnel Trap for most tested insect species. Higher beetle captures and increased detection capability in a less expensive trap equates to greater efficiency of forest pest monitoring programs. The Panel Trap is now commercially available.

PANEL TRAP PERFORMANCE

Table 1. Pine Pitch Canker Vector Survey 2000, Salem, OR (Oregon Department of Agriculture): Capture comparison between Lindgren Funnel Trap (Funnel) and Panel Trap (Panel).

ORDER	FAMILY	SPECIES	NUMBER OF INDIVIDUALS		
			FUNNEL	PANEL	TOTAL
Coleoptera	Anobiidae	<i>Coelostethus quadrulus</i>		1	1
Coleoptera	Anobiidae	<i>Hadrobregmus gibbicollis</i> LeConte	1	3	4
Coleoptera	Bostrichidae	<i>Melaglus confertus</i>	1	3	4
Coleoptera	Bostrichidae	<i>Scobicia declivis</i>	16	38	54
Coleoptera	Buprestidae	<i>Buprestis aurulenta</i>	5		5
Coleoptera	Buprestidae	<i>Buprestis subornata</i> LeConte		1	1
Coleoptera	Buprestidae	<i>Chalcophora angulicollis</i> (LeConte)		3	3
Coleoptera	Cerambycidae	<i>Asemum caseyi</i>		1	1
Coleoptera	Cerambycidae	<i>Megasemum asperum</i>	1	2	3
Coleoptera	Cerambycidae	<i>Monochamus obtusus obtusus</i> Casey	8	1	9
Coleoptera	Cerambycidae	<i>Neoclytus leucozonus</i> (Lap. & Gory)	1		1
Coleoptera	Cerambycidae	<i>Xestoleptura behrensi</i>	1		1
Coleoptera	Cerambycidae	<i>Xylotrechus longitarsis</i>	8	5	13
Coleoptera	Cleridae	<i>Enoclerus lecontei</i> Wolcott	4	1	5
Coleoptera	Cleridae	<i>Enoclerus moesta</i>		1	1
Coleoptera	Cleridae	<i>Enoclerus sphegeus</i> Fabricius	5	7	12
Coleoptera	Cleridae	<i>Phyllobaenus tristis</i> Schaeffer	1		1
Coleoptera	Colydiidae	<i>Lasconotus complex</i>		1	1
Coleoptera	Colydiidae	<i>Lasconotus subcostulatus</i>	4	3	7
Coleoptera	Colydiidae	<i>Lasconotus vegrandis</i>	2		2
Coleoptera	Colydiidae	<i>Microsicus variegatus</i> (LeConte)	1	1	2
Coleoptera	Curculionidae	<i>Pissodes radiatae</i> Hopkins	1		1
Coleoptera	Elateridae	<i>Megapenthes atterimus</i> (Motschulsky)	20	24	44
Coleoptera	Eucnemidae	<i>Asiocnemus basalis</i> (LeConte)		1	1
Coleoptera	Eucnemidae	<i>Asiocnemus nitens</i> (Horn)		1	1
Coleoptera	Melandryidae	<i>Eustrophus tomentosus</i> Say	1	1	2
Coleoptera	Nitidulidae	<i>Eपुरaea</i> sp.	1	1	2
Coleoptera	Nitidulidae	<i>Pityophagus rufipennis</i>	1	2	3
Coleoptera	Rhizophagidae	<i>Hesperobaenus abbreviatus</i> Motschulsky	1	9	10
Coleoptera	Rhizophagidae	<i>Macreurops longicollis</i> Horn		1	1
Coleoptera	Rhizophagidae	<i>Rhizophagus grouvellei</i> Meq.	3		3
Coleoptera	Scolytidae	<i>Dendroctonus valens</i>	1		1
Coleoptera	Scolytidae	<i>Gnathotrichus sulcatus</i>	79	91	170
Coleoptera	Scolytidae	<i>Hylastes gracilis</i>	1		1
Coleoptera	Scolytidae	<i>Hylastes nigrinus</i>	3	1	4
Coleoptera	Scolytidae	<i>Hylastes tenuis</i>	1	4	5
Coleoptera	Scolytidae	<i>Hylurgops porosus</i>	5	1	6
Coleoptera	Scolytidae	<i>Hylurgops reticulatus</i>		4	4
Coleoptera	Scolytidae	<i>Ips mexicanus</i>	8		8
Coleoptera	Scolytidae	<i>Pityophthorus</i> spp.	28	8	36
Coleoptera	Scolytidae	<i>Pseudohylesinus nebulosus nebulosus</i> (LeConte)	1		1
Coleoptera	Scolytidae	<i>Pseudohylesinus pini</i> Wood	3		3
Coleoptera	Scolytidae	<i>Pseudohylesinus sericeus</i>		1	1
Coleoptera	Scolytidae	<i>Xyleborinus saxeseni</i>	36	177	213
Coleoptera	Scolytidae	<i>Xyleborus intrusus</i> Blandford		2	2
Coleoptera	Staphylinidae	<i>Scaphisoma castanea</i> Motschulsky		1	1
Coleoptera	Throscidae	<i>Trixagus mendax</i> Horn	1	1	2
Coleoptera	Throscidae	<i>Trixagus sericeus</i> LeConte		3	3
Coleoptera	Trogositidae	<i>Temnochila chloridia virescens</i>	23	28	51
Coleoptera	Trogositidae	<i>Tenebroides crassicornis</i> Horn		1	1
Hemiptera	Aradidae	<i>Aradus</i> sp.		1	1
Hymenoptera	Orussidae	<i>Orussus</i> sp.		1	1
Hymenoptera	Siricidae	<i>Sirex juvencus californicus</i>	3	10	13
Hymenoptera	Siricidae	<i>Urocerus albicornis</i>		1	1
Isoptera	Hodotermitidae	<i>Zootermopsis angusticollis</i>		1	1
		TOTAL INDIVIDUALS	280	449	729
		TOTAL SPECIES	36	43	55
		NO. UNIQUE SPECIES	12	19	

Panel Trap

1. Hanging wire
2. Hood
3. Main Body
4. Collecting funnel
5. Collecting cup
6. Plastic retainer
7. Lure hanging opening
8. Hanging tabs with holes

Assembly instructions:

1. Align the tabs of the main body with the slots in the hood and collecting funnels,
2. Push the tabs through the holes as much as possible,
3. Protrude at least two plastic retainers through the holes in tabs (8)(that emerge from the collecting funnel). Attach collecting cup by hooking ends of the retainers in the keyholes in the corner of the cup (5a),
4. Attach the hanging wire through two holes in the opposite tabs protruding through the hood of the trap,
5. Mount lure into the lure opening (7) by putting the lure holder through the hole located directly above the opening.

