Select Coleoptera of the Ravenna Training and Logistics Site, Ohio, 1999[1]

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ABSTRACT. This is the first report of a three-year survey of the Coleoptera at the Ravenna Training and Logistics Site (RTLS) near Ravenna, OH. The goal of this study was to conduct a survey of the beetles at the RTLS in order to establish a benchmark of the species found at this site. This is the first study of its kind at the Training and Logistics Site. More than 11,000 specimens were collected during the activity period, April – November 1999. A total of 282 different species in 51 families were collected and identified. Collection methods included flight intercept traps, Lindgren® funnel traps, aerial traps, pit fall traps, aggregation pheromone traps, Japanese beetle traps, aquatic traps, beating sheets, UV light traps, hand collection, Berlese® funnels, and sweep nets. Several new state and regional records have been established.

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INTRODUCTION

The goal of this survey was to collect and identify as many beetle species as possible within the range of habitats at the Ravenna Training and Logistics Site (RTLS) in Northeast Ohio (Fig. 1). A great deal of general and specific collecting at various habitats was done in order to get an idea of the species represented and their relative abundance. This benchmark data will be of interest to those studying invertebrates within the RTLS and also to others in Northeast Ohio and neighboring states where many of these species have not been previously reported. Several of the families, such as Carabidae, Nitidulidae, Scolytidae and aquatic beetle families, have not been identified and will be treated in subsequent publications.

AREA OF STUDY

The three major streams in the Training and Logistics Site are Hinkley Creek, Sand Creek, and South Fork of Eagle Creek. The topography is an irregular plain and tableland with a gentle slope, lying on a glacial plain underlain by sandstone and siltstone. The two predominant forest types are beech maple and oak hickory forest (Tertuliani 1999). In ravines, the associated species are American basswood, American elm, red maple, eastern hemlock, white ash, black cherry, white pine, and northern red oak. In riparian areas, American elm, black ash, beech, and red maple are dominant species, and silver maple, pin oak, swamp white oak, sycamore, tupelo, and cottonwood are less abundant (Tertuliani 1999). Braun (1989) classified woody vegetation in this region as beech maple forest.

Four permanent collecting sites were chosen within the RTLS. These sites were sampled on a weekly basis covering various habitats and were spaced to access the four quadrants of the property. Collections were begun in early April and continued until there was little or no beetle activity in November.

Site 1 was located on the far west end of the RTLS in a level mesic woodland with semi-dense scrub undergrowth. This site consisted of a mixture of young to medium aged deciduous trees, providing a moderately open habitat.

Site 2 was near the headwaters of Hinkley Creek. The site was reached by descending a gentle slope forested primarily with medium to large beech, tulip, and maple trees. Here the canopy was continuous and the undergrowth sparse. During the spring the understory was carpeted with perennial wildflowers (jack-in-the-pulpit, violets, and trillium).

Site 3 was on a level forested area of mixed deciduous trees toward the eastern border of Portage and Trumbull counties. The undergrowth here was minimal due to the heavy forest canopy and deep leaf litter.

Site 4 was open, exposed, dry, and located near the southern boundary of the compound. This area had few mature trees, was composed of low scrub undergrowth, and provided a perfect habitat for beetles preferring open areas with abundant sunlight.

Table 1 lists locations of all sites where collections were made utilizing various sampling techniques such as beating sheets. Sweep-net collections were made along the side of the roads and in open fields. In addition, we set up pitfall traps and used hand nets, searched under logs and in leaf litter in areas other than the four permanent sites. Also, we received assistance from other researchers who collected both terrestrial and airborne species of beetles via various methods including light traps. These additional specimens greatly increased both the total number specimens collected and species diversity.

MATERIALS AND METHODS

The traps used at each of the primary sites were: 2-liter plastic bottles, window traps, pitfall traps, aerial pheromone traps, Lindgren funnel traps, and Japanese beetle traps.

Malt and brown sugar traps were made of 2-liter plastic bottles, suspended from a tree branch about 2.25 m above ground. They contained approximately 250 ml of solution with a 10 cm circular hole in opposite sides to allow beetle access. The malt recipe was 0.25 l malt syrup per 0.75 l of water, and the brown sugar solution was 0.5 kg brown sugar per 4.0 l of water.

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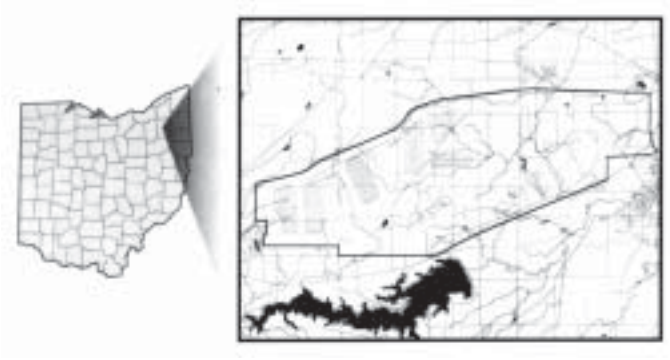

FIGURE 1. Map showing location of Ravenna Training and Logistics Site, Portage and Trumbull counties, OH.

The window traps were single sheets of Plexiglas® 0.7 m^2 mounted on two 1.0 m long wooden boards driven into the ground. These were similar to the design of Peck and Davies (1980). These traps were equipped with a PVC® water trough on each side, and the troughs were filled about half full of soapy water.

Pitfall traps were baited with whole wheat bread dough wrapped in fiberglass netting inside a 0.5 l glass Mason® jar with wire mesh lid. The aerial wheat dough traps were anchored to a 2.0 m wooden pole at the height of approximately 1.0 m (Williams and others 1995).

Aerial aggregation pheromone traps were suspended from tree branches. The pheromone-impregnated caps

TABLE 1

Sampling sites in the Ravenna Arsenal, 1999.

	Township	Site-Location	Latitude	Longitude
1	Charlestown	Site 1 S of Newton Falls Rd., opposite Franks Pond.	41 11 20.3	81 11 03.8
2	Charlestown	Site 2 Near W end of Magazine Rd. where Hinkley Creek crosses.	41 11 46.1	81 06 03.1
3	Windham	Site 3 About 100m N of Ramsdell Rd. on W side of Snow Rd.	41 12 59.4	81 01 17.7
4	Paris	Site 4 S of Newton Falls Rd. at Maintenance area near Paris-Windham	41 11 22.2	81 03 16.6
5	Charlestown	Area on E. side of small road off of Fuze and Booster Spur Rd.	41 11 12.9	81 05 57.8
6	Braceville	Pine stand just N of Butts Kistler Rd. at Portage Co. line.	41 12 12.1	81 00 14.2
7	Charlestown	Hinkley Creek at S Boundary Rd.	41 09 46.7	81 07 58.7
8	Charlestown	McCormick Rd. 1/2 way between Rt. 80 and B Block.	41 10 37.4	81 09 07.7
9	Charlestown	Area near bridge over Sand Cr. on Newton Falls Rd., W of Slagle Rd.	41 11 30.5	81 07 20.9
10	Charlestown	Quarry pond in block A just N of McCormick Rd. on Rd. 5A.	41 10 54.3	81 10 34.7
11	Charlestown	Rt. 80 Hatchery pond 161 m N of Newton Falls Rd. on W side of Rt. 80.	41 11 35.7	81 08 54.9
12	Charlestown	Rt. 80 Trout Pond 322 m N of Newton Falls Rd., E of Rt. 80.	41 11 33.2	81 08 31.7
13	Paris	South Service Rd., S of Criggy's Pond, near SE corner of arsenal.	41 11 35.6	81 00 23.8
14	Charlestown	Near trib. to W Br. Mahoning R. at SW corner of arsenal toward oil pumps.	41 10 30.2	81 09 37.1
15	Paris	S Patrol Rd. near intersection with B&O NYE Rd. at E end of Portage Co.	41 11 43.1	81 00 33.3
16	Charlestown	Area off of Rt. 80 near Gate 22 just N of S Patrol Rd.	41 10 11.1	81 08 49.4
17	Charlestown	Trib. to Hinkley Cr. just S of Hatchery Ponds on Rt. 80	41 11 34.9	81 08 50.0
18	Charlestown	W Patrol Rd. 1.6 km S of the NW corner of the arsenal.	41 11 05.9	81 11 32.9
19	Paris	Big Cobb's Pond off of Paris Windham Rd., 644 m S of Remalia Rd.	41 11 55.9	81 02 51.9
20	Windham	Beaver flooding Trib. to Sand Creek on Paris Wind. Rd. 200m N of Remalia	41 12 30.9	81 02 55.6
21	Paris	E of S Service Rd. 762 m S of Criggy's Pond, E border of Portage Co.	41 11 44.0	81 00 10.3
22	Windham	Ed's Pond 322 m W of Paris Windham Rd., 250 m N of Smalley Rd.	41 13 09.1	81 03 22.1
23	Windham	N Patrol Rd. Pond 161 m S of N Patrol Rd. on road leading into E Block.	41 13 28.5	81 05 42.9
24	Paris	Pine stand on S Service Rd opposite of S Service Rd. Pond.	41 10 21.5	81 04 38.9
25	Paris	S Service Rd. Pond, halfway between George Rd. and Wilcox Wayland Rd.	41 10 25.4	81 04 45.0
26	Paris	Sand Creek near mouth, halfway between Smalley & N Patrol Rd.	41 13 34.7	81 02 06.1
27	Windham	Sand Creek at Smalley Rd. bridge.	41 13 14.3	81 02 24.5
28	Windham	Boy Scout Pond impoundment on S Fk. Eagle Creek off of Wadsworth Rd.	41 13 37.0	81 04 44.0
29	Windham	S Fk. Eagle Cr. at wooden bridge on N Patrol Rd.	41 13 34.9	81 02 49.0
30	Charlestown	Big beaver swamp on W end of Bundling Rd.	41 12 01.7	81 09 01.1
31	Charlestown	Franks Pond, on N side of Newton Falls Rd. E. of W boundary.	41 11 32.7	81 11 03.5
32	Paris	Pine stand on S side of Newton Falls Rd. 161 m from Wilcox-Wayland Rd.	41 11 23.9	81 04 15.5

TABLE 1 (*Cont.*)

Sampling sites in the Ravenna Arsenal, 1999.

	Township	Site-Location	Latitude	Longitude
33	Charlestown	S side of Northline Rd. near beaver impoundment & heron rookery.	41 12 16.6	81 08 05.1
34	Charlestown	S Patrol Rd where trib. to Hinkley Creek crosses, near Demolition pond area.	41 11 05.7	81 10 04.9
35	Paris	Pauls Ponds area, 250 m S of Newton Falls Rd.	41 11 05.6	81 03 49.0
36	Paris	Remalia Rd. near Load Line 2, just before entrance to Load Line 2 Rd.	41 12 09.6	81 02 14.0
37	Paris	George Rd pond just S of intersection with Newton Falls Rd.	41 11 23.0	81 05 01.0
38	Charlestown	Rt. 80 & N Patrol Rd.	41 12 18.6	81 08 52.2
39	Paris	Fence behind garage building N of entrance gate, W side of George Rd	41 10 15.0	81 05 29.2
40	Braceville	Woods in UTES property.	41 12 39.6	80 59 46.0
41	Charlestown	Sand Creek @ Newton Falls Rd., E of Greenleaf Rd.	41 11 31.2	81 06 19.0
42	Freedom	Woods on S side of intersection of Northline & Slagle Rd.	41 12 35.9	81 06 59.6
43	Charlestown	Halfway down E. side of Greenleaf Rd. at Hinkley Crk trib. crossing.	41 10 17.5	81 07 06.4
44	Windham	Near 90∞ bend in Winklepeck Rd & Sand Creek, NE of Wilcox-Wayland Rd.	41 12 39.6	81 02 36.6
45	Paris	Powerline cut B&O Y area N of S Patrol, E of RR tracks	41 11.728	81 05 31
46	Charlestown	S Patrol Rd E of Rt 80 near exterior fenceline	41 10 01	81 09 16
47	Windham	Boy Scout Camp W of Wadsworth Rd, S of N Patrol, walnut stand	41 13 37	81 04 40
48	Windham	N Patrol Rd woods near N Patrol Rd pond	41 13 32	81 05 47
49	Charlestown	W of Fuze/Booster, 122 m behind 1st bldg S of junction with Demolition Spur	41 11 28	81 5. 80
50	Freedom	W end of wood lot, Block D	41 11.80	81 6.81
51	Paris	Guard property E side, woods, near bridge over trib. to Mahoning River	45 62 426	50 11 55
52	Charlestown	N of S Patrol near gate 22 W side Arsenal off of Rt. 80	41 10.44	81 8.58
53	Windham	Trib to S. fork Eagle Creek at Slagle Rd. bridge S. of Northline Rd.	41 12 33	81 06 59
54	Charlestown	SW corner S Patrol Rd on dirt rd leading to oil pumps	41 10.25	81 11.11
55	Charlestown	457.2 m W of Rt 80 on S Patrol Rd stream	41 10.03	81 9.24
56	Windham	E of stone arch bridge crossing S Fork Eagle Creek on Wadsworth Rd	41 13.37	81 5.16
57	Windham	Woods adjacent to ammo sectioning area off Remalia W of Randall Rd	41 12 37	81 02 09
58	Paris	Newton Falls Rd. 0.8km W of Paris Windham Rd	41 11 27	81 04 57
59	Paris	Woods on E side George Rd just S of Newton Falls Rd.	41 11 27	81 04 57
60	Charlestown	Midway btwn Block B and Rt 80 on both sides of Newton Falls Rd	41 11.61	81 9.10
61	Charlestown	W and behind building SM-7 on Magazine Rd	41 19.34	81 15.78
62	Charlestown	125 km N of S Patrol Rd on Knapp Rd	45 57.03	48 59.21

were hung on a string inside the Mason® jar with the same type of wire mesh lid. The aggregation pheromones were nitidulid attractants developed for several species of sap beetles.

Japanese beetle traps were hung on 2.0 m metal poles. Two Lindgren® funnel traps were used; one baited with a Chalcoprax® lure and the other with 3 exotic bark beetle lures. These traps were secured to 1.5 m metal poles. The lures in the 2 Lindgren® traps were replaced on June 29 and again on August 18.

An area we called the "stumps" was surveyed weekly. It was located near Site 1 at the western end of the RTLS. Recent logging left many exposed freshly cut maple and cherry stumps, which attracted sap beetles, rove beetles, and other ground dwelling beetles. In order to make the stumps more attractive we placed wooden wedges on top of them which provided a cover for the beetles and made it more likely they would stay *in situ*.

We also collected beetles from deer carcasses in the Training Grounds. Carrion beetles, nitidulids, histerids, clerids, and rove beetles were encountered in the carrion. By mid-June, scavenger activity made it necessary to wrap chicken wire around the aerial, malt, and brown sugar traps to keep unidentified animals (probably raccoons) from removing the bait.

During the summer months, Megan Michael processed several samples of leaf litter through Berlese® funnels at the Ohio Department of Natural Resources, Natural Areas

and Preserves Division. These provided an additional source of terrestrial beetles.

Window traps were maintained until October 27. The Lindgren® traps were maintained until November 4, while the 2-liter plastic bottle traps were run until November 10. The aerial, ground, and aggregation pheromone traps were removed on November 17. The UV light traps used by Michael Gilligan were removed in the beginning of October.

The location of each specimen collected at RTLS was designated by site number, date, and coordinates, along with the collection method. Most specimens were pinned or placed on insect points. Labels with all pertinent data were placed with the specimens and separate determination labels were added once the specimens were identified. In most cases these determinations were to the species level.

RESULTS AND DISCUSSION

The 1999 collecting season was extremely dry resulting in several of the ponds drying up and apparent plant stress when compared to adjacent areas which had received more precipitation. Although we do not have data for comparison, we speculate that the effects of the drought reduced the numbers of beetles in some habitats, especially those living in the leaf litter, riparian, and woodland areas. However, the light traps yielded hundreds of beetle specimens from woodland and water habitats. At various times our collecting traps were invaded by other insects that were attracted to the baits. Ants, moths, yellow jackets, spiders, slugs, bald face hornets, and European hornets were among the unwelcome insects captured in our traps.

One of the benefits of this research project was the Ravenna complex itself. It is a unique place to do field work in a variety of habitats. We were so intrigued by the diversity of beetles found at the RTLS that we decided to design a poster featuring some of the beetles we collected for posterity and educational purposes. The poster will be one of the legacies of this project.

We did not find any federally listed endangered, threatened, or candidate species, or any state listed endangered, threatened, or potentially threatened species. However, we did find three new state records (NSR) all of which belonged to the Family Staphylinidae. Specialist Alfred Newton contributed the following comment on the staphylinid species Erichsonius cinerascens: “this species was earlier recorded from North America, then thought to not occur here in the most recent revision of the genus, but this specimen is definitely cinerascens and I think the species is actually widespread in North America but confused with another species.”

Abundance ratings were used to describe a particular species population as follows beginning with the highest populations: A = abundant, C = common, U = uncommon, R = rare, and SI = special interest. The abundance ratings were solicited from specialists in the different families. This ranking is very subjective and should not be given much weight. For the most part the specialists were familiar with the relative abundance of their group of interest in the Midwest. The insects in Table 2 represent the majority of beetles collected in our 1999 studies.

TABLE 2

List of the species of Coleoptera in the Ravenna Training and Logistics Site 1999.

Taxon	Total	Range of Dates	Abun	Location
Anthicidae				
Anthicus cervinus (La Ferte)	4	05-19 to 08-18	A	1,45,54
Anthicus ephippium LaFerte	1	08-18	A	54
Omonadus floralis (L.)	1	04-28	C	4
Biphyllidae				
Diplococelus brunneus LeConte	1	10-19	C	2
Buprestidae				
Chrysobothris rugosiceps Melsheimer	1	06-09	C	1
Taphrocerus gracilis (Say)	1	06-09	U	2
Byturidae				
Byturus unicolor Say	1	05-12	C	Δ*
Cantharidae				
Silis sp.	13	05-12 to 06-03	N/A**	1,2

TABLE 2 (*Cont.*)

List of the species of Coleoptera in the Ravenna Training and Logistics Site 1999.

Taxon	Total	Range of Dates	Abun	Location
Cerambycidae				
Analeptura lineola (Say)	7	06-23 to 07-26	A	1,2,3
Bellamira scalaris (Say)	1	06-23	U	3
Brachysomida bivittata (Say)	5	05-19 to 06-09	C	1,2,4,11
Dorcaschema alternatum (Say)	1	07-14	C	9
Gaurotes cyanipennis (Say)	2	07-14	C	2
Orthosoma brunneum (Forster)	17	04-21 to 07-15	A	1,3,14
Parandra (*Neandra*) *brunnea brunnea* (F.)	2	08-04 to 08-25	A	2
Stictoleptura canadensis Canadensis (Olivier)	1	07-27	U	3
Strangalia luteicornis (F.)	6	6-29 to 07-27	A	2
Tetraopes tetrophthalmus (Forster)	11	06-29 to 07-19	A	3,33,34
Tylonotus bimaculatus (Haldeman)	1	07-27	U	Δ
Typocerus velutinus velutinus (Olivier)	2	07-14 to 07-21	A	1,33
Cerylonidae				
Cerylon castaneum Say	7	05-05 to 06-09	C	1,2
Philothermus glabriculus LeConte	1	04-21	C	1
Chrysomelidae				
Altica spp.	3	05-05 to 07-30	N/A	1,2,3
Brachycoryna melsheimeri (Crotch)	1	05-19	R, SI	4
Brachypmoea margaretae (Schultz)	9	06-16 to 07-30	C	1,19,30,41
Calligrapha multipunctata bigsbyana (Kirby)	1	06-16	C	1
Chaetocnema fuscata White	6	04-21 to 05-19	C	4
Chaetocnema pulicaria Melsheimer	1	04-28	A	19
Chrysochus auratus (F.)	15	07-14 to 08-18	C	1,19,30,41
Chrysolina auripennis (Say)	2	06-23 to 06-27	C	2,Δ
Crepidodera browni Parry	1	04-28	C	19
Diabrotica undecimpunctata howardi Barber	11	07-19 to 11-10	A	1,3,19,22,25
Disonycha pensylvanica (Illiger)	8	08-24 to 10-04	A	22,Δ
Donacia sp.	1	08-10	N/A	19
Exema canadensis Pierce	1	not recorded	A	Δ
Exema sp.	1	06-16	N/A	2
Kuschelina miniata (F.)	1	04-28	C	2
Longitarsus sp.	4	04-28 to 05-12	N/A	4
Luperaltica senilis (Say)	3	08-17	A	30
Microrhopala sp.	1	09-15	N/A	4
Odontota sp.	20	06-09 to 08-10	N/A	1,2,3,22,30,34,41
Ophraella conferta (LeConte)	3	06-16 to 06-29	A	9
Ophraella cribrata (LeConte)	1	06-03	A	2
Ophraella notata (F.)	1	05-05	A	1
Pachybrachys sp.	1	08-03	N/A	34
Paria thoracica (Melsheimer)	8	06-29 to 08-17	A	1,6,9,19,34
Phyllotreta sp.	2	04-28 to 05-19	N/A	3
Plateumaris shoemakeri (Schaeffer)	1	05-19	C	11
Rhabdopterus praetextus (Say)	3	07-07 to 07-21	C	2
Scelolyperus sp.nr liriophilus Wilcox	1	06-16	A	3
Strabala rufa (Illiger)	1	05-19	C	2

TABLE 2 (*Cont.*)

List of the species of Coleoptera in the Ravenna Training and Logistics Site 1999.

Taxon	Total	Range of Dates	Abun	Location
Systena blanda Melsheimer	1	10-19	A	2
Tricholochmaea sp.	5	05-19 to 08-18	N/A	4,19,34
Tymnes tricolor (F.)	1	07-07	R	2
Ciidae				
Cis levetti (Casey)	13	04-07 to 08-04	C	1,2
Orthocis punctatus (Mellie)	3	05-12 to 06-09	U	2
Cleridae				
Enoclerus nigripes (Say)	14	09-15 to 11-04	A	1,3
Necrobia rufipes DeGeer	9	06-29	C	4
Necrobia violacea L.	20	04-14 to 06-29	C	39
Placopterus thoracicus (Olivier)	1	06-03	C	2
Thanasimus dubius (F.)	3	05-05 to 05-19	C	2
Zenodosus sanguineus (Say)	3	05-05 to 05-19	C	2,4
Coccinellidae				
Brachiacantha rotunda Gordon	3	06-16 to 07-14	C	1,4
Coccinella septempunctata L.	1	05-19	C	4
Coleomegilla maculata lengi Timberlake	4	05-19 to 08-03	C	1,3,30
Cycloneda munda (Say)	6	04-28 to 10-01	C	4,19,Δ
Harmonia axyridis (Pallas)	7	04-28 to 10-19	A	1,2,19,30,33
Hippodamia parenthesis (Say)	3	04-14 to 08-17	U	3,19,Δ
Psyllobora vigintimaculata (Say)	6	04-21 to 07-27	C	1,2,3,30
Colydiidae				
Colydium lineola Say	1	06-03-99	U	1
Corylophidae				
Molamba sp.	1	05-12-99	N/A	4
Cryptophagidae				
Telmatophilus americanus LeConte	1	07-27-99	U	30
Cucujidae				
Cathartosilvanus imbellis (LeConte)	1	09-29	C	1
Cucujus clavipes F.	2	05-05-99	U	2,Δ
Pediacus fuscus Erichson	1	06-09-99	U	Δ
Silvanus muticus Sharp	2	06-16-99	C	1
Uleiota dubius (F.)	1	09-29	C	1
Curculionidae				
Acoptus suturalis LeConte	1	06-29	C	2
Anthonomus consimilis Dietz?	1	04-28	C	19
Barypeithes pellucidus (Boheman)	98	05-19 to 07-21	C	1,3,4,20,25,27,28, 29,33,35,47,48
Caulophilus dubius (Horn)	5	07-31 to 08-16	C	1,37
Ceutorhynchus septentrionalis Gyll.	1	04-28	C	4

TABLE 2 (*Cont.*)

List of the species of Coleoptera in the Ravenna Training and Logistics Site 1999.

Taxon	Total	Range of Dates	Abun	Location
Conotrachelus anaglypticus (Say)	1	09-09	C	16
Conotrachelus aratus (Germar)	2	09-08 to 09-09	C	2,16
Conotrachelus nenuphar (Herbst)	1	07-14	C	32
Conotrachelus posticatus Boheman	2	09-09 to 09-15	C	16,28
Cossonus impressifrons Boheman	1	07-21	C	1
Cyrtepistomus castaneus (Roelofs)	1	10-27	C	2
Dorytomus imbecillus Faust	1	06-22	R	48
Dorytomus laticollis LeConte	1	06-22	C	48
Dryophthornus americanus Bedel	3	06-16 to 07-07	C	2
Euparius marmoreus Olivier	1	09-29	C	1
Eurhoptus pyriformis LeConte	1	07-21	A	1
Gymnetron pascuorum (Gyllenhall)	1	06-29	C	41
Lechriops oculata (Say)	1	05-12	C	2
Listronotus sparsus Say	1	04-21	C	4
Mecinus pyraster (Herbst)	5	05-12 to 08-31	C,SI	1
Odontocorynus salebrosus (Casey)	19	06-09 to 07-19	C	1,19,33,39,41
Otiorhynchus rugosostriatus (Goeze)	5	05-26 to 08-25	C	15,28,37
Otiorhynchus sp.	2	08-05	N/A	46
Otiorhynchus sulcatus (F.)	1	08-18	C	2
Perigaster liturata (Dietz)	1	06-16	R	2
Phyllobius oblongus (L.)	9	05-16 to 06-03	C	1,2,3,4
Phyxelis rigidus (Say)	1	09-29	C	1
Pseudobaris nigrina (Say)	1	04-28	C	4
Rhynchaenus pallicornis (Say)	1	04-28	C	4
Sciaphilus asperatus (Bonsdorff)	8	04-28 to 08-05	C	2,3,4,21,39,41
Stenoscelis brevis (Boheman)	17	06-03 to 07-14	C	2,28,Δ
Tachyerges niger (Horn)	2	07-19	C	19
Tychius picirostris (F.)	2	04-28 to 05-19	C	4
Tychius stephensi Schoenherr	1	07-07	C	1
Dermestidae				
Dermestes rattus rattus (LeConte)	3	07-30 to 08-04	SI	2,Δ
Derodontidae				
Derodontus maculatus (Melsheimer)	4	10-02 to 11-04	C	2
Elateridae				
Aeolus mellilus (Say)	1	08-27	A	16
Agriotes quebecensis Brown	13	04-28 to 06-29	C	2,3,4
Ampedus areolatus (Say)	1	06-09	C	Δ
Ampedus linteus (Say)	1	08-24	A	22
Ampedus nigricollis (Herbst)	1	05-12	A	2
Ampedus sanguinipennis (Say)	1	04-28	A	2
Ampedus semicinctus (Randall)	1	06-09	A	2
Athous brightwelli (Kirby)	1	06-23	A	2
Athous cucullatus (Say)	1	08-12	C	28
Ctenicera caricinus (Germar)	2	04-21	A	2
Ctenicera cylindriformis (Herbst)	6	04-28 to 05-05	A	2

TABLE 2 (*Cont.*)

List of the species of Coleoptera in the Ravenna Training and Logistics Site 1999.

Taxon	Total	Range of Dates	Abun	Location
Ctenicera hamata (Say)	1	06-23	C	2
Ctenicera lobatus (VanDyke)	1	04-28	C	2
Ctenicera pyrrhos (Herbst)	16	07-14 to 07-27	A	2,15,18,21
Ctenicera vernalis (Hentz)	1	04-28	C	2
Dalopius spp.	4	05-05 to 06-23	N/A	1,2,3
Elater abruptus Say	2	07-21 to 07-30	A	2
Hemicrepidius bilobatus (Say)	7	08-06 to 08-18	A	3,24,28
Hemicrepidius memnonius (Herbst)	8	07-15 to 08-12	C	1,2,16,18,21,24
Lacon discoidea (Weber)	2	06-16	A	2
Melanotus castanipes (Paykull)	2	06-03 to 06-09	C	2
Melanotus morosus Candeze	1	07-07	A	4
Melanotus sagittarius (LeConte)	1	05-26	A	2
Melanotus similis (Kirby)	13	06-03 to 09-22	A	1,2,4,16
Melanotus sp.	1	06-03	N/A	3
Endomychidae				
Aphorista vittata (F.)	1	08-10	C	50
Lycoperdina ferruginea LeConte	2	08-12 to 08-16	C	24,59
Erotylidae				
Megalodacne fasciata (F.)	4	07-15 to 08-18	A	14,21,22
Triplax festiva Lacordaire	1	08-12	C	14
Triplax thoracica (Say)	2	05-12 to 05-19	A	2
Tritoma biguttata (Say)	4	07-21 to 07-27	A	1,18
Tritoma mimetica (Crotch)	1	08-18	R	55
Tritoma sanguinipennis (Say)	4	05-26 to 06-29	A	2,3
Eucnemidae				
Dirhagus triangularis (Say)	9	06-03 to 06-23	C	2
Dirhagus pectinatus (LeConte)	1	06-09	C	2
Isorhipis ruficornis (Say)	2	06-03 to 07-07	C	2,3
Geotrupidae				
Bolboceras filicornis (Say)	2	07-15 to 08-25	C	3,Δ
Geotrupes splendidus splendidus (F.)	8	05-19 to 08-24	C	1,3,22
Heteroceridae				
Heterocerus sp.	2	07-27	N/A	30,60
Heterocerus tristis Mannerheim	2	07-27	A	30,60
Tropicus pusillus (Say)	1	07-27	A	60
Histeridae				
Aeletes floridae (Marseul)	4	05-12 to 06-16	U	1
Euspilotus assimilis (Paykull)	1	07-21	A	39
Hister abbreviatus F.	2	05-05 to 07-21	A	39
Hister margaranotus LeConte	5	05-05 to 08-04	A	1,2,22
Hololepta aequalis (Say)	2	05-19 to 06-03	C	1
Hololepta lucida LeConte	1	06-29	U	1
Platysoma coarctatum LeConte	1	05-05	C	2
Platysoma lecontei Marseul	16	05-05 to 09-15	A	1,2,3

TABLE 2 (*Cont.*)

List of the species of Coleoptera in the Ravenna Training and Logistics Site 1999.

Taxon	Total	Range of Dates	Abun	Location
Hydraenidae				
Hydraena pennsylvanica Kiesenwetter	1	06-11	U	Δ
Laemophloeidae				
Laemophloeus fasciatus Melsheimer	4	05-05 to 11-04	C	2
Lampyridae				
Ellychnia corrusca (L.)	1	06-16	A	2
Lucidota sp.	1	06-29	N/A	2
Photinus carolinus Green	2	06-11 to 06-29	U	2,29
Photinus consanguineus LeConte	1	06-29	C	1
Photinus sp.	1	08-04	N/A	1
Photuris sp.	2	06-16	N/A	4
Pyropyga decipiens (Harris)	2	06-16 to 06-23	C	1,4
Pyropyga sp.	7	06-16 to 06-29	N/A	1
Languriidae				
Toramus sp.	1	05-19	N/A	4
Leptodiridae				
Catops sp.	6	07-07 to 07-21	N/A	2
Prionochaeta opaca (Say)	2	08-04	U	2
Lucanidae				
Ceruchus piceus (Weber)	4	06-23 to 10-01	C	2,22
Platycerus virescens (F.)	1	05-19	C	3
Melandryidae				
Dircaea liturata (LeConte)	1	7-27	A	20
Eustrophus tomentosus Say	1	08-18	U	55
Hallomenus sp.	1	09-01	N/A	41
Melandrya striata Say	3	05-19 to 06-09	C	2
Synchroa punctata Newman	6	06-09 to 07-27	A	2,Δ
Meloidae				
Epicauta pensylvanica (DeGeer)	1	08-18	A	19
Meloe americanus (Leach)	1	05-05	C	2
Monotomidae				
Pycnotomina cavicolle (Horn)	4	05-05 to 06-03	R	2,3
Mordellidae				
Mordella marginata Melsheimer	3	06-16 to 08-17	A	4,19,25
Mordellistena aspersa (Melsheimer)	1	06-09	A	1
Mordellistena bihamata (Melsheimer)	1	07-14	C	3
Mycetophagidae				
Litargus balteatus LeConte	4	06-09 to 11-04	A	2
Litargus tetraspilotus LeConte	1	06-09	U	2
Mycetophagus melsheimeri LeConte	1	05-05	R	2

TABLE 2 (*Cont.*)

List of the species of Coleoptera in the Ravenna Training and Logistics Site 1999.

Taxon	Total	Range of Dates	Abun	Location
Oedemeridae				
Asclera ruficollis (Say)	3	04-28 to 05-19	C	2,3
Passandridae				
Catogenus rufus (F.)	2	06-09 to 09-29	U	1,2
Phengodidae				
Phengodes fusciceps LeConte	1	not recorded	R	Δ
Pyrochroidae				
Dendroides canadensis Latreille	4	06-29 to 08-18	C	3,21,30
Neopyrochroa flabellata (F.)	7	06-29 to 07-21	A	2,3,15
Rhizophagidae				
Picnotomina cavicolle (Horn)	1	05-12	R	2
Salpingidae				
Rhinosimus viridiaenus Randall	2	05-26 to 10-19		3
Scarabaeidae				
Aphodius fimetarius (L.)	1	07-26	A	Δ
Aphodius granarius (L.)	6	08-12 to 09-09	A	5,9,24
Aphodius leopardus Horn	1	08-27	C	28
Aphodius lutulentus Haldeman	2	07-27	A	18,21
Aphodius rufipes (L.)	19	07-15 to 09-09	A	2,3,5,15,16, 18,24,28,41
Aphodius ruricola Melsheimer	8	04-14 to 09-01	C	2,21,24,28,30,39
Ataenius strigatus (Say)	10	04-28 to 10-05	A	2,4,9,29,60
Copris fricator fricator (F.)	2	09-09 to 09-29	A	9,42
Cyclocephala borealis Arrow	3	06-29 to 07-15	C	4,15
Dialytes truncatus Melsheimer	6	08-27 to 09-01	C	60,61,62
Dialytes ulkei Horn	7	08-12 to 09-01	C	13,47,60,61,62
Dichelonyx diluta (Fall)	1	06-29	C	2
Gnorimella maculosa (Knoch)	1	06-03	C	2
Hoplia trifasciata Say	1	04-28	C	2
Onthophagus hecate hecate (Panzer)	21	04-28 to 09-29	A	1,3,4
Onthophagus striatulus striatulus (Beauvois)	2	06-22 to 06-23	C	2,3
Osmoderma scabra (Beauvois)	1	07-21	C	2
Phyllophaga balia (Say)	3	07-14 to 07-15	A	3,16
Phyllophaga knochii (Schoenherr & Gyllenhal)	1	07-15	C	16
Popillia japonica Newman	3623	07-07 to 10-12	A	2,4
Serica intermixta Blatchley	3	07-15 to 07-27	C	16,18,30
Serica serica (Illiger)	1	07-27	C	18
Serica vespertina (Gyllenhal)	8	06-09 to 09-09	A	2,5,14,18
Scirtidae: (=Helodidae)				
Cyphon nebulosus (LeConte)	2	08-03 to 11-04	C	1
Cyphon neovariabilis Klausnitzer	1	06-03	C	4
Prionocyphon limbatus LeConte	2	08-06 to 09-09	C	5,56

TABLE 2 (*Cont.*)

List of the species of Coleoptera in the Ravenna Training and Logistics Site 1999.

Taxon	Total	Range of Dates	Abun	Location
Silphidae				
Necrodes surinamensis (F.)	2	04-14	U	39
Nicrophila americana (L.)	91	06-09 to 08-04	A	1,2,3,4
Nicrophorus orbicollis Say	123	05-26 to 09-08	A	1,2,3,4,5,6,8,14, 18,20,21,24,25,28
Nicrophorus sayi Laporte	6	04-14 to 07-27	C	2,3
Nicrophorus tomentosus Weber	53	07-07 to 09-15	C	1,2,3,4
Oiceoptoma inaequale (F.)	2	04-14 to 07-21	C	2,39
Oiceoptoma noveboracense (Forster)	44	04-14 to 08-04	C	1,2,3,4,39
Staphylinidae				
Aleochara sp.	1	07-21	N/A	39
Aleocharinae sp. 1	10	04-14 to 06-03	N/A	1,2,4
Aleocharinae sp. 2	1	06-09	N/A	3
Aleocharinae sp. 3	1	05-12	N/A	1
Aleocharinae sp. 4	1	05-12	N/A	4
Belonuchus formosus (Gravenhorst)	1	06-03	A	1
Bisnius blandus (Gravenhorst)	1	05-19	A	3
Carphacis intrusus (Horn)	2	05-05 to 06-23	C	1,3
Creophilus maxillosus (L.)	2	04-14	A	39
Erichsonius brachycephalus Frank	1	not recorded	NSR***	47
Erichsonius cinerascens (Gravenhorst)	1	09-29	U	2
Gabrius sp.	1	07-21	N/A	57
Hesperus apicialis (Say)	2	05-05 to 05-12	U	1,2
Homaeotarsus sp.	1	05-12	N/A	2
Laetulonthus laetulus (Say)	3	04-14 to 05-19	U	1
Lathrobium sp.	1	09-01	N/A	22
Neohypnus sp.	1	04-28	N/A	2
Ontholoestes cingulatus (Gravenhorst)	9	05-19 to 08-04	A	1,3,4,22
Oxyporus quinquemaculatus LeConte	1	06-29	U	1
Philonthus politus (L.)	1	04-14	A	39
Philonthus ? sp. 3	1	05-05	N/A	2
Platydracus violaceus (Gravenhorst)	1	09-15	C	1
Quedius fulgidus (F.)	2	09-22	C	1
Quedius plagiatus (=laevigatus)	1	08-18	C	2
Sepedophilus versicolor (Casey)	2	09-29	C	2
Siagonium punctatum LeConte	2	05-19	NSR	1
Tachinus fimbriatus Gravenhorst	38	06-16 to 09-08	A	1,2,3
Tachinus fumipennis (Say)	1	05-19	A	3
Tachinus luridus Erichson	1	04-28	A	1
Xestolinus abdominalus Casey	14	04-28 to 05-05	NSR	1,4
Tenebrionidae				
Alobates pennsylvanica (DeGeer)	2	08-24 to 08-25	A	15,22
Anaedus aeneus (Ziegler)	4	07-07 to 08-16	U	20,37
Bolitotherus cornutus (Panzer)	4	07-27 to 08-10	C	3,14,20,21
Corticeus praetermissus (Fall)	1	05-05	R	2
Diaperis maculata (Olivier)	4	06-15 to 08-04	C	20,22,29
Meracantha contracta (Beauvois)	3	06-16 to 06-29	U	1,28,36

TABLE 2 (*Cont.*)

List of the species of Coleoptera in the Ravenna Training and Logistics Site 1999.

Taxon	Total	Range of Dates	Abun	Location
Neatus tenebrioides (Beauvois)	2	06-11 to 08-24	A	1,28,36
Neomida bicornis (F.)	1	06-09	C	2
Paratenetus punctatus Spinola	1	06-16-99	C	27
Uloma impressa Melsheimer	2	07-21 to 09-29	R	1,41
Throscidae				
Aulonothroscus sp.	1	10-27	N/A	2
Trixagus sp.	8	05-05 to 11-04	N/A	2,3,6,30,45
Trogidae				
Trox aequalis Say	3	08-12 to 09-29	C	42,55
Trox capillaris Say	1	04-14	U	39
Trox hamatus Robinson	2	07-27	C	21,30
Trox unistriatus Beauvois	2	08-27 to 09-09	C	62
Trox variolatus Melsheimer	5	05-29 to 08-18	A	2,3
Trogositidae				
Grynocharis quadrilineata Melsheimer	1	04-28	U	2
Ostomida sp.	1	07-14	N/A	2
Tenebroides corticalis Melsheimer	2	05-05 to 06-19	U	2
Thymalus marginicollis Chevrolat	1	07-14	U	2

*Δ Denotes a specimen within the compound, exact location not specified.
**N/A Denotes specimens identified to genus only.
***NSR Denotes new state record.

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