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SOIL INVERTEBRATE ASSAY NAS CECIL FIELD FL

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UNIVERSITY OF FLORIDA

SOIL INVERTEBRATE ASSAY
CECIL FIELD, JACKSONVILLE, FLORIDA

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Introduction

Soil invertebrates were sampled from 27 sites. Sites were categorized as either polycyclic aromatic hydrocarbon (PAH) contaminated, lead contaminated, or as a reference (non contaminated). All sites were forested with "high pine" vegetation typical of north Florida. At each site a 10' x 15' plot was established for sampling. Extracted specimens were identified and either preserved in 70% alcohol (PAH sites), or sent away for lead content analyses (Lead and reference sites). The scope of this report is to detail the methods used for soil invertebrate extraction and identification, and to present the data.

Soil Invertebrate Extraction

Soil invertebrates dwelling at the interface between mineral soil and leaf litter were focused on. The logic presented to the author for this bias was that these invertebrates were more likely to be resident to (therefore representative of) the site and not transient. Also, the mineral soil of north Florida has a very high sand content and does not support enough invertebrate activity to be of any use for this assay. Therefore, the surface leaf litter was removed from the plot. The "duff" layer was meticulously sorted by a team of investigators for soil invertebrates large enough to be a food item for birds or rodents (>5mm). Sorting was done with tweezers and gloved hands. Extracted specimens were placed in sample bags and stored in coolers in the field. At the end of each day, samples were placed in jars and either frozen (lead and reference sites) or covered in 70% alcohol (PAH sites).

Soil Invertebrate Identification

Invertebrates were identified to the most detailed taxon possible given the time and facilities the author had to work with. Insects, snails, and earthworms were identified to family. Identification of insects beyond the family level is difficult and requires the attention of specialists for each family. Identification of larva also requires attention from a larva specialist. Non-insect arthropods were identified to order. Identification of non-insect arthropods beyond the order taxon often requires dissection of mouthparts and/or specialists who work exclusively with a specific order or family of arthropod (i.e. spiders).

Functional Roles

The level of identification performed for this assay is detailed enough to categorize the specimens into functional roles. Following is a list of encountered organisms organized by their role in the food web.

Generalist Predators
All arachnids, all centipedes, Hemiptera: Reduviidae, Anthocoridae; Coleoptera: Carabidae, Cicindelidae.

Specialist Predators
Coleoptera: Cleridae (preys on other beetles), some Staphlyinds (prey varies with species).

Omnivores
Coleoptera: Staphylinidae; Hymenoptera: Formicidae

Herbivores
Coleoptera: Scarabidae; Orthoptera: Tettigonidae; Gastropoda

Detritivores
Coleoptera: Staphylindae, Silphidae, Elateridae; Diptera: Tabanidae (only as larva); Orthoptera: Gryllidae; Blatteria: Blatellidae; Annelida; Isopoda

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Phylum	Class	Order	Family	Genus	Species	Quantity		common name
Arthropoda	Insecta	Coleoptera	Scarabaeidae			5		Scarab beetles
			Staphylindae			1		Rove beetles
			Silphidae			1		Carrion beetles
			Elateridae			3	larva	Click beetles
			unkown			2	larva	
		Lepidoptera	unkown			1	larva	
		Blattaria	Blatellidae			11		roaches
	Chilopoda	Scolopendromorpha				7		centipedes
	Arachnida	Araneida				12		spiders
		Opiolones				1		daddy longlegs
Annelida	Oligochaeta		Lumbricidae			1		earthworms

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Phylum	Class	Order	Family	Genus	Species	Quantity	Common Name
Arthropoda	Insecta	Coleoptera	Scarabaeidae			2	Scarab beetle
			unknown			1	unknown beetle grub
			unknown			1	unknown beetle grub
		Hemiptera	Anthocoridae			1	Pirate bug
			Lygaeidae			1	Seed bug
		Hymenoptera	Formicidae			1	Ant
	Arachnida	Araneida				4	Spider
	Chilopoda	Scolopendromorpha				12	Centipede
		Lithobiomorpha				10	Centipede