

A Preliminary Checklist of Arthropods Associated with Exposed Carrion in the Hawaiian Islands¹

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ABSTRACT

A classified checklist of arthropods recovered from exposed remains of both humans and test animals in various stages of decomposition on the island of Oahu and Maui, Hawaiian Islands, is presented.

Exposed remains present a temporary and progressively changing habitat and food source for a wide variety of organisms ranging from bacteria and fungi to vertebrate scavengers. The arthropods comprise a major element of this biota and previous studies have shown that the various taxa arrive in definite, predictable succession patterns (Payne 1965; Early & Goff in press). Beginning with the work of Megnin (1894), knowledge of these sarcosaprophagous insects and their succession patterns has been used by forensic science in the determination of postmortem interval in cases of homicide, suicide accident or unattended death due to natural causes. As a preliminary part of the establishment of a program in forensic entomology in the Hawaiian Islands, as a cooperative effort of the Department of Entomology, University of Hawaii at Manoa, and the Office of the Medical Examiner, City and County of Honolulu, decomposition studies were conducted at several localities on the island of Oahu to establish baseline data for the Hawaiian sarcosaprophagous arthropod fauna. Results of these studies have been previously reported, in part, by Early & Goff (in press). Additional studies have since been conducted at other sites and additional sites will be involved in the future. The checklist presented here is a compilation of all arthropods recovered from our decomposition studies to date and also includes taxa recovered from decomposing human remains during the period 1983-1985. As additional studies are being conducted at the present time, and more are planned for the future at alternate sites, this list must be considered a preliminary list of the taxa associated with the decomposition process in the Hawaiian Islands. While there will undoubtedly be an increase in the number of arthropods recovered in association with decomposing remains, it is doubtful that the total will ever approach that encountered in studies conducted in continental areas. For example, Payne (1965) recorded 522 species during his studies in South Carolina. This is, in part, a function of the relative isolation of the Hawaiian Islands from continental land masses or high islands in combination with their being a geologically young chain of islands.

In some instances, complete identifications of the taxa recovered from the remains either have not yet been completed or the taxa represent undescribed species. In these cases, identifications are given to the lowest possible category. Taxa recovered in association with human remains are indicated in the list by an asterisk (*). While all of the taxa listed here were recovered in association with decomposing remains, many of these are incidental to the remains and of limited, if any, significance with regard to the decomposition process.

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Classified List of Arthropods Associated with Exposed Carrion
in the Hawaiian Islands

ORDER	FAMILY	GENUS AND SPECIES	
Acari	Acaridae	<i>Caloglyphus berlesei</i> (Michael) <i>Cosmoglyphus</i> sp. <i>Sancassania</i> sp. <i>Tyrophagus putrescentiae</i> (Schrank)	
	Anoetidae		
	Ascidae	<i>Asca craneta</i> DeLeon <i>Proctolaelaps</i> n. sp.	
	Cunaxidae	<i>Cunaxia</i> sp.	
	Ereynetidae		
	Galumnidae		
	Histiostomatidae	<i>Histiostoma</i> sp. <i>Myianoetus</i> sp. ?	
	Lardoglyphidae	<i>Lardoglyphus zacheri</i> (Oudemans)	
	Macrochelidae	<i>Macrocheles merdarius</i> (Berlese) <i>M. muscaedomesticus</i> (Scopoli) <i>Glyphthaspis americana</i> (Foa)	
	Pachylaelapidae	<i>Pachylaelaps</i> sp.	
	Parasitidae	<i>Pergamasus</i> sp.	
	Phytoseiidae	<i>Phytoseius hawaiiensis</i> Prasad	
	Pygmephoridae		
	Scutacaridae		
	Uropodidae		
	Winterschmidtidae	<i>Czenspinksia transversostriata</i> (Oudemans)	
	Amphipoda		
	Araneae	Clubionidae	<i>Chiracanthium mordax</i> Koch
Salticidae			
Chilopoda	Scolopendridae	<i>Scolopendra subspinipes</i> Leach	
Coleoptera	Ciidae		
	Cleridae	<i>Necrobia ruficollis</i> (Fabricius) <i>N. rufipes</i> (DeGeer)*	
	Colydiidae	<i>Euxestes erithricus</i> (Chevrolat)	
	Cucujidae	<i>Psammoecus desjardinsi</i> Gverin	
	Dermestidae	<i>Dermestes ater</i> DeGeer*	
		<i>D. frischi</i> Kugelann	
		<i>D. maculatus</i> DeGeer*	
	Elateridae	only larvae collected	
	Histeridae	<i>Atholus rothkirchi</i> Bickhardt	
		<i>Bacanius atomarius</i> Sharp	
<i>Pachylister caffer</i> Erichson			
<i>Saprinus</i> sp. <i>S. fimbriatus</i> LeConte <i>S. lugens</i> Erichson			

	Hydrophilidae	<i>Cryptoleurus minutum</i> Fabricius
	Monotomidae	<i>Monotoma picipes</i> Herbst
	Mycetophagidae	<i>Typhaea stercorea</i> (Linnaeus)
	Nitidulidae	<i>Carpophilus mutilatus</i> Erichson
	Ptiliidae	
	Scarabaeidae	<i>Aphodius lividus</i> Oliver <i>Ataenius pacificus</i> Sharp <i>Onthophagus incensus</i> Say <i>Saprosites pygmaeus</i> Harold
	Scolytidae	<i>Stephanoderes</i> sp.
	Staphylinidae	<i>Anotylus vinsoni</i> (Cameron) <i>Creophilus maxillosus</i> Linnaeus* <i>Lithocharis ochracea</i> (Gravenhorst) <i>Oligota</i> sp. <i>Oxytelus incissus</i> Motschulsky <i>Philonthus</i> sp. <i>P. discoideus</i> (Gravenhorst) <i>P. longicornis</i> Stephens <i>P. rectangularis</i> Sharp <i>Thyrecephalus albertisi</i> Fauvel
	Tenebrionidae	<i>Alphitobius diaperinus</i> (Panzer) <i>Gonocephalum</i> spp.
	Trogidae	<i>Trox suberosus</i> Fabricius
Collembola	Entomobryidae	
Dermoptera	Labiduridae	<i>Euborellia annulipes</i> (Lucas)
Diplopoda	Polyxenidae	<i>Polyxenus</i> sp.
Diplura	Campodeidae	<i>Lepidocampa giffardii</i> Silvestri
	Japygidae	<i>Parajapyx isabellae</i> (Grassi)
Diptera	Anthomyiidae	<i>Anthomyia illocata</i> Walker
	Calliphoridae	<i>Chrysomya megacephala</i> (Fabricius)* <i>C. rufifacies</i> (Macquart)* <i>Phaenicia cuprina</i> (Weidemann)*
	Cecidomyiidae	
	Ceratopogonidae	<i>Dasyhelea platychaeta</i> Hardy
	Chironomidae	
	Chloropidae	<i>Cadrema pallida</i> (Loew) <i>Hippelates hermsi</i> Sabrosky
	Dolichopodidae	<i>Chrysotus pallidipalpus</i> Van Duzee
	Drosophilidae	<i>Dettopsomyia fossata</i> Lamb <i>D. nigrovittata</i> (Malloch) <i>Sulfurigaster bilimbata</i> Bezzi
	Ephydriidae	<i>Discomyza maculipennis</i> (Wiedemann)
	Milichiidae	<u><i>Milichiella lacteipennis</i> (Loew)</u>
	Muscidae	<i>Atherigona orientalis</i> Schiner <i>Fannia pusio</i> (Wiedemann) <i>Lispe pectinipes</i> Becker <i>Musca domestica</i> Linnaeus* <i>M. sorbens</i> Wiedemann

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		<i>Ophyra aenescens</i> (Wiedemann)
		<i>O. chalcogaster</i> (Wiedemann)
		<i>Synthesiomyia nudiseta</i> (van der Wulp)
	Otitidae	<i>Euxestia annonae</i> (Fabricius)
		<i>Notogramma cimiciforme</i> Loew
		<i>Physiphora aenea</i> (Fabricius)
		<i>P. demandata</i> (Fabricius)
	Phoridae	<i>Megaselia scalaris</i> Loew
		<i>Puliciphora lucifera</i> Dahl
	Piophilidae	<i>Piophila casei</i> (Linnaeus)*
	Psychodidae	<i>Psychoda</i> sp.
	Sarcophagidae	<i>Bercaea haemorrhoidalis</i> (Fallen)*
		<i>Boettcherisca peregrina</i> (Robineau-Desvoidy)*
		<i>Helicobia morionella</i> (Aldrich)
		<i>Parasarcophaga ruficornis</i> (Fabricius)
		<i>Sarcophagula occidua</i> (Fabricius)
		<i>Seniorwhitea krameri</i> (Boettcher)
	Scenopinidae*	
	Sciaridae	
	Sepsidae	<i>Sepsis thoracica</i> Robineau-Desvoidy
	Sphaeroceridae	<i>Leptocera</i> sp. nr. <i>bifrons</i>
	Stratiomyidae	<i>Hermetia illucens</i> Linnaeus
	Tephritidae	<i>Dacus dorsalis</i> Hendel
Dictyoptera	Blattidae	<i>Pycnoscelus surinamensis</i> (Linnaeus)
Hemiptera	Anthocoridae	<i>Xylocoris discalis</i> (Van Duzee)
(Heteroptera)	Cydnidae	<i>Geotomus pygmaeus</i> (Dallas)
	Nabidae	<i>Nabis lusciosus</i> White
Hymenoptera	Apidae	<i>Apis mellifera</i> Linnaeus
	Bethylidae	<i>Epyris</i> sp.
	Chalcidae	<i>Brachymeria fonscolombi</i> (Dufour)
	Diapriidae	<i>Doliopria</i> sp.
		<i>Phenopria</i> sp.
	Encyrtidae	<i>Exoristobia philippiensis</i> Ashmead
		<i>Tachinaephagus zealandicus</i> Ashmead
	Eucoilidae	<i>Hexacola</i> sp. nr. <i>tahaitiensis</i>
	Formicidae	<i>Camponotus variegatus</i> (Fr. Smith)
		<i>Cardiocondyla nuda</i> Mayr
		<i>Hypoponera punctatissima</i> (Roger)
		<i>Leptogenys falcigera</i> Roger
		<i>Monomorium minutum</i> Mayr
		<i>Paratrechina vaga</i> (Fabricius)
		<i>Pheidole megacephala</i> (Fabricius)*
		<i>Plagiolepis exigus</i> Forel
		<i>Solenopsis geminata</i> (Fabricius)
		<i>Tapinoma melanocephalum</i> (Fabricius)
		<i>Tetramorium simillimum</i> (Fr. Smith)
	Scelionidae	<i>Baeus</i> sp.
	Sclerogibbidae	<i>Sclerogibba vagabunda</i> (Bridwell)
	Spalangidae	<i>Spalangia cameroni</i> Perkins
		<i>S. endius</i> Walker

	Sphecidae	<i>Liris opulenta</i> (Lepeletier)
		<i>Pison insulare</i> Smith
Isopoda	Oniscidae	<i>Porcellio laevis</i> Latreille
Lepidoptera	Gelichiidae	only larvae collected
	Tineidae	<i>Monopsis monachella</i> (Hubner)
		unidentified larvae
Pseudoscorpionida		
Psocoptera		
Thysanura	Leptismatidae	<i>Ctenolepisma urbana</i> Slabaugh

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