

**APPENDIX F-1**  
Arthropod Study

PU'UNENE HEAVY INDUSTRIAL SUBDIVISION  
ARTHROPOD STUDY – PULEHU, MAUI

Pu'unenē Heavy Industrial Subdivision Project  
ARTHROPOD STUDY

Pulehu, Maui

INTRODUCTION

The Pu'unenē Heavy Industrial Subdivision project lies on 86 acres of undeveloped land in lower Pulehu, East Maui TMK (2) 3-8-08:19. This survey also includes the primary access road and the alternate access road to the project (see Figure 1). The project area has a plantation reservoir to the north, sugar cane fields and a rock crusher/cement operation to the east and south, and Maui Raceway Park to the west. The project area lies about a mile to the east of Mokulele Highway. This arthropod study was initiated by the owners in response to environmental requirements of the planning process.

SITE DESCRIPTION

This area was the site of a former hog farm operation and as a result is heavily disturbed by intensive human and animal use. Much of the area remains cleared of vegetation with a network of old asphalt roadways. The existing vegetation consists mostly of buffelgrass (*Cenchrus ciliaris*) with scattered kiawe trees (*Prosopis pallida*). The terrain is gently sloping down to the west at elevations from 110 feet to 140 feet above sea level. Soils consist primarily of Waikoua Extremely Stony Silty Clay Loam (Poote et al, 1972). Rainfall averages about 12 inches per year with the bulk falling in a few winter storms (Armstrong 1983).

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## SURVEY OBJECTIVES

Survey objectives were to inventory all arthropod species occurring on the property, recording species, distribution, abundance and status, and to identify any native species with special focus on any that are Endangered or Threatened species.

## METHODS

A walk-through survey method was employed, covering all parts of the project area. Binoculars and a magnifying lens were used and field notes taken for reference work.

## RESULTS

A total of 15 arthropods were recorded during the survey, representing seven Orders of spiders and insects. Taxonomy and nomenclature follow Nishida et al (1992). Just two species were common, the blowfly (*Excaliphora latifrons*) and the honey bee (*Apis mellifera*). All others were uncommon to rare in the project area.

One native dragonfly was recorded, the globe skimmer (*Pantala flavescens*). This dragonfly is indigenous to Hawaii and quite common. It is also native worldwide in the tropics. It is of no particular environmental interest or concern.

Looked for but not seen was the Endangered Blackburn's sphinx moth *Manduca blackburni* (USFWS, 2000). None of its preferred alternate host plants, the tree tobacco (*Nicotiana glauca*) were found on the property and no adult moths, eggs or larvae were seen.

No other rare or endangered insects were seen.

## CONCLUSIONS

There were no Endangered or Threatened arthropod species found during the survey on this dry, un-irrigated project area. From an entomological standpoint the proposed developments on this property would not have a significant negative impact on the arthropod resources in this part of Maui.

No recommendations with regard to the arthropod fauna are deemed appropriate or necessary.

Following is a checklist of the animal species inventoried during the field work. Animal species are arranged in descending abundance for Arthropods only. For each species the following information is provided:

1. Common name
2. Scientific name
3. Bio-geographical status. The following symbols are used:  
endemic = native only to Hawaii; not naturally occurring anywhere else in the world.  
indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).  
non-native = all those animals brought to Hawaii intentionally or accidentally after western contact.  
migratory = spending a portion of the year in Hawaii and a portion elsewhere. In Hawaii the migratory birds are usually in the overwintering/non-breeding phase of their life cycle.
4. Abundance of each species within the project area:  
abundant = many flocks or individuals seen throughout the area at all times of day.  
common = a few flocks or well scattered individuals throughout the area.  
uncommon = only one flock or several individuals seen within the project area.  
rare = only one or two seen within the project area.

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
Order ARANAE - spiders			
ARANEIDAE (Orb Weaver Family)	European garden spider	non-native	rare
<i>Araneus diadematus</i> Clerck			
SALTICIDAE (Jumping Spider Family)	Adamsen's house jumper	non-native	uncommon
<i>Hasarius adamseni</i> Audouin			
Order COLEOPTERA - beetles			
CRYPTOPHAGIDAE (Silken Fungus Beetle Family)	silken fungus beetle	non-native	rare
<i>Henoticus serratus</i> Gyllenhal			
Order DIPTERA - flies			
CALLIPHORIDAE (Blowfly Family)	blowfly	non-native	common
<i>Eucalliphora latifrons</i> Hough	blowfly	non-native	rate
<i>Rhinia testacea</i> Robineau-Desvoidy	vinegar fly	non-native	uncommon
DROSOPHILIDAE (Fruit Fly Family)	vinegar fly	non-native	rate
<i>Chymomyza praecox</i> Williston	dump fly	non-native	rate
MUSCIDAE (House Fly Family)	dump fly	non-native	rate
<i>Musca sorbens</i> Wiedemann			
Order HYMENOPTERA - bees, wasps & ants			
APIIDAE (Honey Bee Family)	honey bee	non-native	common
<i>Apis mellifera</i> Linnaeus			
FORMICIDAE (Ant Family)	Argentine ant	non-native	rate
<i>Linepithema humile</i> Mayr	leafcutter bee	non-native	rate
MEGACHILIDAE (Leafcutter Bee Family)	leafcutter bee	non-native	rate
<i>Megachile genitilis</i> Cresson	jewel wasp	non-native	rate
SPHECIDAE (Sphecid Wasp Family)	jewel wasp	non-native	rate
<i>Ampulex compressa</i> Fabricius	golden paper wasp	non-native	uncommon
VESPIDAE (Vespid Wasp Family)	golden paper wasp	non-native	uncommon
<i>Polistes aurifer</i> Saussure			
Order LEPIDOPTERA - butterflies & moths			
NOCTUIDAE (Owllet Moth Family)	corn ear worm moth	non-native	rate
<i>Helioverpa zea</i> Boddie			
Order ODONATA - dragonflies & damselflies			
LIBELLULIDAE (Skimmer Dragonfly Family)	globe skimmer	indigenous	uncommon
<i>Pantala flavescens</i> Fabricius			
Order ORTHOPTERA - grasshoppers & crickets			
ACRIDIDAE (Grasshopper Family)	short-horned grasshopper	non-native	uncommon
<i>Oedotopus abruptus</i> Thunberg			

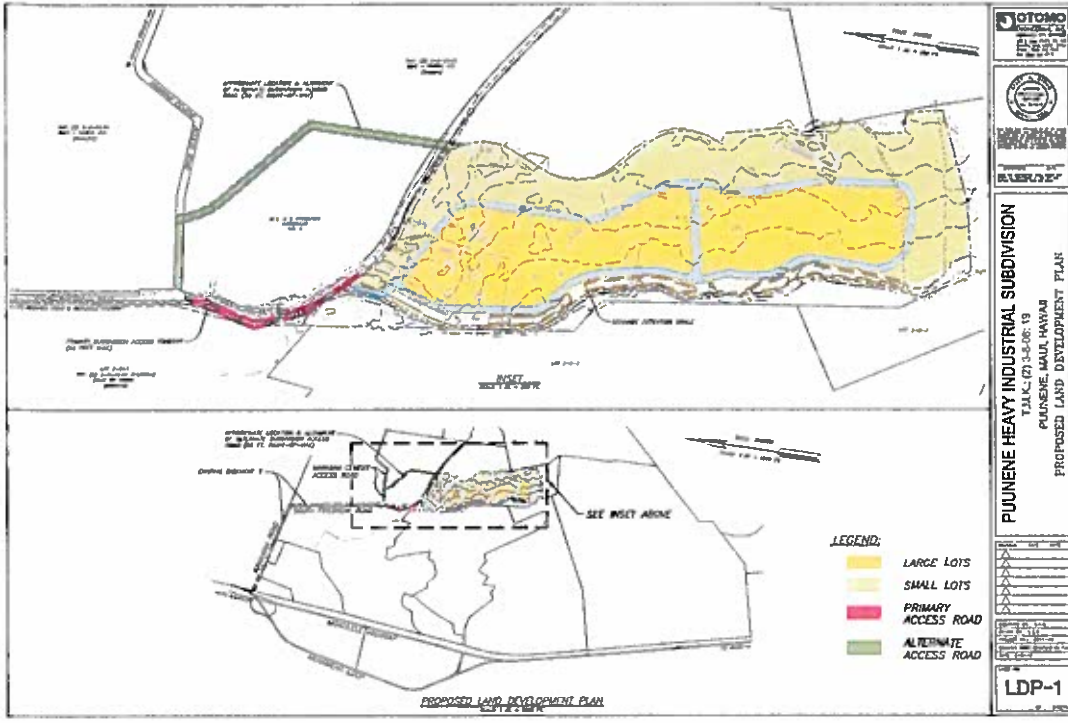


Figure 1

## LITERATURE CITED

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