

## DOCKETED

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## Species Data Analysis for Appendix A & B: Exh\_3108\_Andrews\_et\_al\_1979

Below, please find two tables and various graphs based on the data included Appendix A & B of Exhibit 3108 submitted by Center for Biological Diversity, **The Coleopterous Fauna of Selected California Sand Dunes**, dated March 15, 1979, Insect Taxonomy Laboratory, Division of Plant Industry, California Department of Food and Agriculture. The report was prepared in fulfillment of Bureau of Land Management contract CA-960-1285-1225-DEOO.

### Results:

- Palen had zero (0.00%) “endemic” species (where "Endemic" is known only from a particular dune and dependent upon the sand dune environment.)
- Palen had the second highest percentage of species diversity among the five sites studied.
- Palen had the second highest percentage of species categorized as “Widespread Desert ” (where “Widespread Desert” are organisms that are commonly found both in dune and -off dune environments.)
- Palen represented 26.4% of the total number of unique species identified across all five sites in the study.

### Terms Key

E	Endemic	Endemic, known only from a particular dune and dependent upon the sand dune environment.
SO	Sand Obligate	Sand Obligate, restricted to the sand environment where it may live directly in sand or be restricted to other biotic entities that are themselves restricted to the sand habitat.
WD	Widespread Desert	Widespread Desert, organisms that are commonly found both in dune and -off dune environments.
A	Accidental	Accidental, normally not a user of the sand dune environment. May have been blown onto the dune by winds, attracted to blacklight etc.
U	Unknown	Biology and habitat totally unknown or a species that cannot be identified

**Table 1**

Total Species Present per Region	
<b>Owens</b>	48
<b>Cadiz</b>	61
<b>Rice</b>	92
<b>Palen</b>	143
<b>Algodones</b>	197
	<b>541</b>

**Table 2**

Species per Land Status According to Region						
Row Labels	Sum of Owens	Sum of Cadiz	Sum of Rice	Sum of Palen	Sum of Algodones	Total
Accidental	3	3	9	17	34	66
Endemic	0	1	1	0	7	9
Sand Obligate	10	15	17	19	22	83
Sand Obligate/Unl	0	1	0	0	1	2
Unkown	1	1	4	7	5	18
Widespread Deser	34	40	61	100	128	363
<b>Grand Total</b>	<b>48</b>	<b>61</b>	<b>92</b>	<b>143</b>	<b>197</b>	<b>541</b>

Figure 1

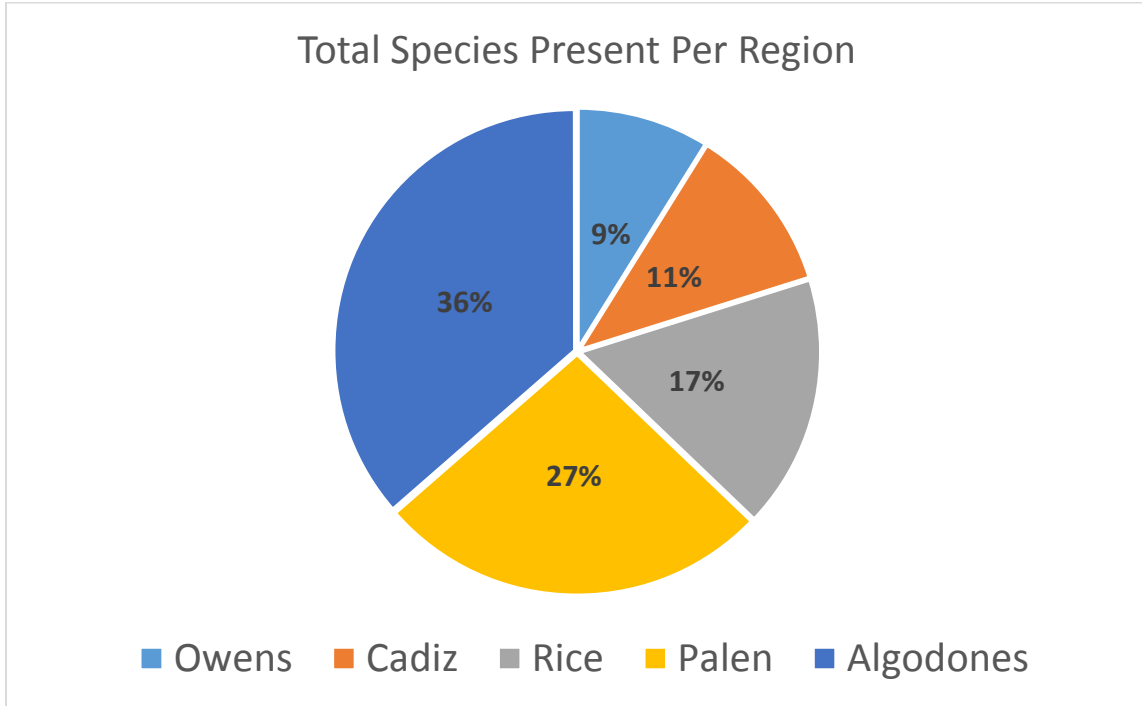
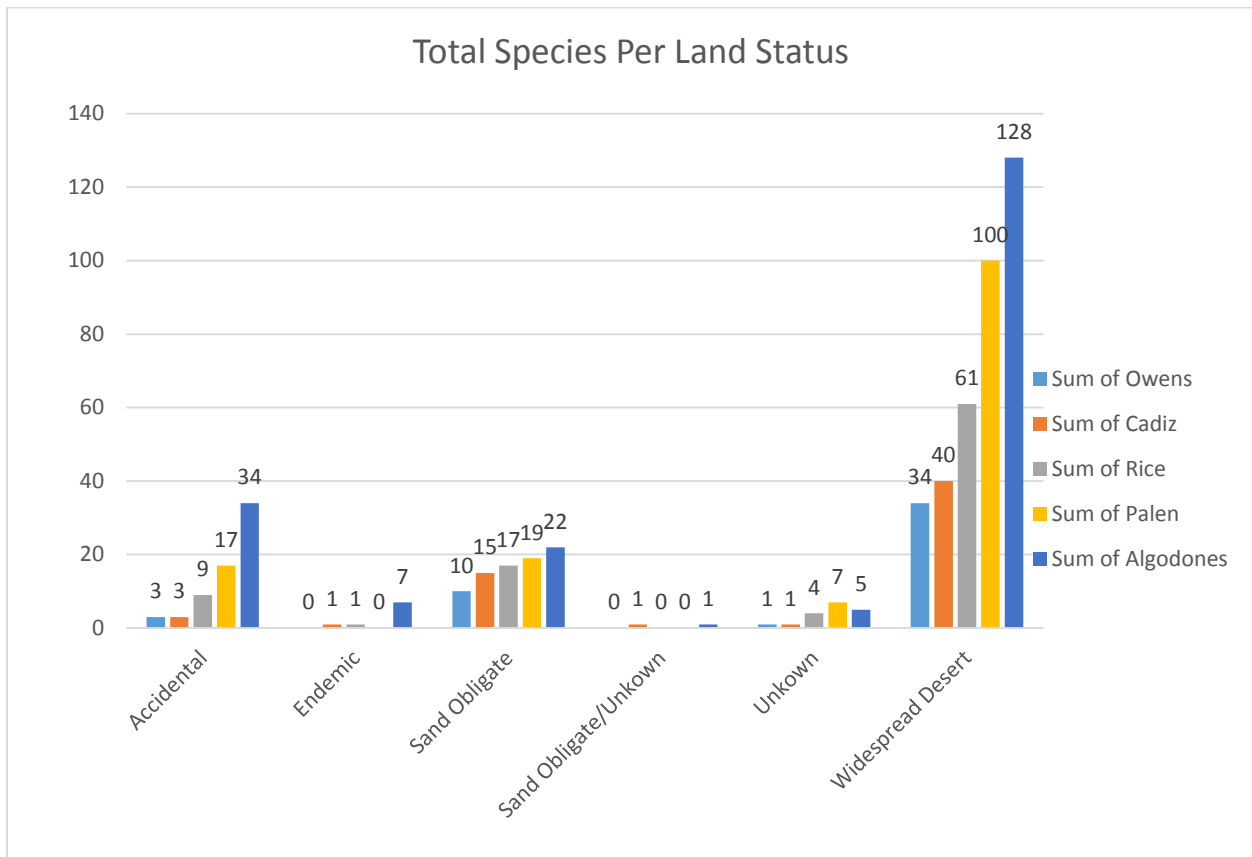


Figure 2



Organism	Organism Species	Status	Owens	Cadiz	Rice	Palen	Algodones	
ALLECULIDAE	Alleculidae species #1	U	0	0	1	1	0	
	Alleculidae species #2	U	0	0	0	1	1	
	Alleculidae species #3	U	1	1	1	1	0	
	Alleculidae species #4	U	0	0	0	1	1	
ANOBIIDAE	Tricorynus elutus	WD	0	1	1	1	0	
	Tricorynus gibbulus pubescens	WD	0	0	0	0	1	
	Tricorynus luteotectus	WD	0	0	0	0	1	
	Tricorynus vestitus	WD	0	0	0	0	1	
	Tricorynus species #1	U	0	0	0	0	1	
	Stegobium paniceum	A	0	0	0	1	0	
	Anthicus cervinus	WD	0	0	1	1	1	
ANTHICIDAE	Anthicus cribratus	WD	1	0	0	0	0	
	Anthicus ephippium	WD	1	0	0	0	0	
	Anthicus floralis	WD	0	0	0	0	1	
	Anthicus lutulentus	WD	0	0	0	1	1	
	Anthicus nanus	WD	0	0	0	1	0	
	Formicilla munda	WD	0	0	0	1	1	
	Mecynotarsus delicatulus	SO	1	0	0	1	1	
	Notoxus calcaratus	WD	1	1	0	1	0	
	Notoxus robustus	WD	1	0	0	0	0	
	Tanarthrus alutaceus	WD	0	0	0	0	1	
	Tanarthrus coruscus	WD	1	0	0	1	0	
	Tanarthrus tartarus	WD	1	1	0	1	0	
	Thicanus annectans	WD	0	0	0	0	1	
	Vacusus confinus	WD	1	0	1	1	1	
	Vacusus infernus	WD	1	1	0	1	1	
	BOSTRICHIDAE	Amphicerus cornutus	WD	0	0	0	0	1
		Amphicerus simplex	WO	0	0	0	1	1
Amphicerus teres		WD	0	0	1	0	0	
Apatides fortis		WD	0	0	1	1	1	
Dendrobiella aspera		WD	0	0	1	0	1	
Xylobiops parilis		WD	0	0	0	0	1	
Xylobiops sextuberculatus		WD	0	0	0	0	1	
Xyloblaptus prosopidis		WD	0	0	0	0	1	
Xyloblaptus quadrispinosus		WD	0	0	0	1	1	
BRUCHIDAE		Acanthoscelides daleae	WO	0	0	0	1	1
	Algarobius prosopis	WD	0	1	0	0	1	
	Mimosestes amicus	WD	0	0	0	0	1	
	Stator limbatus	WD	0	0	0	0	1	
BUPRESTIDAE	Acmaeodera alicia	WD	0	0	0	0	1	
	Acmaeodera ephedrae	WD	0	0	0	0	1	
	Chrysobothris biramosa callda	WD	1	0	0	0	0	
	Chrysobothris octocola	WO	0	0	0	1	1	
	Chrysobothris deserta	WD	1	0	0	0	0	
	Hippomelas diana	WD	0	1	0	0	0	
	Hippomelas fulgida	WO	1	0	0	0	0	

KEY	
E	Endemic
SO	Sand Obligate
WD	Widespread Desert
A	Accidental
U	Unknown

CARABIDAE	<i>Hippomelas planicosta</i>	WD	0	1	0	0	0
	<i>Apristus</i> species #1	A	0	0	0	0	1
	<i>Bembidion impotans</i>	WD	0	0	0	1	1
	<i>Bembidion nubiculosum</i>	A	0	0	0	0	1
	<i>Bembidion timidum</i>	WD	0	1	0	1	1
	<i>Bradycellus (Stenocellus) species #1</i>	A	0	0	0	0	1
	<i>Calosoma affine</i>	WD	0	0	0	0	1
	<i>Calosoma parvicollis</i>	WD	1	1	1	1	1
	<i>Clivina dentipes</i>	A	0	0	0	0	1
	<i>Harpalus pensylvanicus</i>	A	0	0	0	0	1
	<i>Harpalus intactus</i>	A	1	0	0	0	0
	<i>Pseudaptinus horni</i>	A	0	0	0	1	0
	<i>Pseudomorpha parallela</i>	U	0	0	1	1	1
	<i>Schizogenius falli</i>	A	0	0	1	1	1
	<i>Selenophorus palliatus</i>	A	0	0	0	0	1
	<i>Selenophorus semirufus</i>	A	0	0	0	1	0
	<i>Stenolophus anceps</i>	A	0	0	0	0	1
	<i>Stenolophus lineola</i>	A	0	0	0	0	1
	<i>Stenolophus ochropezus</i>	A	0	0	0	0	1
	<i>Tachys species #3</i>	A	0	0	0	1	1
<i>Tachys species #4</i>	A	0	0	1	1	1	
<i>Tachys species #5</i>	A	0	0	0	1	0	
<i>Tetragonbderus pallidus</i>	SO	1	1	1	1	1	
CERMABYCIDAE	<i>Achryson surimanum</i>	WD	0	0	1	1	1
	<i>Derobrachus geminatus geminatus</i>	WD	0	0	0	1	0
	<i>Eburia falli</i>	WD	0	0	0	0	1
	<i>Eustomula validum</i>	WD	0	0	0	1	0
	<i>Megacyllene antennata</i>	WD	0	0	0	1	0
	<i>Methia species #1</i>	WD	0	0	0	0	1
	<i>Schizax senax</i>	WD	0	0	0	0	1
CHRYSOMELIDAE	<i>Altica torquata</i>	WD	1	1	1	0	1
	<i>Chaetocnema ectypa</i>	WD	0	0	1	0	1
	<i>Diabrotica undecimpunctata undecimpunctata</i>	WD	0	0	0	1	0
	<i>Epitrix hirtipennis</i>	WD	0	0	0	0	1
	<i>Euryscopa vittata larga</i>	WD	0	0	0	0	0
	<i>Exema deserti</i>	WD	0	0	1	1	0
	<i>Lema trilineaia daturaphila</i>	WD	0	0	0	1	0
	<i>Longitarsis species #1</i>	U	0	0	0	1	0
	<i>Metachroma californicum</i>	WD	1	0	0	0	0
	<i>Metachroma immaculatum</i>	WD	1	0	0	0	0
	<i>Microrhpa rubrolineata vulnerata</i>	WD	0	0	0	1	0
	<i>Myochrous longulus</i>	WD	0	0	0	0	1
	<i>Pachybrachys integratus</i>	WD	1	0	0	0	0
	<i>Pachybrachys mellitus</i>	WD	0	0	0	1	0
	<i>Pachybrachys xanti</i>	WD	0	0	1	0	0
	<i>Pachybrachys species #1</i>	WD	0	0	0	1	0
	<i>Phyllotreta species #2</i>	WD	0	0	0	1	0
	<i>Systema blanda</i>	WD	0	0	0	1	1
	CHRYSOMELIDAE new genus, new species	E	0	1	0	0	0

CICINDELIDAE	<i>Cicindela lemniscata lemniscata</i>	A	0	0	0	0	1	
	<i>Cicindela willistoni pseudosenilis</i>	A	1	0	0	0	0	
	<i>Cicindela tranquebarica inyo</i>	WD	1	0	0	0	0	
CLERIDAE	<i>Callotillus elegans vafer</i>	WD	0	0	1	0	1	
	<i>Cymatodera fuchsi</i>	WD	0	0	0	1	1	
	<i>Cymatodera oblita</i>	WD	0	0	0	0	1	
	<i>Cymatodera punctata</i>	WD	0	0	0	0	1	
	<i>Enoclerus quadrisignatus</i>	WD	0	0	0	0	1	
	<i>Serriger reichei</i>	WD	0	0	1	0	0	
	<i>Trichodes ornatus ornatus</i>	WD	0	0	1	1	0	
	<i>Trichodes peninsularis basilis</i>	WD	0	0	0	0	1	
COCCINELLIDAE	<i>Trichodes peninsularis horni</i>	WD	0	0	0	0	1	
	<i>Brumus septentrionis</i>	WD	1	0	0	0	0	
	<i>Chilocorus stigma orbus</i>	WD	0	1	0	0	0	
	<i>Hippodamia convergens</i>	WD	1	1	1	1	1	
	<i>Hyperaspidius new species #1</i>	WD	0	1	0	0	0	
	<i>Hyperaspis bensonica bensonica</i>	WD	0	1	1	0	1	
	<i>Hyperaspis pleuralis</i>	WD	1	1	0	0	0	
	<i>Lindorus lophanthae</i>	WD	0	0	1	1	1	
	<i>Olla abdominalis</i>	WD	0	0	0	1	0	
	<i>Psyllobora vigintimaculata</i>	WD	0	0	0	1	0	
	<i>Scymnus species #1</i>	WD	0	0	1	1	0	
	<i>Scymnus species #2</i>	WD	0	0	1	0	1	
	CRYPTOPHAGIDAE	<i>Cryptophagus species #1</i>	WD	0	0	0	0	1
	CUCUJIDAE	<i>Ahasverus advena</i>	WD	0	0	0	0	1
CURCULIONIDAE	<i>Acanthoscelidius californicus</i>	WD	0	1	0	0	0	
	<i>Auletobius new species #1</i>	U	0	0	1	0	0	
	<i>Baris interstitialis</i>	SO	0	0	0	1	0	
	<i>Cleonus albovestitus</i>	SO	0	1	1	1	1	
	<i>Cryptolepidius cazieri</i>	WD	0	0	1	0	0	
	<i>Eucilinus aridus aridus</i>	SO	0	1	1	1	1	
	<i>Hypera brunneipennis</i>	A	0	0	0	0	1	
	<i>Microlarinus sp. #1</i>	WD	0	1	0	0	1	
	<i>Onychobaris species #1</i>	SO	0	1	1	1	1	
	<i>Ophryastes argentatus</i>	WD	0	0	0	0	1	
	<i>Ophryastes geminatus</i>	WD	1	1	1	0	0	
	<i>Ophryastes mixtus</i>	WD	0	1	1	0	0	
	<i>Ophryastes robustus</i>	WD	0	0	0	0	1	
	<i>Sitona species #1</i>	WD	0	0	0	1	1	
	<i>Smicronyx imbricatus</i>	WD	1	1	1	1	0	
	<i>Trigonoscuta species #1</i>	SO	1	1	1	1	1	
	DERMESTIDAE	<i>Cryptorhopalum fusciclave</i>	WD	0	0	0	1	0
		<i>Novelsis picta</i>	SO	0	1	1	1	1
		<i>Novelsis uteana</i>	SO	0	1	0	0	0
<i>Novelsis new species #1</i>		SO	0	0	0	0	1	
DYTISCIDAE	<i>Copelatus chevrolati renovatus</i>	A	0	0	0	0	1	
	<i>Eretes sticticus</i>	A	0	1	1	1	1	
	<i>Hygrotus species #1</i>	A	0	0	0	0	1	
	<i>Hygrotus species #2</i>	A	0	0	1	0	0	

ELATERIDAE	<i>Anchastus bicolor</i>	WD	0	0	0	0	1
	<i>Esthesopus mitis</i>	WD	0	0	1	1	1
	<i>Esthesopus parvus</i>	WD	0	0	0	0	1
	<i>Horistonotus simplex</i>	WD	0	0	1	1	1
	<i>Meristhus cristatus</i>	WD	0	0	0	1	0
HETEROCERIDAE	<i>Heterocerus gnatho</i>	A	0	0	0	1	1
	<i>Heterocerus mexicanus</i>	A	0	0	1	1	1
HISTERIDAE	<i>Eremosaprinus hubbardi</i>	WD	0	0	1	1	0
	<i>Eremosaprinus unguiculatus</i>	WD	0	0	0	0	1
	<i>Eremosaprinus new species near unguiculatus</i>	WD	0	0	1	1	0
	<i>Euspilotus socius</i>	WD	0	0	0	0	1
	<i>Hypocaccus propensus</i>	WD	1	0	0	0	1
	<i>Philothris species #1</i>	WD	0	0	0	1	1
	<i>Saprinus discoidalis</i>	WD	1	0	0	1	1
	<i>Teretrius species #1</i>	WD	0	0	0	0	1
	<i>Xerosaprinus (Vastosaerinus) ciliatoides</i>	WD	0	0	1	1	1
	HYDROPHILIDAE	<i>Berosus californicus</i>	A	0	0	0	0
<i>Berosus infuscatus</i>		A	0	0	0	1	1
<i>Berosus maculosus</i>		A	0	1	0	0	0
<i>Enochrus species #1</i>		A	0	0	0	1	1
<i>Hydrophilus triangularis</i>		A	0	0	0	1	1
LATHRIDIIDAE	<i>Corticaria species</i>	WD	0	0	0	1	0
	<i>Corticarina cavicollis</i>	WD	0	0	0	1	1
	<i>Corticarina scissa LeConte</i>	WD	0	0	0	0	1
	<i>Migneauxia species #1</i>	WD	0	0	0	1	1
LEIODIDAE	<i>Ptomaphagus fisus</i>	WD	0	0	1	0	1
LIMNEBIIDAE	<i>Ochthebius fossatus</i>	A	0	0	0	0	1
LYCTIDAE	<i>Trogoxylon aequale</i>	WD	0	0	0	0	1
MELANDRYIDAE	<i>Melandryidae species #1</i>	WD	1	0	0	0	0
	<i>Melandryidae species #2</i>	WD	0	0	0	1	0
MELOIDAE	<i>Cysteodemus armatus</i>	WD	0	1	1	1	1
	<i>Epicauta lauta</i>	WD	0	1	1	1	1
	<i>Epicauta tenella</i>	WD	0	1	0	1	0
	<i>Epicauta tenuilineata</i>	WD	0	0	0	1	0
	<i>Epicauta virgulata</i>	WD	0	0	0	1	0
	<i>Eupomeha elegans elegans</i>	WD	0	0	0	0	1
	<i>Eupompha imperialis</i>	WD	0	0	1	0	0
	<i>Lytta (Paralytta) magister</i>	WD	0	0	0	1	0
	<i>Lytta (Poreospasta) auriculata</i>	WD	0	0	0	0	1
	<i>Negalius marmorata</i>	WD	0	0	0	1	1
	<i>Phodaga alticeps</i>	WD	0	1	1	1	0
	<i>Pleuropompha costata</i>	WD	0	0	0	1	0
	<i>Pseudozonitis species #1</i>	WD	0	0	0	1	0
	<i>Pyrota concinna</i>	WD	0	0	1	1	1
	<i>Tegrodera latecincta</i>	WD	1	0	0	0	0
<i>Zonitis atripennis terminalis</i>	WD	0	0	0	1	0	
MELYRIDAE	<i>Attalus atripennis</i>	WD	0	1	0	0	0
	<i>Attalus lobulatus</i>	WD	0	0	1	0	0
	<i>Attalus species #2</i>	WD	0	0	0	1	0

	Attalus species #5	WD	0	0	1	0	0
	Attalus species #6	WD	0	0	1	0	0
	Pristoscelis species #1	WD	0	0	1	1	0
	Trichochorus umbratus	WD	0	0	1	0	0
MYCETOPHAGIDAE	Typhaea stercorea	WD	0	0	0	1	1
NITIDULIDAE	Nitidulidae species #1	WD	0	0	0	0	1
	Nitidulidae species #2	WD	0	0	0	1	0
	Nitidulidae species #3	WD	0	1	0	1	0
	Nitidulidae species #4	WD	0	0	0	0	1
	Nitidulidae species #5	WD	0	0	0	0	1
	Nitidulidae species #6	WD	0	0	0	0	1
	Nitidulidae species #7	WD	0	0	1	0	0
OEDEMERIDAE	Oxacis species #1	WD	0	0	0	1	0
	Oxacis species #2	WD	0	0	0	1	0
	Oxacis species #3	WD	1	0	0	1	0
	Rhinoplatia ruficollis	WD	0	0	0	1	0
PEDILIDAE	Leptoremus species #1	WD	0	0	0	0	1
	Steropalpus species #1	WD	0	0	0	0	1
	Undescribed genus and species	E	0	0	0	0	1
PHALACRIDAE	Phalacrus species #1	WD	1	0	0	0	0
	Phalacrus species #2	WD	0	1	0	0	0
PSELAPHIDAE	Pilopius occularis	WD	0	0	1	0	0
	Ctenisis species #1	WD	0	0	0	1	0
PTINIDAE	Niptus ventriculus	SO	0	1	1	1	1
	Ptinus species #1	SO	0	0	0	0	1
RHIPIPHORIDAE	Rhipiphoridae epinomiaae	WD	0	0	0	0	1
SCARABAEIDAE	Acoma glabrata	WD	0	0	0	0	1
	Anomala carlsoni	E	0	0	1	0	1
	Anomala flavilla	WD	0	0	0	1	1
	Anomala hardyorum	E	0	0	0	0	1
	Aphodius acutissimus	WD	0	0	0	0	1
	Aphodius fucosus	WD	0	0	1	0	1
	Aphodius granarius	A	0	0	1	0	0
	Aphodius lividus	A	0	0	0	0	1
	Aphodius militaris	WD	0	0	1	0	0
	Ataenius californicus	WD	0	0	0	0	1
	Ataenius cognatus	WD	0	0	0	0	1
	Ataenius desertus	WD	0	1	0	1	1
	Ataenius hesperius	WD	1	0	0	0	0
	Ataenius lobatus	WD	0	0	0	0	1
	Ataenius puncticollis	WD	0	1	1	1	1
	Bolbocerastes regalis	WD	0	0	0	0	1
	Bolbocerastes species	WD	0	0	0	1	0
	Chnaunanthus discolor	A	0	0	1	0	1
	Chnaunanthus flavipennis	A	0	1	0	0	1
	Cyclocephala longula	WD	1	1	1	1	1
	Cyclocephala wandae	E	0	0	0	0	1
	Diplotaxis corbula	E	0	0	0	0	1
	Diplotaxis fimbriata	WD	0	0	0	0	1



	<i>Diplotaxis fossipalpa</i>	WD	0	1	0	0	0
	<i>Diplotaxis knausii</i>	WD	0	0	1	1	1
	<i>Diplotaxis moerens</i>	WD	1	1	1	1	1
	<i>DiElotaxis pacata</i>	WD	0	0	1	1	1
	<i>Diplotaxis subangulata</i>	WD	0	0	1	1	1
	<i>Glaresis clypeata</i>	WD	0	0	0	0	1
	<i>Glaresis ecostata</i>	WD	0	0	0	1	1
	<i>Glaresis phoenicus</i>	WD	0	0	0	0	1
	<i>Leptohoplia testaceipennis</i>	SO	0	0	0	0	1
	<i>Liglrus gibbosus obsoletus</i>	WD	0	1	1	1	1
	<i>Ligyru ruginasus</i>	WD	0	0	1	1	0
	<i>Megasoma sleeperi</i>	WD	0	0	0	0	1
	<i>Ochodaeus mandibularis</i>	WD	1	0	0	1	1
	<i>Pachyplectris laevis</i>	SO/U	0	1	0	0	1
	<i>Phileurus illatus</i>	WD	0	0	0	0	1
	<i>Phyllophaga mucorea</i>	WD	0	0	0	0	1
	<i>Pleurophorus caesus</i>	A	0	0	0	0	1
	<i>Pleurophorus micros</i>	WD	0	0	0	0	1
	<i>Pseudocotalpa andrewsi</i>	E	0	0	0	0	1
	<i>Xeropsamobeus desertus</i>	SO	1	1	1	1	1
SCOLYTIDAE	<i>Chaetophloeus parkinsoniae</i>	WD	0	0	0	1	1
SCYDMAENIDAE	<i>Papusus species #1</i>	WD	0	0	0	0	1
STAPHYLINIDAE	<i>Acalophaena compacta</i>	WD	0	0	0	1	1
	<i>Aleocharinae sp. #10</i>	A	0	0	0	1	0
	<i>Aleocharinae sp. #11</i>	A	0	0	0	1	0
	<i>Apocellus analis</i>	A	0	0	0	0	1
	<i>Bledius ferratus</i>	A	0	0	0	0	1
	<i>Carpelimus species #2</i>	A	0	0	0	0	1
	<i>Carpelimus species #2</i>	A	1	0	1	0	0
	<i>Lobrathium lituarium</i>	A	0	0	1	1	1
	<i>Neobisnius species #1</i>	WD	0	1	1	1	1
	<i>Philonthus alumnus</i>	WD	0	0	0	1	1
	<i>Platystethus spiculus</i>	A	0	0	0	0	1
	<i>Scopaeus species #1</i>	A	0	0	0	1	1
TENEBRIONIDAE	<i>Anemia californica</i>	SO	1	1	1	1	1
	<i>Areoschizus species #1</i>	WD	0	0	0	0	1
	<i>Areoschizus species #2</i>	WD	0	1	1	1	1
	<i>Asida confluens</i>	SO	0	0	1	0	1
	<i>Batulius setosus</i>	SO	0	0	0	1	1
	<i>Blapstinus species #1</i>	U	0	0	0	1	1
	<i>Cerenopus concolor</i>	WD	0	0	1	0	1
	<i>Cnemeplatia sericea</i>	SO	1	0	1	1	1
	<i>Cnemodius testaceus</i>	SO	0	1	1	1	1
	<i>Cryptoglossa laevis laevis</i>	WD	0	0	0	0	1
	<i>Cryptoglossa verrucosa verrucosa</i>	WD	0	1	1	1	1
	<i>Edrotes arens</i>	SO	0	1	1	1	1
	<i>Edrotes ventricosus</i>	SO	1	1	1	1	1
	<i>Eleodes armata</i>	WD	1	1	1	1	1
	<i>Embaphion depressum</i>	SO	0	0	1	1	1

	<i>Eupsophulus castaneus</i>	WD	0	1	1	1	1
	<i>Eusattus fortineri</i>	E	0	0	0	0	1
	<i>Eusattus muricatus</i>	SO	1	1	1	1	0
	<i>Latheticus prosopis</i>	WD	0	0	0	0	1
	<i>Mecysmus augustus</i>	WD	1	1	0	1	1
	<i>Mycotrogus augustus</i>	WD	0	0	0	1	0
	<i>Nocibiotes granulatus</i>	WD	0	0	0	0	1
	<i>Notibius puberulus</i>	WD	0	1	1	1	1
	<i>Trichasida hirsuta</i>	SO	0	0	0	0	1
	<i>Triorophus nodiceps</i>	WD	0	0	0	1	0
	<i>Trogloderus costatus costatus</i>	SO	1	0	0	0	0
	<i>Trogloderus costatus mayhewi</i>	SO	0	1	1	0	0
	<i>Trogloderus costatus tuberculatus</i>	SO	1	0	0	0	0
	<i>Ulus crassus</i>	SO	0	0	0	1	1
	<i>Zopherus tristis</i>	WD	0	0	1	1	0
TROGOSITIDAE	<i>Temnochila chlorodia</i>	WD	0	0	1	0	1
	<b>TOTAL</b>		<b>48</b>	<b>61</b>	<b>92</b>	<b>143</b>	<b>197</b>

Total Species Present per Area

<b>Owens</b>	48
<b>Cadiz</b>	61
<b>Rice</b>	92
<b>Palen</b>	143
<b>Algodones</b>	197

Terms Key

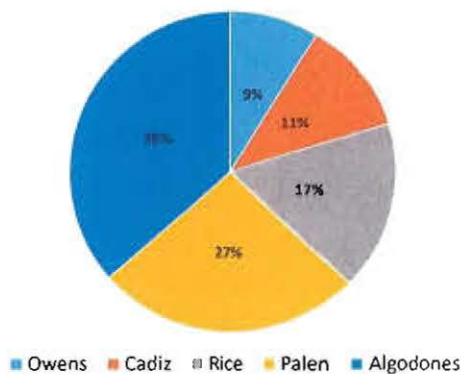
E	Endemic	Endemic, known only from a particular dune and dependant upon the sand dune environment.
SO	Sand Obligate	Sand Obligate, restricted to the sand environment where it may live directly in sand or be restricted to other biotic entities that are themselves restricted to the sand habitat.
WD	Widespread Desert	Widespread Desert, organisms that are commonly found both in dune and -off dune environments.
A	Accidental	Accidental, normally not a user of the sand dune environment. May have been blown onto the dune by winds, attracted to blacklight etc.
U	Unknown	Biology and habitat totally unknown or a species that cannot be identified

Total Species Present per Region

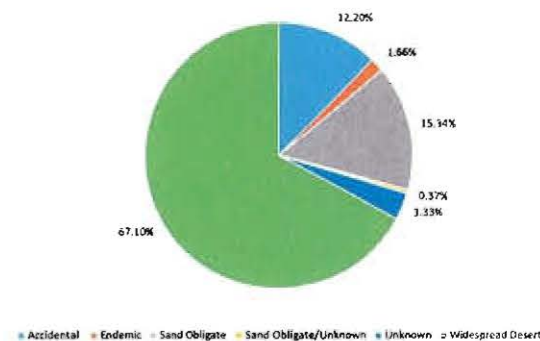
Owens	48
Cadiz	61
Rice	92
Palen	143
Algodones	197
	<u>541</u>

	Total %
Accidental	12.20%
Endemic	1.66%
Sand Obligate	15.34%
Sand Obligate/Unknown	0.37%
Unknown	3.33%
Widespread Desert	67.10%

Total Species Present Per Region



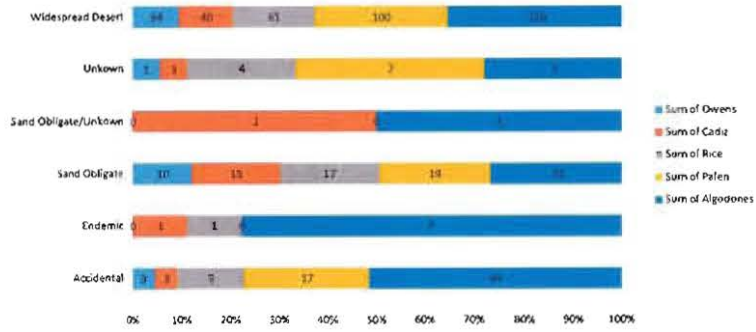
Total Percentage of Species per Land Status



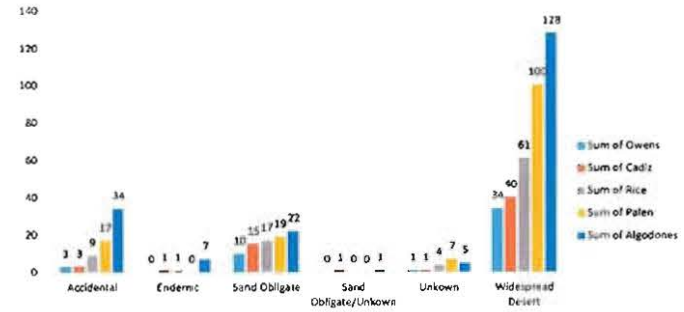
Row Labels	Sum of Owens	Sum of Cadiz	Sum of Rice	Sum of Palen	Sum of Algodones	
Accidental	3	3	9	17	34	66
Endemic	0	1	1	0	7	9
Sand Obligate	10	15	17	19	22	83
Sand Obligate/Unknown	0	1	0	0	1	2
Unknown	1	1	4	7	5	18
Widespread Desert	34	40	61	100	128	363
<b>Grand Total</b>	<b>48</b>	<b>61</b>	<b>92</b>	<b>143</b>	<b>197</b>	<b>541</b>

	Owens	Cadiz	Rice	Palen	Algodones	Total %
Accidental	0.55%	0.55%	1.66%	3.14%	3.14%	12.20%
Endemic	0.00%	0.18%	0.18%	0.00%	1.29%	1.66%
Sand Obligate	1.85%	2.77%	3.14%	3.51%	4.07%	15.34%
Sand Obligate/Unknown	0.00%	0.18%	0.00%	0.00%	0.18%	0.37%
Unknown	0.18%	0.18%	0.74%	1.29%	0.92%	3.33%
Widespread Desert	6.28%	7.39%	11.28%	18.48%	23.66%	67.10%

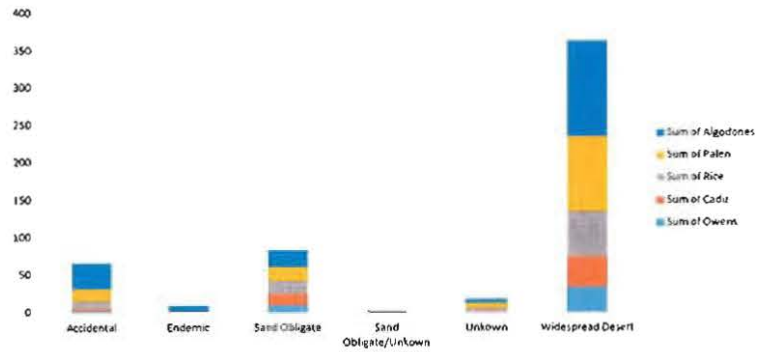
Species Percent by Land Status



Total Species Per Land Status



Total Species Per Land Status (Stacked)



Organism	Organism Species	Winter	Spring	Summer	Fall
ALLECULIDAE	Alleculidae species #3				x
ANTHICIDAE	Anthicus cribratus				x
	Anthicus ephippium				x
	Mecynotarsus delicatulus		xxx	xxx	
	Notoxus calcaratus				xx
	Notoxus robustus				x
	Tanarthrus coruscus				xx
	Tanarthrus tartarus				x
	Vacusus confinus				x
	Vacusus infernus				xx
	BUPRESTIDAE	Chrysobothris biramosa calida			
Chrysobothris deserta					x
CARABIDAE	Calosoma earvicollis				xx
	Harpalus intactus				xx
CHRYSOMELIDAE	Tetragonoderus pallidus			x	xxx
	Altica torquata	xx	x		
	Metachroma immaculatum				xxx
	Pachybrachys integratus				x
	Altica torquata	xx	x		
	Metachroma immaculatum				xxx
CICINDELIDAE	Pachybrachys integratus				x
	Cicindella willistoni pseudosenilis				x
	Cicindella tranquebarica inyo				xxx
COCCINELLIDAE	Brumus septentrionis				xx
	Hippodamia convergens	x	x	x	
	Hyperaspis pleuralis			x	
CURCULIONIDAE	Ophryastes geminatus		xxx	xx	
	Smicronyx imbricatus			x	
	Trigonoscuta species #1			x	
HISTERIDAE	Hypocaccus propensus		xx		
	Saprinus discoidalis				xx
MELANDRYIDAE	Melandryidae species #1				xx
MELOIDAE	Tegrodera latecincta				x
OEDEMERIDAE	Oxacis species #3				xxx
PHALACRIDAE	Phalacrus species #1				x
SCARABAEIDAE	Ataenius hesperius		xx		
	Cyclocephala longu;a				xxx
	Diplotaxis moerens				xx
	Ochodaeus manibularis				xx
	Xeropsamobeus desertus	xxx			
STAPHYLINIDAE	Carpelimus species #2				xx
TENEBRIONIDAE	Anemia californica				xxx

Key	
x	1 or 2 specimens collected
xx	3 - 9 specimens collected
xxx	10 or more specimens collected

Cnemeplatia sericea			x	
Edrotes ventricosus	xxx	x		
Eleodes armata	xx	x	xx	xx
Eusattus muicatus	xxx	xxx	xxx	xx
Mecysmus augustus			xx	
Trogloderus costatus costatus		xx	xxx	xxx
Trogloderus costatus tuberculatus		x	xx	

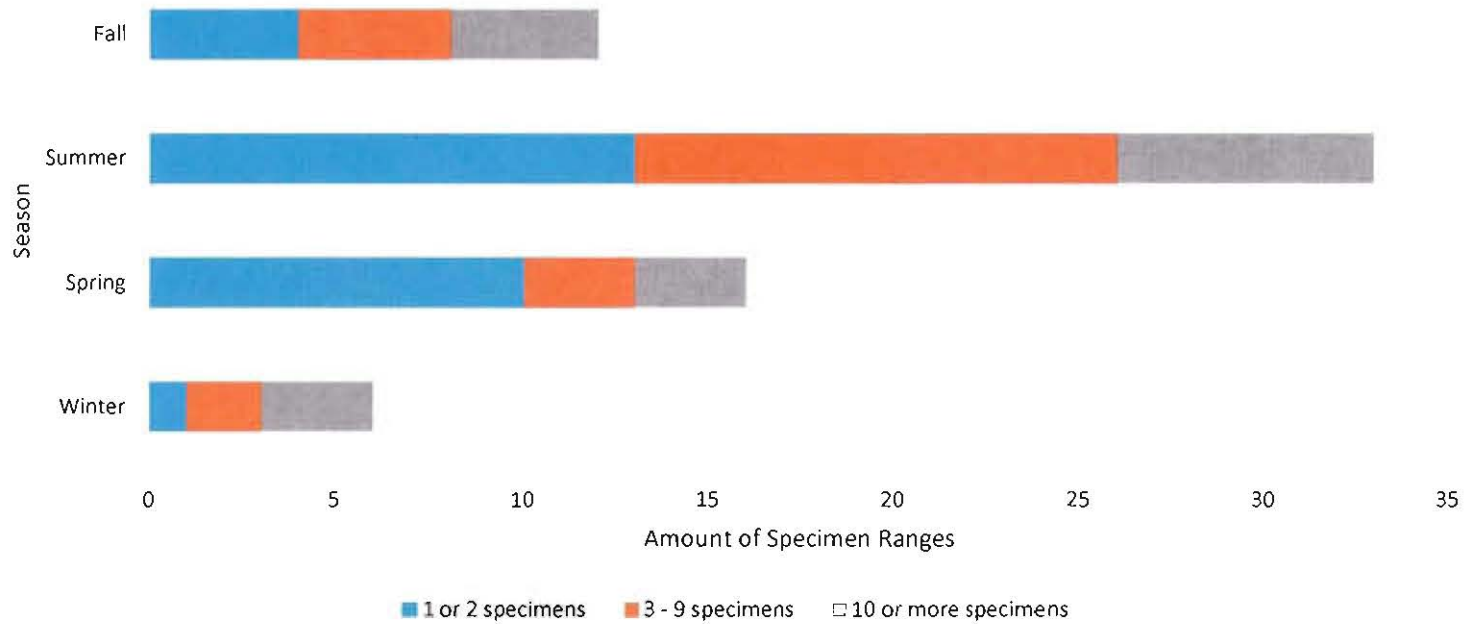
Frequency of Species per Season

	Winter	Spring	Summer	Fall
x	1	10	13	4
xx	3	3	13	4
xxx	3	3	7	4

Frequency Range of Species per Season

	Winter	Spring	Summer	Fall
1 or 2 specimens	1	10	13	4
3 - 9 specimens	2	3	13	4
10 or more specimens	3	3	7	4

Owens Species Frequency per Season



Organism	Organism Species	Winter	Spring	Summer	Fall
ALLECULIDAE	Alleculidae species #3				x
ANOBIIDAE	Tricorynus elutus			xx	
ANTHICIDAE	Notoxus calcaratus			xx	
	Tanarthrus tartarus				xx
	Vacusus infernus				x
BUPRESTIDAE	Hippomelas diana			xxx	
	Hippomelas planicosta			xx	
BRUCHIDAE	Algarobius prosopis				x
CARABIDAE	Benidiom timidum		x		
	Calosoma parvicollis			xxx	
	Tetragonoderus pallidus		xxx		xxx
CHRYSOMELIDAE	Altica torquata			xxx	
	New genus, new species			xxx	
COCCINELLIDAE	Chilocorus stigma orbus			x	
	Hippodamia convergens			xx	
	Hyperaspidium			xx	
	Hyperaspis bensonlca bensonica			xx	
	Hyperaspis pleuralis			x	
CURCULIONIDAE	Acanthoscelidius callifornicus			xx	
	Cleonus albovestitus			x	
	Eucllinus aridus aridus		xx	xxx	xx
	Microlarinus species #1			x	
	Onychobaris species #1		x	xxx	
	Ophryastes geminatus		x		
	Ophryastes mixtus		x	x	
	Smicronyx imbricatus		x		
	Trigonoscuta species		xxx	xx	
DERMESTIDAE	Novelsis picta				x
	Novelsis uteana			x	
DYTISCIDAE	Eretes sticticus				xxx
HYDROPHILIDAE	Berosis maculosus				x
MELOIDAE	Cysteodemus armatus			x	
	Epicauta lauta				xx
	Epicauta tenella				x
	Phodaga alticeps			xxx	xx
MELYRIDAE	Allatus atripennis			x	
NITIDULIDAE	Nitidulidae species #3			x	
PHALACRIDAE	Phalacrus species #2				x
PTINIDAE	Niptus ventriculus			xx	xxx
SCARABAEIDAE	Ataenius desertus				x
	Ataenius puncticollis				x
	Chnaunanthus flavipennis			xx	

Key	
x	1 or 2 specimens collected
xx	3 - 9 specimens collected
xxx	10 or more specimens collected



	Cyclocephala longula	x			
	diplotaxis fossipala			xx	xx
	Diplotaxis moerens			xx	
	Ligyru gibbosus obsoletus	xx	xx	x	
	Pachyplectris laevis	x			
	Xeropsamobeus desertus	xxx			
STAPHYLINIDAE	Neobisnius species #1	x			
TENEBRIONIDAE	Anemia californica			xxx	x
	Aeroschizus species #2	x	x	xxx	xx
	Cnemodius testaceus		x	xx	
	Cryptoglossa verrucosa verrucosa		xx	xxx	xx
	Edrotes arens	xxx	xxx	xx	xxx
	Edrotes ventricosus	xxx	xxx	xxx	xxx
	Eleodes armata	xxx	xx	xx	xx
	Eupsophulus castaneus		x		
	Eusattus muricatus	xx	xxx	x	xx
	Mecysmus augustus		x		
	Notibius puberulus		xx		
	Trogloclerus costatus mayhewi			x	xx

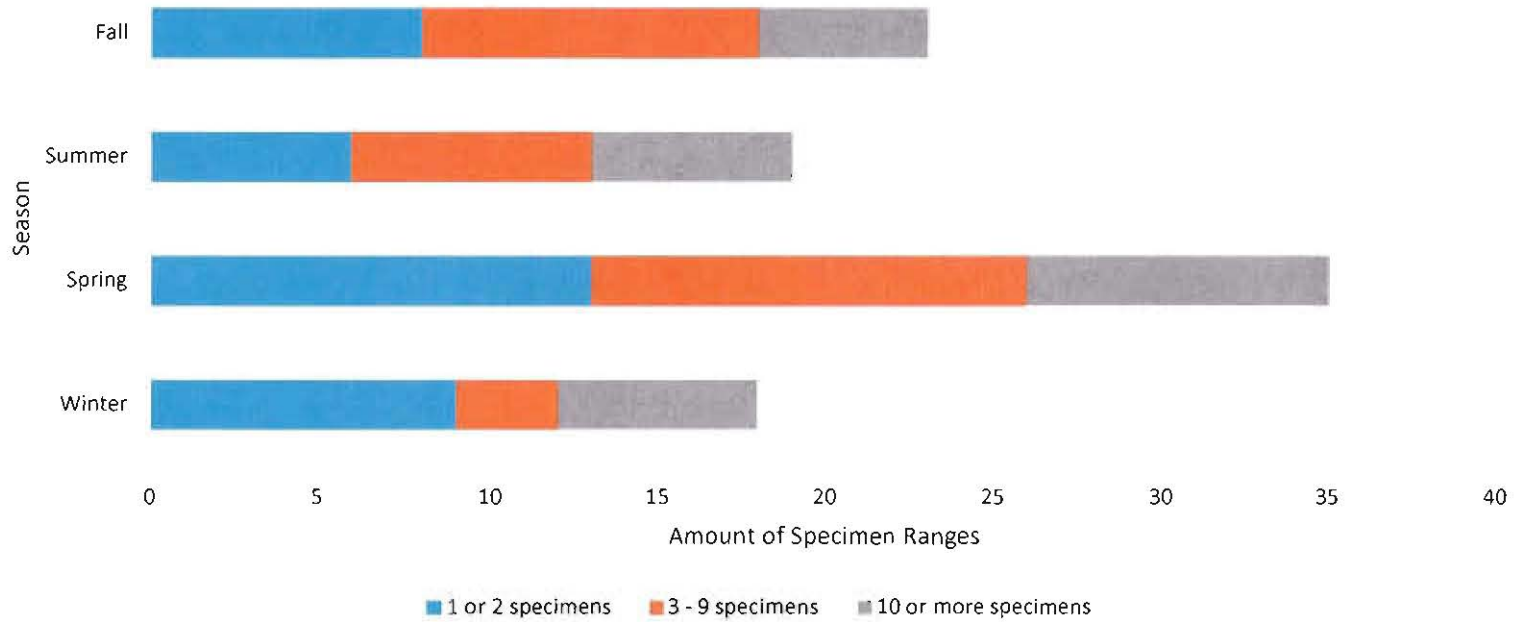
Frequency Range of Species per Season

	Winter	Spring	Summer	Fall
x	9	13	6	8
xx	3	13	7	10
xxx	6	9	6	5

Frequency Range of Species per Season

	Winter	Spring	Summer	Fall
<b>1 or 2 specimens</b>	9	13	6	8
<b>3 - 9 specimens</b>	3	13	7	10
<b>10 or more specimens</b>	6	9	6	5

Cadiz Species Frequency per Season



Organism	Organism Species	Winter	Spring	Summer	Fall
ALLECULIDAE	Alleculidae species #1				x
	Alleculidae species #3				x
ANOBIIDAE	Tricorynus elutus		xxx		
ANTHICIDAE	Anthicus cervinus				x
	Vacusus confinus		x	x	
BOSTRICHIDAE	Amphicerus teres			xx	
	Apatides fortis			x	
CARABIDAE	Dendrobiella aspera		x		
	Calosoma parvicollis		xx		
	Pseudomorpha parallela				x
	Schizogenius falli	xx			x
	Tachys	x			
	Tetragonoderus pallidus		xxx		xxx
CERAMBYCIDAE	Achryson surinamum				x
CHRYSOMELIDAE	Altica torquata		xxx		
	Euryscopa vittata larga		x		
	Pachybrachys xanti		xx		
CLERIDAE	Callotillus elegans vafer		x		
	Serriger reichei		xx		
COCCINELLIDAE	Trichodes ornatus ornatus		x		
	Hippodamia convergens		xx		
	Hyperaspis bensonica bensonica		x		
	Lindorus lophanthae	x			
	Scymnus species #1		x		
	Scymnus species #2		x		
CURCULIONIDAE	Auletobius		x		
	Cleonus albovestitus	xxx			
	Crypstolepidius cazieri		xxx		
	Eucilinus aridus aridus	xx	xx		x
	Onychobaris species #1		x		
	Ophryastes geminatus	x			
	Ophryastes mixtus	x	x		
	Smicronyx imbricatus		x		
	Trigonoscuta species	xxx	xx		
DERMESTIDAE	Novelsis picta			x	
DYTISCIDAE	Eretis sticticus				xx
	Hygrotus species #2		x		
ELATERIDAE	Esthesopus mitis			xxx	xx
	Horistonotus simplex			x	
HETEROCERIDAE	Heterocerus mexicanus	xx			x
HISTERIDAE	Eremosaprinus hubbardi		x		
	Eremosaprinus unguiculatus		x		

Key	
x	1 or 2 specimens collected
xx	3 - 9 specimens collected
xxx	10 or more specimens collected

	Xerosaprinus ciliatoides		xxx		
LEIODIDAE	Ptomaphagus fesus	x	x		
MELOIDAE	Cysteodemus armatus		x		
	Epicauta lauta				x
	Eupompha imperialis		x		
	Phodaga alticeps		xx		
	Pyrota concinna				xx
MELYRIDAE	Attalus lobulatus		xx		
	Attalus species #5		x		
	Attalus species #6		xx		
	Pristoscelis species #1		x		
	Trichochorus umbratus		xxx		
NITIDULIDAE	Nitidulidae species #7		x		
SCARABEEIDAE	Acoma glabrata				
	Aphodius fucus	xx	x		
	Aphodius granarius	xx			
	Aphodius militaris Complex	xx			
	Ataenius puncticollis				x
	Chnaunanthus discolor		xxx		
	Cyclicephala longula		x		
	Diplotaxis knausii				xx
	Diplotaxis moerens			xxx	xx
	Diplotaxis paceta			x	x
	Diplotaxis subangulata				x
	Ligyris gibbosus obsoletus	xx			
	Ligyris ruginasus				xx
	Xeropsamobeus desertus	xxx	xxx		
STAPHYLINIDAE	Carpelimus species #2		x		
	Lobrathium lituarium		x		x
	Neobisnius species #1		x		
TENEBRIONIDAE	Anemia californica		x		
	Areoschizus	xx	x	xx	xx
	Asida confluens				xxx
	Cerenopus concolor		x	x	
	Cnemeplatia sericea	xxx			
	Cnemodius testaceus			x	
	Cryptoglossa verrucosa verrucosa		x	xx	xxx
	Edrotes arens	xxx	xxx	xx	xxx
	Edrotes ventricosus	xxx	xxx	xxx	xxx
	Eleodes armata	xx	xx		xx
	Embaphion depressum	x			
	Eupsophulus castaneus		xx		
	Eusattus muricatus	xxx	xx	x	xxx
	Notibius puberulus		x		
	Trogloclerus costatus mayhewi			x	xxx
	Zopherus tristis				x

TROGOSTITIDAE    *Temnochila chlorodia*

x            x

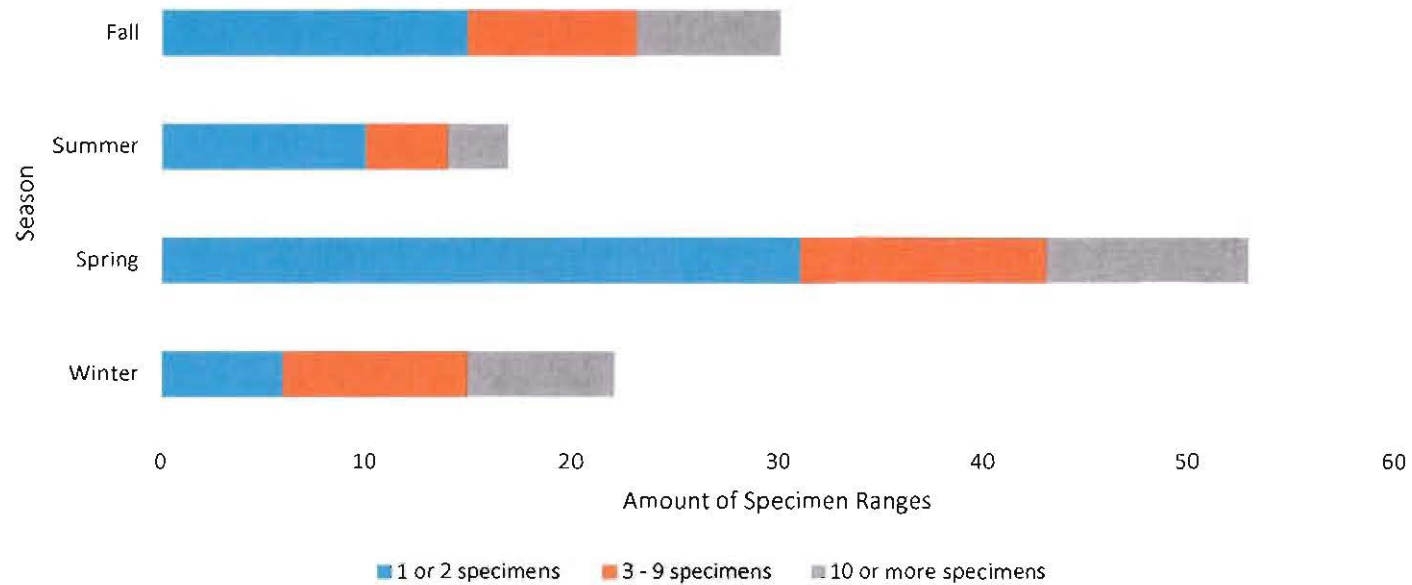
Frequency Range of Species per Season

	Winter	Spring	Summer	Fall
x	6	31	10	15
xx	9	12	4	8
xxx	7	10	3	7

Frequency Range of Species per Season

	Winter	Spring	Summer	Fall
<b>1 or 2 specimens</b>	6	31	10	15
<b>3 - 9 specimens</b>	9	12	4	8
<b>10 or more specimens</b>	7	10	3	7

Rice Species Frequency per Season



Organism	Organism Species	Winter	Spring	Summer	Fall	
ALLECULIDAE	Alleculidae species #1				x	
	Alleculidae species #2				x	
	Alleculidae species #3			x	xxx	
	Alleculidae species #4			x	xx	
ANOBIIDAE	Tricorynus elutus		xxx			
	Stegobium paniceum				xx	
ANTHICIDAE	Anthicus cervinus				xx	
	Anthicus lutulentus		xx		xx	
	Anthicus nanus		xx		xx	
	Formicilla munda				x	
	Macynotarsus delicatulus	xxx	xxx		xxx	
	Notoxus calcaratus			x	xx	
	Tanarthrus coruscus				xx	
	Tanarthrus tartarus				xx	
	Vacusus confinus			xx	xxx	
	Vacusus infernus				xxx	
BOSTRICHIDAE	Amphicerus simplex				x	
	Apatides fortis				x	
	Xyloblaptus quadrispinosus				x	
BRUCHIDAE	Acanthoscelides daleae		xxx			
BUPRESTIDAE	Chrysobothris octocola				x	
CARABIDAE	Bembidion impotans		x			
	Bembidion timidum		x			
	Calosoma parvicollis		xxx		xx	
	Pseudaptinus horni		x		xx	
	Pseudomorpha parallela		x			
	Schizogenis falli		x		xxx	
	Selenophorus semirufus				x	
	Tachys species #3				xx	
	Tachys species #4				x	
	Tachys species #5				x	
	Tetragonoderus pallidus	xx			xxx	
	CERAMBYCIDAE	Achryson surinamum		x		x
		Derobrachus geminatus geminatus				x
Eustromula validum					x	
Magecyllene antennata			x			
CHRYSOMELIDAE	Chaetocnema ectypa		xx			
	Diabrotica undecimpunctata undecimpunctata				x	
	Exema deserti				x	
	Lema trilineata daturaphila		x			
	Longitarsis species #1				x	
	Microrhopala rubrilineata vulnerata			xxx		

Key	
x	1 or 2 specimens collected
xx	3 - 9 specimens collected
xxx	10 or more specimens collected

	Pachybrachys mellitus			x	
	Pachybrachys species #1			x	
	Phyllotreta species #1	xxx			
CLERIDAE	Systema blanda	x	xx		
	Cymatodera fuchsi				xx
	Trichodes ornatus ornatus	x			
COCCINELLIDAE	Hippodamia convergens	xxx			
	Lindorus lophanthae				xxx
	Olla abdominalis	xx			
	Psyllobora vigintimaculata	x			
	Scymnus species #1	x			
CURCULIONIDAE	Baris interstitialis			xxx	
	Cleonus albovestitus	x	xxx		
	Eucilinus aridus aridus	xx			xxx
	Onychobaris species #1	x	x		
	Sitona species #1	x	xxx		
	Smicronyx imbricatus	xx			
	Trigonoscuta species	xx	x		
DERMESTIDAE	Cryptorhopalum fusciclave		x		
	Novelsis picta			xx	
DYTISCIDAE	Eretes sticticus				xx
ELATERIDAE	Esthesopus mitis	xxx			xxx
	Horistonotus simplex		xx		
	Meristhus cristatus				x
HETEROCERIDAE	Heterocerus gnatho	x			
	Heterocerus mexicanus				xx
HISTERIDAE	Eremosaprinus hubbardi		x		
	Eremosaprinus new species near unguiculatus	x			
	Pilothris species #1		x		
	Sparinus dicoidalis				x
	Xerosaprinus ciliatoides	xxx			
HYDROPHILIDAE	Berosis infuscatus	x			x
	Enochrus species #1	x			xx
	Hydrophilus triangularis	x			
LATHRIDIIAE	Corticaria species #1				x
	Coricerina cavicollis				xx
	Migneauxia species #1				x
MELANDRYIDAE	Melandryidae species #2			x	
MELOIDAE	Cysteodemus armata	x			
	Epicauta lauta				x
	Epicauta tenella				x
	Epicauta tenuilineata				x
	Epicauta vergulata				x
	Lytta (Paralytta) magister	xx			
	Negalius marmorata				xxx
	Phodaga alticeps	x			



	Pleuropompha castata				X
	Pseudozonitis species #1	xxx			
	Pytota concinna				xxx
MELYRIDAE	Zonitis atripennis terminalis	x			
	Attalus species #2	x			
	Pristogcelis species #1	x			
MYCETOPHAGIDAE	Typhaea stercorea		x		xx
NITIDULIDAE	Nitidulidae species #2				x
	Nitidulidae species #3	x			
OEDEMERIDAE	Oxacis species #1				x
	Oxacis species #2	xxx			
	Oxacis species #3				x
	Rhinoplatia ruficollis	xxx			
PSELAPHIDAE	Ctenisis species #1				x
PTINIDAE	Niptus ventriculus	x			xxx
SCARABARIDAE	Anomala flavilla	xxx			
	Ataenius desertus				xxx
	Ataenius puncticollis				xxx
	Bolbocerastes species	x			
	Cyclpcephala longula	xxx	x		
	Diplotaxis fimbriata				xx
	Diplotaxis knausii		xxx		
	Diplotaxis moerens		xx		
	Diplotaxis pacata				xx
	Diplotaxis subangulata		xx		x
	Glaresis ecostata	xxx			
	Ligyris gibbosus obsoletus	xxx			
	Ligyris ruginasus		x		x
	Ochodaeus mandibularis				x
	Xeropsamobeus desertus	x			
SCOLYTIDAE	Chaetophloeus parkinsoniae	x			
STAPHYLINIDAE	Acalophaena compacta	x			x
	Aleocharinae sp. #10				x
	Aleocharinae sp. #11				x
	Lobarthium lituarium	xxx			xxx
	Neobisnius species #1				xx
	Philonthus alumnus	x			xxx
	Scopaeus species #1				x
TENEBRIONIDAE	Anemia californica	xx	xxx	xxx	xxx
	Areoschizus species #2				xx
	Batulius setosus		xx		
	Blapstinus species #1				x
	Cnemeplatia sericea	xx		x	
	Cnemodius testaceus		xxx		
	Cryproglossa verrucosa verrucosa			xx	xx
	Edrotes arens	x	xxx		xx

Edrotes ventricosus	x	xx		xxx
Eleodes armata	x	xx	xxx	
Embaphion depressum			x	x
Eupsophulus castaneus		xxx		
Eusattus muricatus	xx	xx		xxx
Mecysmus augustus			xx	xxx
Mycotrogus augustus				x
Notibius puberulus	x	xx	x	x
Triorophus nodiceps		x		xx
Ulus crassus				xx
Zopherus tristis				x

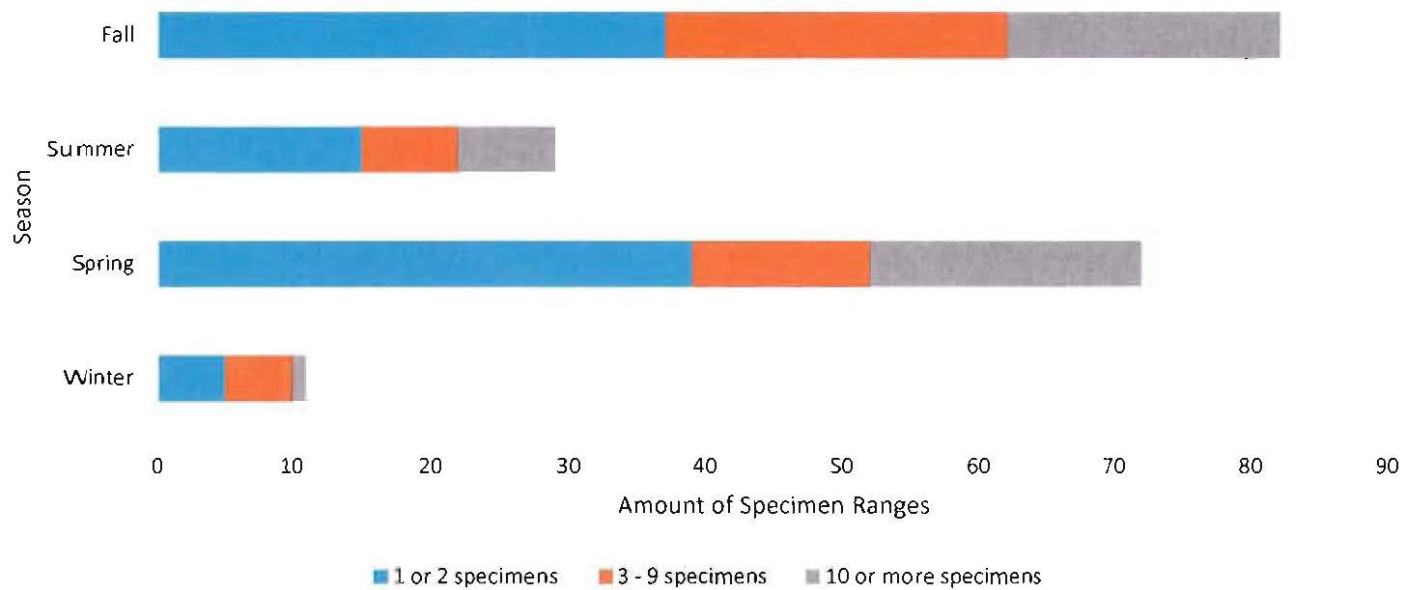
Frequency Range of Species per Season

	Winter	Spring	Summer	Fall
x	5	39	15	37
xx	5	13	7	25
xxx	1	20	7	20

Frequency Range of Species per Season

	Winter	Spring	Summer	Fall
1 or 2 specimens	5	39	15	37
3 - 9 specimens	5	13	7	25
10 or more specimens	1	20	7	20

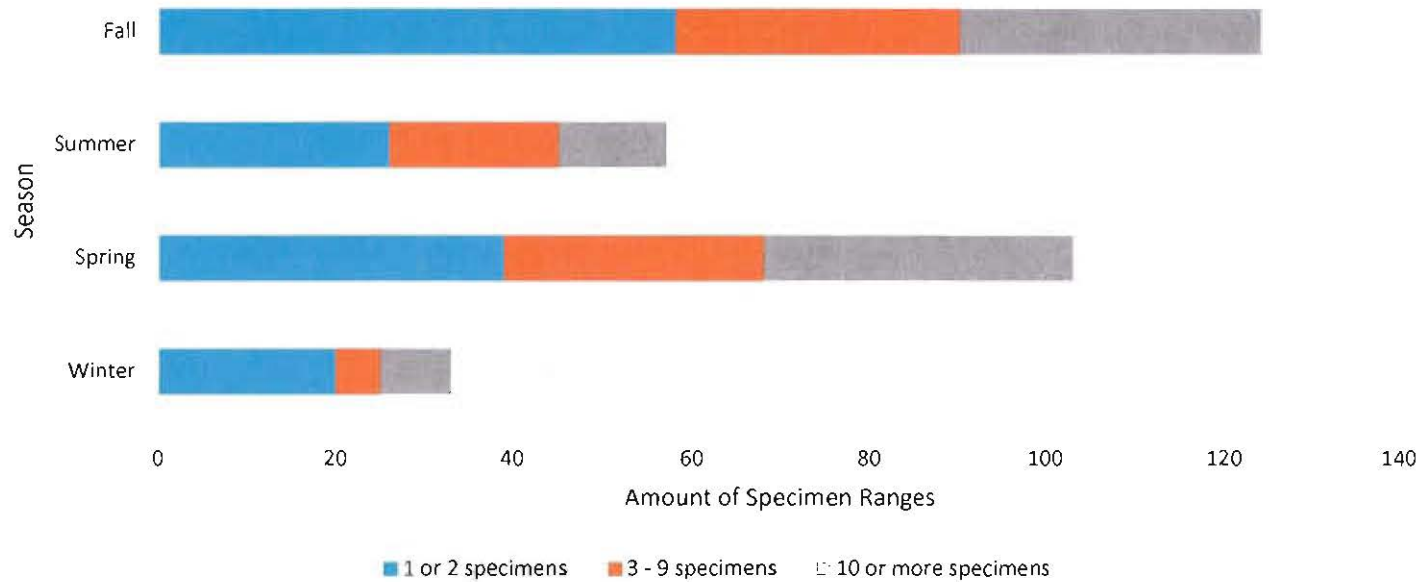
Palen Species Frequency per Season



Frequency Range of Species per Season

	Winter	Spring	Summer	Fall
<b>1 or 2 specimens</b>	20	39	26	58
<b>3 - 9 specimens</b>	5	29	19	32
<b>10 or more specimens</b>	8	35	12	34

Algodones Species Frequency per Season



	Owens				Cadiz				Rice				Palen				Algodones			
	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall
1 or 2 specimens	1	10	13	4	9	13	6	8	6	31	10	15	5	39	15	37	20	39	26	58
3 - 9 specimens	2	3	13	4	3	13	7	10	9	12	4	8	5	13	7	25	5	29	19	32
10 or more specimens	3	3	7	4	6	9	6	5	7	10	3	7	1	20	7	20	8	35	12	34

Species Frequency Each Season per Region

