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Final Report Rancho Mariano Biodiversity Surveys 2025: Select Macroinvertebrates & Herpetofauna

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Final Report Rancho Mariano Biodiversity Surveys 2025: Select Macroinvertebrates & Herpetofauna



CHEADLE CENTER FOR BIODIVERSITY AND ECOLOGICAL RESTORATION
UNIVERSITY OF CALIFORNIA, SANTA BARBARA
HARDER SOUTH, BUILDING 578
December 2025

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Highlights and Achievements

- >800 hours were spent in the field and lab to survey, image, collect, and identify macroinvertebrate, amphibian, and reptile diversity on Ventura Land Trust's Rancho Mariano Preserve
- 851 macroinvertebrate specimens were collected and incorporated into the UCSB Natural History Collection, and 32 observations were recorded.
- 190 unique taxa, 22 unique orders, and 85 unique families were collected or observed (checklist included).
- Sensitive riparian (dry river bed) and coastal sage scrub habitats are noted because of their high diversity, especially in native bees.
- *Bombus crotchii* and *Bombus californicus* were observed multiple times in two locations.
- Established 11 sampling sites for macroinvertebrates to allow for long-term sampling and historical comparisons
- 20 species of native amphibians and reptiles occur on Ventura Land Trust's Rancho Mariano Preserve based on historical records, observations, and survey results
- One species, Blainville's Horned Lizard (*Phrynosoma blainvillii*), is considered likely extirpated from Rancho Mariano Preserve
- Established 13 arrays of 10 coverboards sited to test hypotheses about the effect of historical land management and vegetation on herpetofauna and macroinvertebrate diversity
- Piloted two camera trap drift fence arrays for passive monitoring of amphibians and reptiles. Four species were recorded from October-November
- Created the VLT_RanchoMariano_Atlas_app, a shared ESRI ArcGIS Online map of biodiversity monitoring resources for Rancho Mariano Preserve

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& Ecological Restoration

Rancho Mariano Biodiversity Survey 2025: Select Macroinvertebrates

Prepared by K.C Seltmann, C. J. Evelyn, and R. Tang



Raphidiidae (snake fly - top), Cylindromyia *(parasitic tachinid fly - left) and* Synanthedon polygoni *(buckwheat root borer moth - bottom right)*

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Summary

- 851 macroinvertebrate specimens were collected and incorporated into the UCSB Natural History Collection, and 32 observations were recorded.
- 190 unique taxa, 22 unique orders and 85 unique families were collected or observed (checklist included).
- Sensitive riparian (dry river bed) and coastal sage scrub habitats are noted because of their high diversity, especially in native bees.
- *Bombus crotchii* and *Bombus californicus* were observed multiple times in two locations.

Overall Invertebrate Diversity

We targeted incidental collecting through hand collection (i.e., nets) on flowers and under cover boards. Thus, flower visiting and terrestrial invertebrates who like to hide under wood were the most commonly collected taxa.

Order (higher taxonomy)	Common name	Records	Taxa	Families
Hymenoptera	Bees, wasps, ants	194	61	14
Coleoptera	Beetles	155	41	16
Isopoda	Woodlice/pillbugs	152	5	3
Diptera	Flies	86	28	16
Araneae	Spiders	65	5	4
Hemiptera	True bugs, hoppers, aphids	47	22	9
Orthoptera	Grasshoppers, crickets, katydids	40	6	7
Stylommatophora	Land snails and slugs	21	2	2
Lepidoptera	Moths and butterflies	8	5	4
Odonata	Dragonflies and damselflies	6	3	3
Lithobiomorpha	Stone centipedes	5	1	1
Opiliones	Harvestmen (daddy longlegs)	3	1	0
Scolopendromorpha or Lithobiomorpha	Centipedes (order uncertain)	2	1	1

Zygentoma	Silverfish and firebrats	2	1	1
Ephemeroptera	Mayflies	2	1	1
Ixodida	Ticks	1	1	1
Opisthopora	Earthworms	1	1	1
Raphidioptera	Snakeflies	1	1	1
Dermaptera	Earwigs	1	1	1
Spirobolida	Millipedes	1	1	1
Blattodea	Cockroaches and termites	1	1	0
Acari	Mites and ticks (Acari)	1	1	0

Table 1: Overall invertebrate diversity grouped by order. Specimens are the number of individuals collected or observed, taxa is the number of unique taxa identified, and families is the family-level representation of those taxonomic groups.

Preliminary Taxon List

Table 2 is a preliminary checklist of invertebrates, including order, family, and lowest determination achieved to date (scientificName). Common names and the number of specimens/observations recorded (records) are also included.

There is an obvious trend of a long tail of diversity, meaning we found 190 unique scientificName values, and 111 of them occur only once (singletons). So richness is high, but many taxa are rare in the dataset. A few orders dominate the specimen counts. Of 852 specimens, the top three orders are Hymenoptera (194; ~22.8%), Coleoptera (155; ~18.2%), and Isopoda (152; ~17.8%) — together ~58.8% of all specimens.

Abundance is concentrated in a handful of taxa. These very abundant taxa are likely important food resources for invertebrates and vertebrates under cover boards (Porcellio or Porcellionides: 82 specimens; Armadillidium or Venezillo: 61 specimens).

Several groups are mostly identified only to a high rank. These likely contain a high level of hidden diversity that will come out with further identification.

- Formicidae (ants): 82 specimens (and ~42% of Hymenoptera specimens)
- Araneae: 65 spider specimens, but 60 are labeled just “Araneae” (~92% of spider specimens).
- Diptera: 86 fly specimens, but 53 are labeled just “Diptera” (~62% of fly specimens).

Identification of invertebrates can be challenging because of the sheer numbers, and taxonomic resolution is mixed (and often coarse). Looking only at specimens ~17% are entered as a clear species name (largely in bees), ~21% are family-level (often ending

in "-idae"), ~19% are uncertain, but known to be different ("A or B" style morphospecies names), and ~34% are genus-or-higher identifications.

The aquatic invertebrates, from only one day of sampling, included 4 species of predaceous diving beetles that should continue to be identified as some of these are species of special concern in California.

Order	Family	Scientific name	ID Level	Common name	Records
Acari		Acari	genus/above	Mites and ticks	1
Araneae	Dysderidae	*Dysdera crocata*	species/infra	Woodlouse hunter	3
Araneae	Lycosidae	Lycosidae	genus/above	Wolf spiders	1
Araneae	Salticidae	Salticidae	genus/above	Jumping spiders	1
Araneae	Theraphosidae	Theraphosidae	genus/above	Tarantulas	1
Araneae		Araneae	genus/above	Spiders	60
Blattodea		Blattodea	genus/above	Cockroaches and termites	1
Coleoptera	Cantharidae	*Pacificanthia consors*	species/infra	Beetles	1
Coleoptera	Carabidae	*Amara*	genus/above	Ground beetles	1
Coleoptera	Carabidae	*Bembidion impotens*	species/infra	Ground beetles	3
Coleoptera	Carabidae	*Calathus ruficollis*	species/infra	Ground beetles	6
Coleoptera	Carabidae	Carabidae	genus/above	Ground beetles	2
Coleoptera	Carabidae	*Pterostichus*	genus/above	Ground beetles (genus)	20
Coleoptera	Carabidae	*Pterostichus* (*Hypherpes*)	subgenus	Ground beetles	2
Coleoptera	Carabidae	*Tanystoma*	genus/above	Ground beetles	1
Coleoptera	Carabidae	*Trechus*	genus/above	Ground beetles	2
Coleoptera	Chrysomelidae	Chrysomelidae	genus/above	Leaf beetles	1
Coleoptera	Chrysomelidae	*Saxinis*	genus/above	Leaf beetles	1
Coleoptera	Cleridae	*Cymatodera vandykei*	species/infra	Beetles	1
Coleoptera	Coccinellidae	*Coccinella*	genus/above	Lady beetles	1
Coleoptera	Coccinellidae	*Hippodamia convergens*	species/infra	Convergent lady beetle	1
Coleoptera	Coccinellidae	*Hyperaspis quadrioculata*	species/infra	Lady beetles	1

Coleoptera	Crabronidae	Crabronidae	genus/above	Square-headed wasps (family)	4
Coleoptera	Curculionidae	Curculionidae	genus/above	Weevils	5
Coleoptera	Dytiscidae	Dytiscidae	genus/above	Predaceous diving beetles	1
Coleoptera	Dytiscidae	*Hygrotus*	genus/above	Predaceous diving beetles	1
Coleoptera	Dytiscidae	*Oredodytes* or *Stictotarsus*	species/infra	Predaceous diving beetles	1
Coleoptera	Dytiscidae	*Oreodytes* or *Heterosternuta*	species/infra	Predaceous diving beetles	1
Coleoptera	Hydrophilidae	*Hydrochara*	genus/above	Beetles	2
Coleoptera	Hydrophilidae	*Hydrophilus*	genus/above	Beetles	3
Coleoptera	Hydrophilidae	*Laccobius*	genus/above	Beetles	2
Coleoptera	Kateretidae	*Amarcus tinctus*	species/infra	Beetles	1
Coleoptera	Meloidae	*Lytta*	genus/above	Beetles	3
Coleoptera	Meloidae	*Lytta lugens*	species/infra	Beetles	1
Coleoptera	Phalacridae	Phalacridae	genus/above	Shining flower beetles	1
Coleoptera	Pyrochroidae	*Pedilus*	genus/above	Beetles	3
Coleoptera	Pyrochroidae	*Pedilus bardii*	species/infra	Beetles	1
Coleoptera	Pyrochroidae	*Pedilus vittatus*	species/infra	Beetles	1
Coleoptera	Staphylinidae	Staphylinidae	genus/above	Rove beetles	1
Coleoptera	Tenebrionidae	*Apsena*	genus/above	Darkling beetles	1
Coleoptera	Tenebrionidae	*Blapstinus*	genus/above	Darkling beetles	4
Coleoptera	Tenebrionidae	*Eleodes*	genus/above	Darkling beetles (genus)	21
Coleoptera	Tenebrionidae	*Eleodes acuticauda*	species/infra	Darkling beetles	5
Coleoptera	Tenebrionidae	*Eleodes dentipes*	species/infra	Darkling beetles	4
Coleoptera	Tenebrionidae	*Eleodes osculans*	species/infra	Darkling beetles	17
Coleoptera	Tenebrionidae	Nyctoporis cristata	species/infra	Darkling beetles	8
Coleoptera	Zopheridae	*Phloeodes diabolicus*	species/infra	Diabolical ironclad beetle	1
Coleoptera		Coleoptera	genus/above	Beetles	19
Dermaptera	Forficulidae	*Forficula auricularia*	species/infra	European earwig	1

Diptera	Anthomyiidae	Anthomyiidae	genus/above	Root-maggot flies (family)	1
Diptera	Asilidae	Asilidae	genus/above	Robber flies	1
Diptera	Bibionidae	*Bibio albipennis*	species/infra	March flies (family)	1
Diptera	Bombyliidae	Anthracinae	genus/above	Bee flies	2
Diptera	Bombyliidae	Bombyliidae	genus/above	Bee flies	4
Diptera	Chironomidae	Chironomidae	genus/above	Non-biting midges	1
Diptera	Chironomidae	*Chironomus*	genus/above	Non-biting midges	1
Diptera	Chironomidae	*Radotanypus*	genus/above	Non-biting midges	1
Diptera	Culicidae	*Aedes*	genus/above	Mosquitoes (genus)	1
Diptera	Culicidae	*Culex*	genus/above	Mosquitoes (genus)	1
Diptera	Dixidae	Dixidae	genus/above	Meniscus midges	1
Diptera	Empididae	*Empis*	genus/above	Flies	2
Diptera	Heleomyzidae	*Pseudoleria*	genus/above	Flies	1
Diptera	Sarcophagidae	Sarcophaginae	genus/above	Flies	1
Diptera	Stratiomyidae	*Stratiomys maculosa*	species/infra	Flies	1
Diptera	Syrphidae	*Chrysotoxum chinook*	species/infra	Hoverflies	1
Diptera	Syrphidae	*Paragus haemorrhous*	species/infra	Hoverflies	1
Diptera	Syrphidae	*Sphaerophoria sulphuripes*	species/infra	Hoverflies	1
Diptera	Syrphidae	Syrphidae	genus/above	Hoverflies	1
Diptera	Syrphidae	*Syrphus opinator*	species/infra	Hoverflies	1
Diptera	Tachinidae	*Cylindromyia*	genus/above	Tachinid flies	1
Diptera	Tachinidae	*Gymnoclytia*	genus/above	Tachinid flies	1
Diptera	Tachinidae	*Peletaria* or *Deopalpus*	species/infra	Tachinid flies	1
Diptera	Tachinidae	Tachinidae	genus/above	Tachinid flies	1
Diptera	Ulidiidae	Ulidiidae	genus/above	Picture-winged flies	1
Diptera	Xylophagidae	*Rachicerus honestus*	species/infra	Flies	1
Diptera		Diptera	genus/above	Flies	53
Diptera		Muscoidea	genus/above	Flies	1
Ephemeroptera	Baetidae	*Callibaetis*	genus/above	Mayflies	2
Hemiptera	Andrenidae	*Perdita*	genus/above	Mining bees	1

Hemiptera	Aphididae	Aphididae	genus/above	Aphids	5
Hemiptera	Cicadellidae	Cicadellidae	genus/above	Leafhoppers	1
Hemiptera	Cicadellidae	*Euscelidius*	genus/above	Leafhoppers	1
Hemiptera	Lygaeidae	Lygaeidae	genus/above	Seed bugs	2
Hemiptera	Lygaeidae	*Melacoryphus*	genus/above	Seed bugs	1
Hemiptera	Lygaeidae	*Melanopleurus belfragei*	species/infra	Seed bugs	2
Hemiptera	Miridae	*Closterocoris amoenus*	species/infra	Plant bugs	1
Hemiptera	Miridae	*Closterotomus norvegicus*	species/infra	Plant bugs	1
Hemiptera	Miridae	*Lygus*	genus/above	Plant bugs	1
Hemiptera	Miridae	Miridae	genus/above	Plant bugs	2
Hemiptera	Miridae	*Nysius* sp.	genus (sp.)	Plant bugs	1
Hemiptera	Nabidae	Nabidae	genus/above	Damsel bugs	1
Hemiptera	Pentatomidae	*Bagrada hilaris*	species/infra	Bagrada bug	1
Hemiptera	Pentatomidae	Pentatomidae	genus/above	Stink bugs	9
Hemiptera	Reduviidae	*Apiomerus*	genus/above	Assassin bugs	1
Hemiptera	Reduviidae	*Oncocephalus*	genus/above	Assassin bugs	1
Hemiptera	Reduviidae	Reduviidae	genus/above	Assassin bugs	1
Hemiptera	Rhyparochromidae	*Pseudopamera*	genus/above	True bugs, hoppers, aphids	1
Hemiptera		Fulgoroidea	genus/above	True bugs, hoppers, aphids	1
Hemiptera		*Fulgoromorpha*	genus/above	True bugs, hoppers, aphids	1
Hemiptera		Hemiptera	genus/above	True bugs, hoppers, aphids	10
Hymenoptera	Andrenidae	*Andrena*	genus/above	Mining bees (genus)	2
Hymenoptera	Andrenidae	*Andrena auricoma*	species/infra	Mining bees	4
Hymenoptera	Andrenidae	*Andrena gnaphalii*	species/infra	Mining bees	3
Hymenoptera	Andrenidae	*Andrena* sola	species/infra	Mining bees	1
Hymenoptera	Andrenidae	*Andrena* sp. A	genus (sp.)	Mining bees	3
Hymenoptera	Andrenidae	*Andrena* sp. B	genus (sp.)	Mining bees	2

Hymenoptera	Andrenidae	*Andrena* sp. C	genus (sp.)	Mining bees	1
Hymenoptera	Andrenidae	*Calliopsis*	genus/above	Mining bees	1
Hymenoptera	Apidae	*Anthophora urbana*	species/infra	Honey bees, bumble bees, carpenter bees (family)	1
Hymenoptera	Apidae	*Apis mellifera*	species/infra	Western honey bee	3
Hymenoptera	Apidae	*Bombus californicus*	species/infra	Honey bees, bumble bees, carpenter bees (family)	6
Hymenoptera	Apidae	*Bombus crotchii*	species/infra	Crotch bumble bee	4
Hymenoptera	Apidae	*Bombus melanopygus*	species/infra	Honey bees, bumble bees, carpenter bees (family)	1
Hymenoptera	Apidae	*Bombus vosnesenskii*	species/infra	Yellow-faced bumblebee	11
Hymenoptera	Apidae	*Ceratina nanula*	species/infra	Honey bees, bumble bees, carpenter bees (family)	4
Hymenoptera	Apidae	*Diadaisa bituberculata*	species/infra	Honey bees, bumble bees, carpenter bees (family)	1
Hymenoptera	Apidae	*Diadasia*	genus/above	Honey bees, bumble bees, carpenter bees (family)	1
Hymenoptera	Apidae	*Diadasia bituberculata*	species/infra	Honey bees, bumble bees, carpenter bees (family)	10
Hymenoptera	Apidae	*Eucera*	genus/above	Honey bees, bumble bees, carpenter bees (family)	1
Hymenoptera	Apidae	*Melissodes lupinus*	species/infra	Honey bees, bumble bees, carpenter bees (family)	1

Hymenoptera	Apidae	*Nomada*	genus/above	Honey bees, bumble bees, carpenter bees (family)	1
Hymenoptera	Apidae	*Nomada* (*Holonomada*)	other	Honey bees, bumble bees, carpenter bees (family)	1
Hymenoptera	Apidae	*Triepeolus*	genus/above	Honey bees, bumble bees, carpenter bees (family)	2
Hymenoptera	Apidae	*Xylocopa sonorina/californica*	species/infra	Honey bees, bumble bees, carpenter bees (family)	1
Hymenoptera	Apidae	*Xylocopa tabaniformis*	species/infra	Honey bees, bumble bees, carpenter bees (family)	1
Hymenoptera	Colletidae	*Colletes sleveni*	species/infra	Bees, wasps, ants	2
Hymenoptera	Colletidae	*Hylaeus*	genus/above	Bees, wasps, ants	2
Hymenoptera	Crabronidae	Crabronidae	genus/above	Square-headed wasps (family)	4
Hymenoptera	Formicidae	Formicidae	genus/above	Ants	82
Hymenoptera	Formicidae	*Pogonomyrmex californicus*	species/infra	Ants	1
Hymenoptera	Halicitidae	*Agapostemon*	genus/above	Sweat bees (family)	1
Hymenoptera	Halicitidae	*Agapostemon or Augochlora*	species/infra	Sweat bees (family)	1
Hymenoptera	Halicitidae	*Agapostemon subtilior*	species/infra	Sweat bees (family)	5
Hymenoptera	Halictidae	*Augochlorella pomoniella*	species/infra	Sweat bees	1
Hymenoptera	Halictidae	*Dufourea trochantera*	species/infra	Sweat bees	3
Hymenoptera	Halictidae	*Halictus ligatus*	species/infra	Sweat bees	2
Hymenoptera	Halictidae	*Halictus rubicundus*	species/infra	Sweat bees	3
Hymenoptera	Halictidae	*Halictus* sp.	genus (sp.)	Sweat bees	1
Hymenoptera	Halictidae	*Halictus tripartitus*	species/infra	Sweat bees	5

Hymenoptera	Halictidae	*Lasioglossum*	genus/above	Sweat bees (genus)	7
Hymenoptera	Halictidae	*Lasioglossum* (*Dialictus*)	other	Sweat bees	5
Hymenoptera	Halictidae	*Lasioglossum* (*Evylaeus*)	other	Sweat bees	1
Hymenoptera	Halictidae	*Lasioglossum kincaidii*	species/infra	Sweat bees	3
Hymenoptera	Halictidae	*Lasioglossum sisymbrii*	species/infra	Sweat bees	6
Hymenoptera	Halictidae	*Sphecodes*	genus/above	Sweat bees	1
Hymenoptera	Ichneumonidae	*Netelia*	genus/above	Bees, wasps, ants	1
Hymenoptera	Megachilidae	*Anthidium collectum*	species/infra	Leafcutter & mason bees	2
Hymenoptera	Megachilidae	*Anthidium maculosum*	species/infra	Leafcutter & mason bees	1
Hymenoptera	Megachilidae	*Atoposmia*	genus/above	Leafcutter & mason bees	1
Hymenoptera	Megachilidae	*Hoplitis grinnelli*	species/infra	Leafcutter & mason bees	1
Hymenoptera	Megachilidae	*Hoplitis producta gracilis*	species/infra	Leafcutter & mason bees	1
Hymenoptera	Megachilidae	*Megachile*	genus/above	Leafcutter bees (genus)	1
Hymenoptera	Megachilidae	*Megachile brevis*	species/infra	Leafcutter & mason bees	1
Hymenoptera	Megachilidae	*Osmia aglaia*	species/infra	Leafcutter & mason bees	1
Hymenoptera	Megachilidae	*Osmia clarescens*	species/infra	Leafcutter & mason bees	1
Hymenoptera	Megachilidae	*Stelis montana*	species/infra	Leafcutter & mason bees	1
Hymenoptera	Mtuillidae	*Dasymutilla*	genus/above	Bees, wasps, ants	1
Hymenoptera	Mutillidae	*Dasymutilla*	genus/above	Bees, wasps, ants	2
Hymenoptera	Pompilidae	Pompilidae	genus/above	Spider wasps	1
Hymenoptera	Sphecidae	Sphecidae	genus/above	Thread-waisted wasps (family)	1
Hymenoptera	Tenthredinidae	Tenthredinidae	genus/above	Sawflies	2
Hymenoptera		Hymenoptera	genus/above	Bees, wasps, ants	2

Isopoda	Armadillidiidae	Armadillidiidae	genus/above	Pill woodlice (family)	3
Isopoda	Armadillidiidae	*Armadillidium* or *Venezillo*	species/infra	Pill woodlice (family)	60
Isopoda	Armadillidiidae	*Armadillidium vulgares*	species/infra	Pill woodlice (family)	2
Isopoda	Armadillidiidae	*Armadillium* or *Venezillo*	species/infra	Pill woodlice (family)	4
Isopoda	Armadillidiidate	*Armadillidium* or *Venezillo*	species/infra	Woodlice/pillbugs	1
Isopoda	Porcellionidae	*Porcellio* or *Porcellionides*	species/infra	Woodlice/pillbugs	82
Ixodida	Ixodidae	Ixodidae	genus/above	Hard ticks	1
Lepidoptera	Lyacaenidae	*Glaucopsyche lygdamus*	species/infra	Moths and butterflies	1
Lepidoptera	Lycaenidae	*Callophrys dumetorum*	species/infra	Moths and butterflies	2
Lepidoptera	Lycaenidae	*Glaucopsyche lygdamus*	species/infra	Moths and butterflies	2
Lepidoptera	Pieridae	*Pieris rapae*	species/infra	Cabbage white (butterfly)	1
Lepidoptera	Sesiidae	*Synanthedon polygoni*	species/infra	Moths and butterflies	1
Lepidoptera		Lepidoptera	genus/above	Moths and butterflies	1
Lithobiomorpha	Lithobiidae	Lithobiidae	genus/above	Stone centipedes (family)	5
Odonata	Coenagrionidae	*Argia*	genus/above	Damselflies (genus)	3
Odonata	Lestidae	*Archilestes*	genus/above	Spreadwings (genus)	2
Odonata	Libellulidae	*Libellula* or *Pseudoleon*	species/infra	Dragonflies and damselflies	1
Opiliones		*Opiliones*	genus/above	Harvestmen	3
Opisthopora	Lumbricidae	*Lumbricina*	genus/above	Earthworms	1
Orthoptera	Acrididae	*Schistocerca nitens*	species/infra	Gray bird grasshopper	2
Orthoptera	Gryllidae	*Gryllus*	genus/above	Field crickets (genus)	1

Orthoptera	Rhaphidophoridae	Rhaphidophoridae	genus/above	Cave/camel crickets	14
Orthoptera	Rhaphidophoridae?	Rhaphidophoridae	genus/above	Grasshoppers, crickets, katydids	1
Orthoptera	Rhaphidorphoridae	Rhaphidophoridae	genus/above	Grasshoppers, crickets, katydids	1
Orthoptera	Stenopelmatidae	*Ammopelmatus*	genus/above	Jerusalem crickets	19
Orthoptera	Tettigoniidae	Tettigoniidae	genus/above	Katydids	1
Orthoptera		Orthoptera	genus/above	Grasshoppers, crickets, katydids	1
Raphidioptera	Rhaphidiidae	Rhaphidiidae	genus/above	Snakeflies (family)	1
Scolopendromorpha or Lithobiomorpha	Scolopendridae or Lithobiidae	Scolopendridae or Lithobiidae	species/infra	Centipedes (order uncertain)	2
Spirobolida	Spirobolidae	*Tylobus*	genus/above	Millipedes	1
Stylommatophora	Helicidae	Helicidae	genus/above	Typical snails (family)	10
Stylommatophora	Limacidae or Milacidae	Limacidae or Milacidae	species/infra	Land snails and slugs	11
Zygentoma	Lepismatidae	Lepismatidae	genus/above	Silverfish (family)	2
		Insecta	genus/above		1

Table 2: Preliminary checklist of invertebrates.

Bumble Bees

Four different bumblebee species were observed. *Bombus crotchii* (Crotch's bumble bee) is a species endemic to California and is currently listed as a candidate endangered species under the California Endangered Species Act (CESA). It is also classified as Endangered by the IUCN and as Imperiled (G2) by NatureServe. This species has experienced significant range contraction and population decline, particularly in coastal and low-elevation inland habitats. These declines are likely driven by a combination of habitat loss, agricultural intensification, pesticide exposure, and climate change. Three Crotch's bumblebee queens were seen. Two were found on the Ridgeline Trail (34.286346, -119.261077) and one in the riparian area on Hall Canyon Road (34.303655, -119.255502).

Bombus californicus (synonym: *Bombus fervidus*) is not currently considered a California Species of Special Concern but is considered Vulnerable by the IUCN and as Vulnerable (G3) by NatureServe. One *B. californicus* was found near the Ridgeline Trail.

Bombus vosnesenskii and *Bombus melanopygus* are considered Secure (G5) by NatureServe.

Bee Community & Floral Visitation

A major concentration of our invertebrate survey was conducted on the bee communities which were incredibly rich. Across the trips, we found 127 bee records total (97 specimens + 30 observations).

Family	Records	Taxa	Genera
Halictidae	45	15	6
Apidae	50	17	11
Andrenidae	17	8	2
Megachilidae	11	10	6
Colletidae	4	2	2

Table 3: Bees in 5 families and 27 different genera were collected.

One indication of bee community richness, besides overall diversity, are the number of social parasitic bee taxa. We found 4 just in the coastal sage scrub habitat near Ridgeline Trail. We also saw other bee parasites, including Bombyliidae flies (bee flies) and Mutillidae wasps (velvet ants). To put this in context, at UCSB on our restored sage scrub habitat, including Coal Oil Point Reserve, I have only seen one cuckoo bee in all my years collecting at these locations.

- Cuckoo bees (*Triepeolus*) — 2 specimens (2 records). Often associated with long-horned/digger bee hosts (e.g., *Diadasia*, *Melissodes* groups).
- Cuckoo bees (*Nomada*) — 2 specimens (2 records; one entered as Nomada (Holonomada)). Typically parasites of *Andrena* and related hosts.
- Cuckoo sweat bee (*Sphecodes*) — 1 specimen (1 record). A cleptoparasite on other sweat bees.
- Cuckoo leafcutter/mason bee (*Stelis montana*) — 1 specimen (1 record). A cleptoparasite on megachilid hosts (mason/leafcutter bees).

Out of 122 bee records, 43 include an explicit floral visitation (bee was collected on the flower). The most frequently recorded flower is *Calystegia macrostegia* (15 observations), and it also shows the broadest taxonomic use (11 bee taxa spanning Andrenidae, Apidae, and Halictidae). Within those Calystegia records, the most common visitors are *Ceratina nanula* (3), *Bombus vosnesenskii* (2), and *Lasioglossum*

sisymbrii (2), with the rest appearing once each. The next most frequent plant is *Encelia californica* (7 observations), which has seven different bee taxa, each recorded once, spanning Andrenidae, Colletidae, Halictidae, and Megachilidae. *Phacelia distans* appears 5 times and is strongly associated with *Dufourea trochantera*, with the remaining records attributed to *Lasioglossum*. *Brassica nigra* (4 observations) and *Acmispon glaber* (3 observations) round out the most common plants, each with a small mix of bee taxa. The remaining plants are singletons, including *Eschscholzia californica*, *Glebionis coronaria*, *Hirschfeldia incana*, *Rhamphospermum nigra*, and broader/uncertain labels such as *Astragalus*, *Salix* (willow), and "sage." Overall, the visitation notes suggest bee activity concentrated on a few abundant bloom sources (*Calystegia*, *Encelia*, and *Phacelia*), with several records involving weedy or non-native flowering plants (e.g., *Brassica*, *Hirschfeldia*, *Glebionis*) alongside native forbs/shrubs (e.g., *Encelia*, *Phacelia*, *Eschscholzia*).

Plant	Bee Scientific name
Acmispon glaber	*Andrena* sp. C
Acmispon glaber	*Anthidium maculosum*
Acmispon glaber	*Bombus vosnesenskii*
Astragalus (milkvetch)	*Bombus vosnesenskii*
Brassica nigra	*Andrena*
Brassica nigra	*Apis mellifera*
Brassica nigra	*Lasioglossum*
Brassica nigra	*Lasioglossum sisymbrii*
Calystegia macrostegia	*Ceratina nanula*
Calystegia macrostegia	*Bombus vosnesenskii*
Calystegia macrostegia	*Lasioglossum sisymbrii*
Calystegia macrostegia	*Agapostemon subtilior*
Calystegia macrostegia	*Andrena gnaphalii*
Calystegia macrostegia	*Apis mellifera*
Calystegia macrostegia	*Augochlorella pomoniella*
Calystegia macrostegia	*Bombus californicus*
Calystegia macrostegia	*Bombus melanopygus*
Calystegia macrostegia	*Eucera*
Calystegia macrostegia	*Halictus rubicundus*
Dichelostemma capitatum	*Bombus vosnesenskii*

Table 4: Bee species and associated plants when observed

Dipterostemon capitatus	*Bombus vosnesenskii*
Encelia californica	*Agapostemon or Augochlora*
Encelia californica	*Andrena auricoma*
Encelia californica	*Anthidium collectum*
Encelia californica	*Anthidium maculosum*
Encelia californica	*Colletes sleveni*
Encelia californica	*Halictus tripartitus*
Encelia californica	*Lasioglossum*
Eschscholzia californica	*Halictus rubicundus*
Glebionis coronaria	*Calliopsis*
Hirschfeldia incana	*Andrena sola*
Phacelia distans	*Dufourea trochantera*
Phacelia distans	*Lasioglossum*
Phacelia distans	*Lasioglossum sisymbrii*
Rhamphospermum nigra	*Andrena auricoma*
Salix (willow)	*Bombus crotchii*
sage (unidentified)	*Bombus californicus*

There are several pollen specialists (oligolectic bees), or species whose females provision brood with pollen from a narrow set of host plants. The most conspicuous is *Diadasia bituberculata*, which is a bindweed/morning-glory specialist that focuses its pollen collecting on *Calystegia* and *Convolvulus* (Convolvulaceae). *Dufourea trochantera* is a *Phacelia* specialist, *Melissodes lupinus* is specialized on Asteraceae pollen (composites) and *Andrena gnaphalii* is oligolectic on *Agoseris* (Asteracea).

Management Recommendations

- It is my (Katja Seltmann) expert opinion that the Ridgeline Road sage scrub habitat is an exemplary example of native bee communities. Reference sites for native bee restoration and research of this quality are rarely available and it should be protected. Some preliminary recommendations include:
    - Remove or control for wild honey bee nests to prevent competition with native bee communities.

    - Reduction of vehicular traffic on Ridgeline Road. The *Diadasia bituberculata* aggregation on Ridgeline Road is a very large and healthy aggregation, even with co-nesting of other bee species and diverse parasite communities (to bee biologists, this is a good thing). Meaning this aggregation is likely quite old and deserves the protection as any other aged species (i.e., old trees).
- I also recommend continued study of the riparian areas on-site. The bee communities and aquatic communities in these areas were exceptional, including the discovery of diverse and prolific *Andrena* nests in the riverbeds and Crotch's bumblebee queens. The aquatic invertebrates included multiple species of predaceous diving beetles that should be identified to species, as some of these are of special concern in California.

UC SANTA BARBARA
Cheadle Center for Biodiversity
& Ecological Restoration

Amphibians and Reptiles 2025

Prepared by C. J. Evelyn and R. Tang



Three lizards at left: Alligator lizard (motion-trigger camera), middle left Western Skink (coverboard), Western Fence Lizard (hiding in cracked soil on degraded slope). Our coastal gopher snake subspecies Pituophis Catenifer annectens under a coverboard.

Cheadle Center for Biodiversity and Ecological Restoration
UNIVERSITY OF CALIFORNIA, SANTA BARBARA
HARDER SOUTH, BUILDING 578
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Summary

- 20 species of native amphibians and reptiles occur on Ventura Land Trust's Rancho Mariano Preserve based on historical records, observations, and survey results
- One species, Blainville's Horned Lizard (*Phrynosoma blainvillii*), is considered likely extirpated from Rancho Mariano Preserve
- Established 13 arrays of 10 coverboards sited to test hypotheses about the effect of historical land management and vegetation on herpetofauna and macroinvertebrate diversity
- Piloted two camera trap drift fence arrays for passive monitoring of amphibians and reptiles. Four species were recorded from October to November

Overall Herpetofauna Diversity

Rancho Mariano Preserve is likely home to at least 20 species of native amphibians and reptiles. This is based on species range overlap with the Preserve and by a combination of historical museum records and recent observations. In total 67 species were considered as candidates for inclusion based on their known ranges within Ventura County. Museum records, iNaturalist records, and expert opinion were then used to pair the list down and assign an occurrence status (Observed, Likely, Possible, Unlikely, or Extirpated?) for each species. Conservation status of each species was determined using reference to the California Department of Fish and Wildlife Special Animals List (CDFW 2025), NatureServe (2025), International Union of Concerned Scientists (2025), and the US Department of Fish and Wildlife (2025).

Scientific name	Common name	Occurrence	Order	Record	Most recent	Fed. ESA	CDFW
Anaxyrus boreas	Western Toad	Observed	Anura	Survey	2025	None	None
Pseudacris hypochondriaca (*regilla*)	Baja California Treefrog	Observed	Anura	Survey	2025	None	None
Aneides lugubris	Arboreal Salamander	Observed	Caudata	iNat (within 1km)	2024	None	None
Batrachoseps nigriventris	Black-bellied Salamander	Observed	Caudata	Photo	2025	None	None
Elgaria multicarinata	Southern Alligator Lizard	Observed	Squamata	Cam. Drift	2025	None	None

				Fen.			
Anniella pulchra	California Legless Lizard	Observed	Squamata	Physical	2025	None	SSC
Sceloporus occidentalis	Western Fence Lizard	Observed	Squamata	Survey	2025	None	None
Uta stansburiana	Common Side-blotched Lizard	Observed	Squamata	Photo	2025	None	None
Plestiodon skiltonianus	Western Skink	Observed	Squamata	Photo	2025	None	None
Aspidoscelis tigris	Tiger Whiptail	Observed	Squamata	Survey	2025	None	SSC
Hypsiglena ochrorhyncha	Coast Nightsnake	Observed	Squamata	iNat (within 1km)	2021	None	None
Pituophis catenifer annectens	San Diego Gophersnake	Observed	Squamata	Cover-board	2025	None	None
Tantilla planiceps	Western Black-headed Snake	Observed	Squamata	iNat	2024	None	None
Thamnophis sirtalis	Common Gartersnake	Observed	Squamata	Photo	2025	None	SSC
Crotalus oreganus	Western Rattlesnake	Observed	Squamata	Photo	2025	None	None
Ensatina eschscholtzii	Monterey Ensatina	Likely	Caudata	County		None	None
Diadophis punctatus modestus	Ring-necked Snake	Likely	Squamata	iNat (within 1km)	2024	None	Special
Lampropeltis californiae	California Kingsnake	Likely	Squamata	iNat	2025	None	None
Masticophis lateralis	Striped Racer	Likely	Squamata	Cam. Drift Fen.	2025	None	None
Salvadora hexalepis virgultea	Western Patch-nosed Snake	Likely	Squamata	County		None	SSC
Phrynosoma blainvillii	Blainville's Horned Lizard	Extirpated?	Squamata	Physical (within	1947	None	SSC

				1km)			

Table 5: Herpetofauna species expected on Rancho Mariano Preserve. Survey, Coverboard, and Camera Drift Fence records refer to fieldwork by the authors. SSC indicates a California Species of Special Concern.

Scientific name	Common name	Class	Order	Institution	Records	Year
Pseudacris cadaverina	California Treefrog	Amphibia	Anura (frogs/toads)	U. Mich.	1	1940
Pseudacris regilla	Pacific Treefrog	Amphibia	Anura (frogs/toads)	U. Mich.	1	1940
Rana aurora	California Red-legged Frog	Amphibia	Anura (frogs/toads)	U. Mich.	2	1940
Rana boylii	Foothill Yellow-legged Frog	Amphibia	Anura (frogs/toads)	U. Mich.	1	1940
Aneides lugubris	Arboreal Salamander	Amphibia	Caudata (salamanders)	SBMNH	1	1997
Aneides lugubris	Arboreal Salamander	Amphibia	Caudata (salamanders)	UCB MVZ	1	1942
Batrachoseps nigriventris	Black-bellied Salamander	Amphibia	Caudata (salamanders)	UCB MVZ	8	2002 – 2005
Batrachoseps nigriventris	Black-bellied Salamander	Amphibia	Caudata (salamanders)	SBMNH	3	1997
Diadophis punctatus modestus	Ring-necked Snake	Reptilia	Squamata (lizards/snakes)	LACM	1	1907
Masticophis lateralis lateralis	California Striped Racer	Reptilia	Squamata (lizards/snakes)	CAS	1	1949
Phrynosoma blainvillii	Blainville's Horned Lizard	Reptilia	Squamata (lizards/snakes)	Harvard	2	N/A
Uta stansburiana	Side-blotched Lizard	Reptilia	Squamata (lizards/snakes)	UCB MVZ	1	1947

Table 6: Natural History collection specimen records for amphibians and reptiles that are most proximal to the Rancho Mariano Preserve.

Sampling Scheme for Herpetofauna

In contrast to sampling for macroinvertebrates, where field sampling can quickly lead to an overwhelming amount of both specimens and diversity, sampling for herpetofauna presents the challenge of documenting naturally elusive and low-density species. The goal of this project was to test out and set up infrastructure that would allow Ventura Land Trust to maintain scientifically meaningful long-term sampling efforts for herpetofauna. To this end, three primary approaches were piloted in order to make informed recommendations for an approach to long-term monitoring:

1) Systematically-placed coverboard arrays
2) Visual encounter surveys using both opportunistic and transect approaches
3) Drift fences rigged with automated trail cameras

All three methods produced results in documenting diversity (Table 5). Despite coverboards often needing 12 months or more to be regularly used by herpetofauna, 9 records and 3 species were detected under coverboards in 2025. Visual encounter surveys netted 11 records and 6 species, although this underestimates the number of encounters for the highly common Western Fence Lizard and Side-blotched Lizard. Automated cameras also detected four species.

Scientific name	Common name	Encounter	Survey	Location	Habitat
Aspidoscelis tigris stejnegeri	Coastal Whiptail	Incidental	Visual encounter	Opuntia Fields	coast sage scrub
Crotalus oreganus helleri	So. Pacific Rattlesnake	Incidental	Visual encounter	Aliso Canyon	coast sage scrub
Crotalus oreganus helleri	So. Pacific Rattlesnake	Incidental	Visual encounter	Westridge Bowl	invasive grassland
Scleroporus occidentalis bocourtii	Coast Range Fence Lizard	Incidental	Visual encounter	Westridge Bowl	invasive grassland
Scleroporus occidentalis bocourtii	Coast Range Fence Lizard	Incidental	Visual encounter	Barlow Canyon Trail	invasive grassland
Scleroporus occidentalis bocourtii	Coast Range Fence Lizard	Incidental	Visual encounter	Westridge Bowl	invasive grassland
Scleroporus occidentalis bocourtii	Coast Range Fence Lizard	Incidental	Visual encounter	Westridge Bowl	invasive grassland
Crotalus oreganus helleri	Southern Pacific Rattlesnake	Transect	Visual encounter	Crimea Road	on road - degraded sage scrub

Anaxyrus boreas	Western Toad	Transect	Visual encounter	Hall Canyon	on road - intact sage scrub
Anaxyrus boreas	Western Toad	Transect	Visual encounter	Hall Canyon	on road - intact sage scrub
Scleroporus occidentalis bocourtii	Coast Range Fence Lizard	Incidental	Visual encounter	Center Ridges	degraded sage scrub
Pseudacris (regilla) hypochondriaca	Baja (Pacific) Chorus Frog	Incidental	Audio encounter	Hall Canyon	intact riparian
Pituophis catenifer annectens	San Diego Gopher Snake	Array	Coverboard	North Ridge	coastal sage scrub
Scleroporus occidentalis bocourtii	Coast Range Fence Lizard	Array	Coverboard	Two Trees	invasive grassland
Plestiodon skiltonianus	Western Skink	Array	Coverboard	Aliso Canyon	coastal sage scrub
Plestiodon skiltonianus	Western Skink	Array	Coverboard	Aliso Canyon	coastal sage scrub
Plestiodon skiltonianus	Western Skink	Array	Coverboard	Two Trees	invasive grassland
Plestiodon skiltonianus	Western Skink	Array	Coverboard	Stockpond	invasive grassland
Plestiodon skiltonianus	Western Skink	Array	Coverboard	Stockpond	invasive grassland
Plestiodon skiltonianus	Western Skink	Array	Coverboard	Aliso Canyon	coastal sage scrub
Plestiodon skiltonianus	Western Skink	Array	Coverboard	Apex	coastal sage scrub
Pituophis catenifer annectens	San Diego Gopher Snake	Array	Cam. Drift Fen.	Hall Canyon	coastal sage scrub
Masticophis lateralis	California Striped Racer	Array	Cam. Drift Fen.	Hall Canyon	coastal sage scrub
Batrachoseps nigriventris	Black-bellied Slender Salamander	Array	Cam. Drift Fen.	Hall Canyon	coastal sage scrub
Elgaria mulicarinata	Southern Alligator Lizard	Array	Cam. Drift Fen.	Sheep Flat	coastal sage scrub

Table 7: Herpetofauna detected in 2025 and the method of detection

Coverboard Arrays

Coverboard arrays of ten coverboards each, spanning 200-meter transects, were deployed starting in the fall of 2024 (Fig.1). The layout of these coverboard arrays was designed to capture the varied geography, management history, and drainage diversity of the Rancho Mariano Preserve. Major variables taken into account for siting these coverboard transects were the state of the habitat due to past management practices (degraded or intact), the rough aspect of the array, and whether the array was in the Hall Canyon drainage or drainages to the east or west of Hall Canyon (Table 7). Hall Canyon has the most consistent water source on the Rancho Mariano Preserve, and drainage subbasins have been shown to drive diversity and gene flow patterns in some small vertebrates.

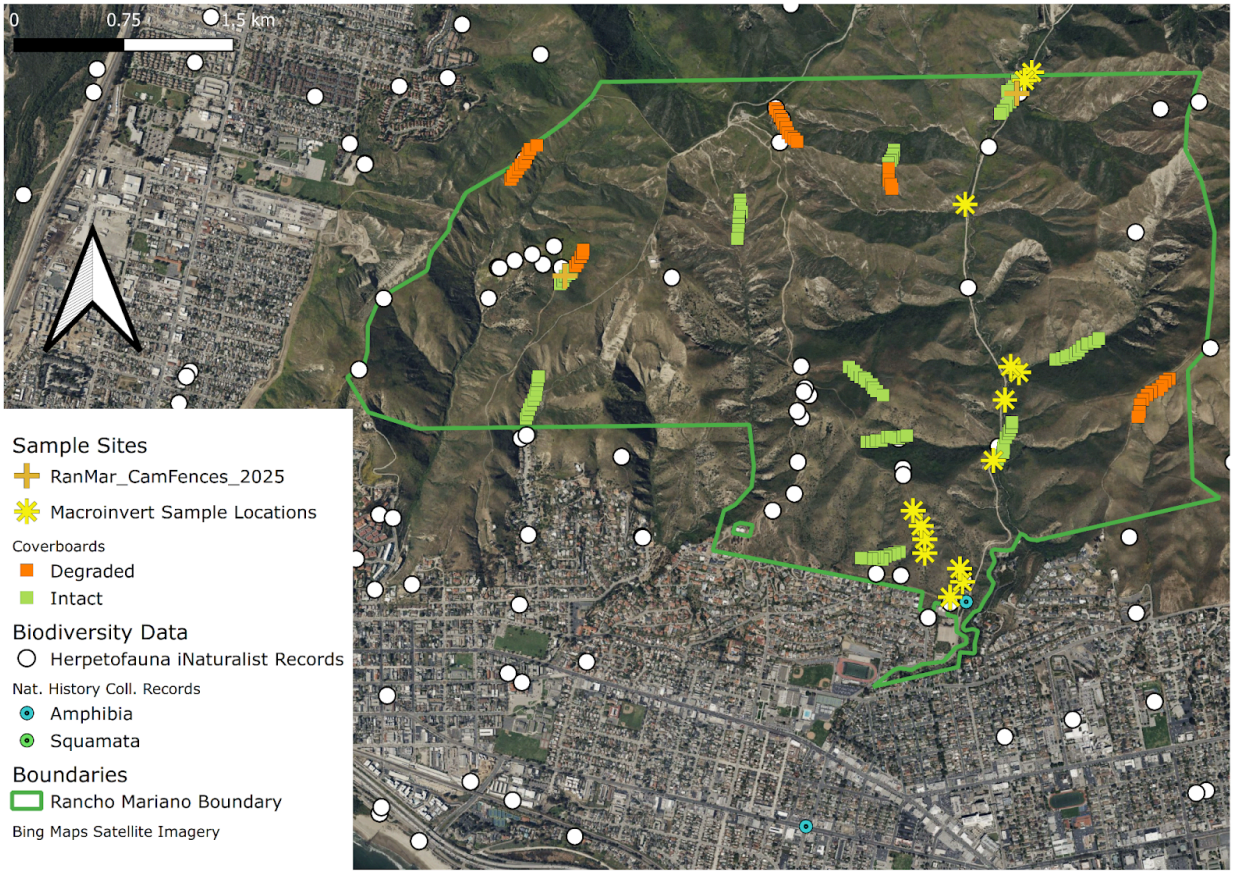


Fig. 1: Map of Rancho Mariano Preserve with survey sites and historical records



Fig. 2: Upper panels show the installation of coverboard arrays on Rancho Mariano Preserve by Ventura Land Trust staff. Lower panels show installation and an example of an image from the coverboard survey.

Camera Drift Fences

A pilot study on the feasibility of drift fences with automated cameras was conducted starting in October 2025. Despite this short timeframe, the initial results are encouraging. Four species were detected overall (Fig. 1). Three species were detected in Hall Canyon, San Diego Gopher Snake, California Striped Racer, and Black-bellied Slender Salamander. In Sheep Flat, a Southern Alligator Lizard was detected. Three of the four cameras deployed were Reconyx Hyperfire 2 cameras that retail for around $600. These were able to capture both timer trigger images and motion trigger images. The Reconyx cameras were left at their native focus distance, which led to blurry pictures and some difficulty in diagnosing small species such as salamanders and insects. One Vikeri trail camera was used, which retails for 1/10 the price of the Reconyx.

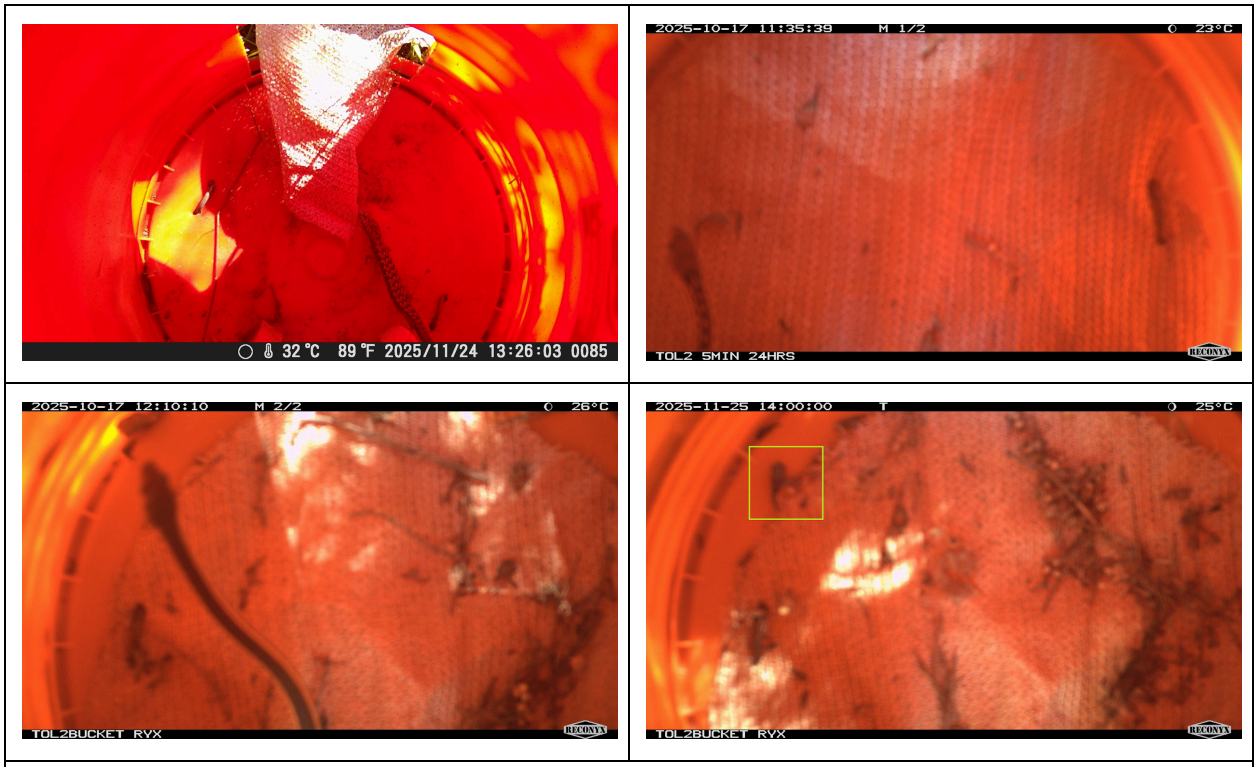


Fig. 3: Example of species detected by camera drift fence arrays. Upper left, a Southern Alligator Lizard (genus *Elgaria*) recorded by a Vikeri camera in Sheep Flat. Upper right, a young Gopher Snake (*Pituophis*). Lower left, an adult California Striped Racer (*Masticophis*), and lower right a Black-bellied Slender Salamander (*Batrachoseps*) that took up residence in the bucket for several days. While the Vikeri had a good focus distance out of the box, the Reconyx cameras would need to be sent back to the manufacturer to adjust the focus distance.

The Vikeri can be set for either a motion trigger or a timer trigger. For this deployment, a timer trigger was used, and the camera performed quite well. It detected a fairly small Southern Alligator Lizard, and its images were much sharper than the Reconyx and this short focus distance. On the whole, it would be possible to use the Vikeri for monitoring the movements of adult reptiles, toads, and small mammals using the drift fence system that was used in 2025. Both Vikeri and Reconyx cameras detected many instances of small mammals. The authors plan to follow up with Ally Coconis of Santa Barbara Museum of Natural History about using the image data or further drift fence deployments in a small mammal study.



Fig. 4: Camera drift fences were set up in Sheep Flat (left panels) and Hall Canyon (right panels). Herpetofauna was imaged by both drift fence cameras.

Visual Encounter Surveys

Two types of visual encounter surveys were utilized by our team: incidental visual encounters while conducting visits to coverboard arrays, and night driving surveys conducted from one hour before sunset to one hour after sunset. Community science incidental visual encounters data were also collected from iNaturalist. If hours are committed to visual systematic encounter surveys, driving or e-bike surveys along Hall Canyon and Crimea Road are likely to be the most productive. The advantage of e-bikes is that they are less likely to result in a vehicle strike of herpetofauna during the survey. April-June are the most active months for many amphibians and reptiles and should be considered as target dates for surveys. Given the less predictable climate patterns we are experiencing, and the generally mild nature of coastal climate, reptile species appear to be active on Rancho Mariano Preserve for much of the year. Notably, the California Striped Whipsnake (*Masticophis lateralis*) was detected as active in October 2025.

Management Recommendations

The approach to further monitoring of herpetofauna on Rancho Mariano Preserve should be driven by the specific goals of Ventura Land Trust. Following our work in 2025, monitoring infrastructure is in place, technology has been de-risked, and there is a clearer picture of the likely yield for the three methods that were used. Several common species expected to occur on Rancho Mariano Preserve still have not been found, and one species expected to occur, Blainville's Horned Lizard (*Phrynosoma blainvillii*), may have been extirpated due to past land use practices.

- Overall habitat assessment
    - Rancho Mariano Preserve contains steep slopes of essentially pristine coastal sage scrub, flanked by highly degraded steep slopes of invasive grasses, mustard, and thistle. This pattern is especially dramatic along the Central Ridges in Hall Canyon and in Sheep Flat. On Central Ridges, the north-facing slope is pristine and the south facing slope is highly degraded and eroded. In Sheep Flat a fairly open habitat of grasses, Coyote Brush (*Baccharis*), and Goldenbush (*Ericameria*) ends in a wall of dense invasive mustard (*Brassica*).
    - The steep degraded slopes are highly eroded with numerous cracks, gaps, and slides present. If they are stable at the right interval, these types of features can sometimes create opportunities for amphibians and reptiles, as they function as retreats below the surface. This allows these species to regulate their temperature and moisture levels. However, if

they are too unstable, they likely serve no net benefit and could even function as a sink for these populations.
    - I have some concerns about road mortality for snakes on Rancho Mariano Preserve. This is due to a combination of vehicle strikes from the work trucks on site and the presence of power poles or telephone poles along both major access routes, Hall Canyon and Crimea Road. These poles serve as perches for raptors, allowing them easy access to snakes as they cross the road.
    - Also difficult to assess is the impact that introduced pigs (*Sus scrofa*) are having on populations of amphibians and reptiles on Rancho Mariano Preserve. The biomass of pigs supported on Rancho Mariano is not known to the authors. Pigs are known to consume herpetofauna.
- Coverboard arrays
    - The current coverboard arrays have now been deployed for a year and are expected to be widely utilized by herpetofauna in 2026.
    - Monitoring of these arrays will yield information about the differential use of habitat by herpetofauna across Rancho Mariano Preserve.
    - Due to the topography of Rancho Mariano Preserve, it is fairly labor-intensive to conduct exhaustive monitoring of the current arrays.
    - Additional coverboards placed along roadsides would allow for more rapid monitoring of these artificial cover objects. These coverboards are likely to be more visible and to be disturbed by the public or influenced by the proximity to roads. These factors should be taken into account when interpreting diversity patterns from roadside coverboards.
- Camera drift fences
    - I do have some concerns about snake populations and recruitment on Rancho Mariano Preserve. Mortality on the major roads, Hall Canyon, and Crimea, is likely fairly high due to vehicle strikes from work trucks and the presence of raptors on the power lines that run along these roads. A study using Vikeri cameras and drift fences along both sides of Crimea Road would allow for long-term monitoring of snake diversity and an estimate of how many snakes make it from one side to the other. Both the terrestrial Southern Pacific Rattlesnake (*Crotalus*) and semi-aquatic Common Gartersnake (*Thamnophis*) were observed on Crimea Road during 2025, indicating that a diversity of snake species are crossing that road.
    - De-risking the Vikeri cameras makes camera drift fences quite cost-effective, with the total materials cost for a two-bucket system with a 6-meter drift fence being <$200 (cameras, fence, buckets, rebar, stakes, contact cloth)
    - Camera drift fence arrays have been effective at detecting Blainville's Horned Lizard (*Phrynosoma blainvillii*), which is a species that may have

been extirpated from Rancho Mariano Preserve due to habitat disturbance.

- Visual encounter surveys
    - Night driving from one hour before sundown to one hour after sundown did capture the expected groups, snakes and toads, despite being performed at a sub-optimal time of year (late summer). Additional diversity would be expected during the last spring and early summer, April-June. Hall Canyon and Crimea Road are the most practical choices for this effort.
    - Matching these night driving transects with morning driving transects from 0900-1100 hours, also from April-June, is likely to yield more diurnal snake diversity.
    - Education and outreach to visitors, encouraging them to post on iNaturalist, and to not obscure the location of their observation, is likely to yield helpful locality data from herpetofauna. With the opening of the Preserve to the public, this will yield additional records.
- Anticipated diversity
    - Species that likely occurred and may have been extirpated
        - Blainville's (Coast) Horned Lizard
    - Species expected to be found on Rancho Mariano with additional sampling effort (with most likely areas):
        - Arboreal Salamander (Lower Hall Canyon, Aliso Canyon)
        - Monterey Ensatina (Lower Hall Canyon, Aliso Canyon, East Canyon)
        - Coast Nightsnake (Aliso Canyon, Kalorama Canyon, Opuntia)
        - San Bernardino Ring-necked Snake (Hall Canyon, Apex, East Canyon)
    - Several species are possibly present and would be exciting to find:

Scientific name	Common name	Record	Most_Recent	ESA	CDFW
Masticophis flagellum	Coachwhip	County			
Thamnophis hammondii	Two-striped Gartersnake	iNat (within 1km)	2025	None	CDFW:SSC
Arizona elegans occidentalis	California Glossy Snake	County		None	SSC
Coluber constrictor	North American Racer	County		None	None
Rena humilis	Western Threadsnake	County		None	None

Species Accounts

The following are brief species accounts for amphibians and reptiles that are known to be found or likely to be found on the Rancho Mariano Preserve. The species found at Rancho Mariano represent a coastal assemblage of widespread species. Many have sister taxa or subspecies who are also found in California but none co-occur on Rancho Mariano, making identification more straightforward. Despite all having fairly large species ranges, the amphibian and reptile species on Rancho Mariano vary in their expected local abundance, seasonal activity, and microhabitat requirements. This all affects the likelihood of encountering these species on any given day, survey, or season. Amphibians and reptiles are highly sensitive to particular surface conditions in order to be active where they can be observed. Surface activity, or near-surface activity, may be constrained within a narrow tolerance of surface moisture, following a rain event. This is true for our three local salamanders, the Arboreal Salamander, Black-bellied Slender Salamander, and Monterey Ensatina. All are lungless and fully-terrestrial species, who do not need standing water for reproduction or larval development. Emergence occurs during the rainy season and they can be found under leaf litter or cover objects, which retain moist microhabitats. Our other two local amphibians, Western Toad and Pacific Treefrog (aka Baja Chorus Frog) are active year round. Toads can be found in Hall Canyon any month of the year, foraging for insects after dark along road courses, riparian corridors or even in upland sage scrub. Surface activity is limited only by extended arid conditions, so long as air temperatures do not drop too close to freezing. The smaller treefrog can utilize upland areas during wet periods but year-round foraging is limited to riparian zones, or areas surrounding other locally mesic habitat or water sources.

One of the most conspicuous animals on Rancho Mariano is a reptile, the Western Fence Lizard. This species is active year round so long as the sun is out enough to allow basking. These small insectivores have cryptic coloration, and will sun themselves in the open on a rock, log, or trunk. When discovered they scamper loudly for cover, often giving away their position with the sound before they are seen. In contrast the California Legless Lizard (*Anniella*. spp.) and California Black-headed Snake rarely come to the surface. Although both are widespread in California, they are almost exclusively encountered under cover, or when soil is disturbed. The other reptiles on Rancho Mariano Preserve fall somewhere between the Western Fence- and California Legless lizards, in their degree of surface activity, with species such as Coast Nightsnake, Western Skink, and Ring-necked Snake seen less often, and San Diego Gopher Snake, Southern Alligator Lizard, and Southern Pacific Rattlesnake being more readily observed.

The greatest conservation threats to populations of amphibians and reptiles on Rancho Mariano are likely introduced pigs (*Sus scrofa*) and the continued impact of habitat disturbance from past and continuing land use practices. It is possible that the

Coast Horned Lizard was present historically on the open hillsides of Rancho Mariano Preserve. This species relies on Harvester Ant (*Pogonomyrmex* sp.) as a primary food source, and is displaced when the Argentine Ant populations move it. During surveys in 2025, *Pogonomyrmex* were observed, opening the possibility that a horned lizard population could be supported.

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Amphibians



Arboreal Salamander	*Aneides lugubris*

Despite its name, the Arboreal Salamander (*Aneides lugubris*) can be found in a variety of habitats. This species can be found in rock outcrops, walls, or crevices in buildings within intact coastal sage scrub, riparian, and oak woodland. Within Ventura County this species is strongly associated with Coast Live Oak woodlands (*Quercus agrifolia*), and a mature stand of *Q. agrifolia* indicates good habitat for this species. Adults can reach 100 mm in standard length (tail excluded) and are robust and brown, with varying amounts of yellow speckles on the dorsum and a pale gray venter. Both adult male and female *A. lugubris* have well-developed cranial musculature, which is especially pronounced in large males. Feet are large with long toes, four on forelimbs and five on hindlimbs, and have pronounced squared-off toe pads. Juveniles match the color of the adults but lack hypertrophied musculature. Hatchlings and young-of-the-year are a finely speckled gray-blue over a black base color. As with all plethodontids in our area, costal folds are pronounced along the body, and here also along the tail which is prehensile. This species is widely distributed in the coastal habitats of California from Baja to north of San Francisco Bay, generally elevation limited from sea level to the live oak belt in the foothills. They are active during the wet season, where they can be found foraging at night along the ground, or on the trunks and branches of trees. Arboreal salamanders emerge from their refuges within the recesses of rotten tree trunks, rock crevices,

rock outcrops, root channels, or rock walls during heavy rain and may remain active foraging for hours if rainfall persists. They feed on insects and other invertebrates and are in turn eaten by snakes, lizards, birds , and mammals. Mating and egg deposition are terrestrial. Large oak snags and large downed logs have tremendous value for this species as egg deposition sites, protection from predators, and refuges to avoid desiccation through the dry season. Leaf litter also holds value for maintaining a robust population of invertebrate prey. Intact woodland and sage scrub habitat are important for this species, although they are resilient enough to persist in some backyard avocado trees in the neighborhoods along Ventura Avenue.
Expect to be surprised by some places this species turns up on Rancho Mariano Preserve. They are already known from Aliso Canyon and are likely in Hall Canyon, East Canyon and Sanjon Canyon.

Accounts continue on the following page.



Black-bellied Slender Salamander	*Batrachoseps nigriventris*

Over twenty species of Slender Salamander can be found across California. Our local form is one of the most elongated with tiny four-toed limbs that are dwarfed by the length of the body. This is a small and narrow-headed salamander with a standard length (tail excluded) under 50mm. Slender salamanders can autotomize their tails when stressed and then regenerate them. When it is able to grow without damage, the tail can make up the majority of the animal's total length. Dorsal coloration is variable, even at a single site, and can range from dull gray to red, tan, or brown, often with streaks or mottling. Chevrons that align with the intervertebral sepses are sometimes present. Sexual dimorphism is extremely subtle if present and can not be reliably detected in the field. Eggs are laid terrestrially in early winter and hatchlings emerge as relatively short-bodied, and short-tailed, versions of the adults. This species is remarkable in its ability to persist in a variety of habitat types and maintain fairly high abundance. Despite this fact, they often escape notice due to their small size, cryptic coloration, and an activity period limited to the wet season. Known habitat includes suburban backyards, grassland, coastal sage scrub, oak woodland and savannah, riparian corridors, chaparral, mixed pine-oak woodland, and pine

forest, including on Mount Pinos in northern Ventura County. The Black-bellied Slender Salamander has one of the largest ranges of any species in the genus, spanning from the San Diego County Line in the south to coastal Monterey County to the north and inland to near the Tehachapi River in Kern County. This species is active during the wet season from the first significant rain, usually >2 inches (5 cm), and can be found in damp leaf litter or under rock and log cover objects during the day. They are active at night during rain events and can be found foraging on the ground and even crossing roads. Like all terrestrial plethodontids (lungless salamanders) Black-bellied Slender Salamander feed on a variety of small invertebrates such as thrips, small spiders, and collembolans. They are preyed upon by Ring-necked Snake, birds, and mammals.
Under favorable conditions, during the wet season and into early spring, it is possible to find Black-bellied Slender Salamander in nearly any part of Rancho Mariano. I would expect them to favor intact, low disturbance habitat in upland areas, especially on north-facing slopes. Hall Canyon, East Canyon, Aliso Canyon, Sanjon Canyon, and the Apex Ridgeline bowl.

Accounts continue on the following page.



Monterey Ensatina	*Ensatina eschscholtzii eschscholtzii*

With their orange or pink bodies and large black eyes, Monterey Ensatina cut a striking figure in the understory during their brief activity period in our area. This subspecies is a member of a ring-species complex whose range extends from southwestern Canada to Baja California. Our local subspecies, Monterey Ensatina, is found from Baja California to Monterey County along the coast, and along the inland transverse ranges. Ensatina reach a standard length of 3-4 inches (8 cm), have well developed limbs, with tapered toes, four in front and five on hindlimbs. The body is fairly compact and the tail has a distinct constriction at the base but otherwise lacks the distinct grooves on the tail found in the Arboreal and Slender salamanders. Reproduction is terrestrial and females lay and brood their eggs toward the end of the wet season. Hatchlings emerge the following wet season and resemble their parents in proportion and coloration. Monterey Ensatina are habitat generalists and persist in oak woodland, oak savannah, chaparral, juniper woodland, sage scrub, and riparian corridors. Ensatina are generalist predators of small invertebrates. Ensatina are preyed upon by birds and snakes but can secrete a noxious white liquid from their tails which is effective at deterring some predators.

As with the other two salamanders in our area, Ensatina can be found in surprisingly arid places, if seasonal moisture and refugia are present. Expect to find them in relatively undisturbed areas with native vegetation such as in north-facing slopes of sage scrub or dominated by poison oak, especially if coast live oak is present. This would include Aliso, East, Hall, and Sanjon canyons. As well as the Apex Ridgeline.



Western (California) Toad	*Anaxyrus boreas halophilus*

Western Toad are one of our most conspicuous local amphibians. Their continued presence, and population numbers in Hall Canyon is a positive sign for the integrity of the preserve. Any change in their abundance there, should be taken as a bellwether. Western Toad are heavy-bodied and reach 5 inches (12.7 cm) in total length. Dorsal coloration is somewhat variable but consistently features a gray to brown base color, with a narrow whitish dorsal stripe down the center of the back, and small protuberances ("warts") that may be highlighted with red or reddish pigment. Large paratoid glands are raised and prominent just posteriolaterally to each eye. Although not related to Western Spadefoot, Western Toad often have dark and hardened protuberances on their hind feet that aid in digging. The aquatic tadpole Larva are conspicuous due to their dark coloration and tendency to aggregate in shallow water along the edges of ponds and creeks, sometimes in staggering numbers. Mating is aquatic with eggs laid in spring as great strands are attached to submerged vegetation in streams or ponds (image below). Once metamorphosed, juveniles resemble miniature adults in coloration and proportions. Surface activity for all size classes continues through the summer, depending on weather conditions and the availability of water. Small individuals are seen less frequently later in the season but large adults may be active year round on Rancho Mariano Preserve, as evidenced by observations into the late fall in Hall Canyon, prior to any significant rainfall. Diurnal activity is common for toadlets while older

individuals retreat to cover under the base of established vegetation, or down a rodent burrow during the day or when surface conditions are unsuitable. Toads then emerge at night to forage for insects such as beetles and crickets. Their dorsum can become quite dry but they will use available standing water to absorb water quickly through a patch of especially thin skin on their lower abdomen. Predators include snakes, birds, and mammals. Western Toad are generalists who can be found from the coastal plain to high elevation meadows to 11,800 feet (3,600 m) across their vast range. Our subspecies, the California Toad, is found primarily west of California's major deserts and south of the Cascade Range into Baja California. Due to their penchant for foraging on roads after dark, this species is susceptible to vehicle strikes by cars and trucks.

Expect to find Western Toad on Rancho Mariano along riparian corridors and surrounding uplands, especially in Hall Canyon. Rodent burrows are often important for this species as refuge sites. Adults, in particular, move well through upland habitat, even when fairly steep. Given the high disturbance regime and steep hillsides on Rancho Mariano Preserve, it would be interesting to better understand whether this species can utilize seasonally-wetted habitat in Sanjon Canyon and the Apex Ridgeline bowl.





Accounts continue on the following page.



Pacific Treefrog (Baja California Chorus Frog)	*Pseudacris regilla* (*hypochondriaca*)

Taxonomic note: Long considered a single species, a three species model was adopted based on a small genetic dataset. This arrangement is widely expected to be replaced in the near future and so discussion here of their ecology will consider the *P. regilla* complex in its entirety.

Pacific Treefrog, aka Baja California Chorus Frog, are remarkable in both the breadth of their distribution and the diversity of their habitat where they persist. This species is abundant in low relief habitat along the coast from urbanized watercourses, coastal terrace habitats of sage scrub, grassland, and oak woodland. Their distribution continues into foothill and montane habitats well over 10,000 feet (3,000 m). This is a small frog, reaching around 2 inches (5 cm) in total length. Limbs are long with yellow on the underside of hindlimbs. Toes are long with square pads at the end of each digit. While an eye mask and some dorsal patterning are common, dorsal coloration is highly variable, even at the same site. Some individuals can also change color readily to match their surroundings. Pacific Treefrog are active year round and can even be heard calling from the underbrush in most months. Mating in winter through spring is aquatic and eggs are laid in small clusters below the water's surface on vegetation or other substrate. Tadpoles are green to brown and are active in the midwater and along the substrate feeding on algae and detritus. Froglets resemble

their parents in color pattern and form, though with often narrower heads leading to a relatively pointy snout. Metamorphosed frogs feed on a variety of invertebrate prey and are preyed upon by snakes, other frogs, birds, and mammals. As with Western Toad, this treefrog will utilize mammal burrows but will also use downed wood, or rocks as cover, or follow root channels of trees or woody shrubs to escape unsuitable surface conditions.
This species is likely to be found across all parts of Rancho Mariano Preserve during the wet season. Frogs retreat to more mesic habitats toward late spring. Hall, East, Sanjon, and Aliso canyons are likely core habitat for this species with breeding occurring in most or all of these locations. Breeding likely also occurs in the stockpond and may occur in temporary pools in the Apex Ridgeline bowl.





Accounts continue on the following page.

Reptiles



California Legless Lizard	*Anniella pulchra*

Taxonomic note: A handful of taxonomic changes have been proposed to split California Legless Lizard into several species. The proposed taxonomic hypotheses are poorly supported by the data and do not resolve the identity of our local population. For these reasons, California Legless Lizard is treated as a single species pending additional genetic evidence.

The only native legless lizard in California, the California Legless Lizard is found from the coastal sand dunes on the beaches of Ventura to a variety of vegetation communities in Ventura's foothills. These small lizards reach 9 inches in total length (23 cm) and have smooth cycloid scales that cover their bodies. The head is no wider than the body and tapers to a shovel-like snout at the rostrum. The color pattern in our area is silver to gold on the dorsum and deep yellow on the underside. Both dorsal and ventral coloration can change depending on the condition of the animal, with individuals becoming more dull when they are malnourished or injured. This species can reach tremendous local densities and balls of individuals with dozens of animals intertwined, are occasionally uncovered during excavation work or gardening. Prey items are invertebrates and their larvae. Termites are thought to be a particularly important food source. When they are active near the surface, *Anniella*

can be found under rotting wood that contains termites, including rotting fenceposts. As with other burrowing lizards, coverboards are helpful in understanding where this species persists. All open, loose soils along ridgelines and the noses of slopes are likely suitable habitat for California Legless Lizard on Rancho Mariano. this in Illegal Grazing, Opuntia Fields, North Ridge, Stockpond, Sanjon Canyon, and Sheeps Flat.

Accounts continue on the following page.



Tiger (Coastal) Whiptail	*Aspidoscelis tigris stejegeri*

Our local subspecies of Tiger Whiptail is fairly large, with a total length over 12 inches (30 cm), well-developed limbs and a distinct black and white dorsal pattern. Tiger Whiptail operate at fairly high body temperatures and are active during the warmest part of the day. When foraging this species is in constant motion, dipping its head and flicking its tongue, in search of a meal. Prey items are mostly invertebrates, although small lizards may also be taken. Tiger Whiptail prefers fairly open habitat often on the edge of grassland, riparian vegetation, scrub, or chaparral. When grass is too dense they have trouble moving and can be easily captured. In open habitat they are swift runners and extremely wary of danger. Ridgelines, roadsides, and scrub with open understory are the most likely places to observe this species. Predators include lizard-eating snakes, raptors, and mammals. In 2025 Coastal Whiptail were observed by the authors on Crimea Road at the gate and an iNaturalist observation reported an individual along Ridgeline Road. It is unknown how well this species can forage on the degraded, south-facing slopes of Northern Ridges. Loop hikes in this area during the spring and summer could help answer this question, as this species is fairly conspicuous when active. Expect core habitat to include the Opuntia Fields and along all ridgelines, particularly where there is low relief and vegetation facilitates foraging and rapid running when fleeing from a threat.



Southern Alligator Lizard	*Elgaria multicarinata*

Southern Alligator Lizard are active foragers, and found in various scrub habitat, grassland, oak woodland, chaparral, and riparian corridors across their range from Baja California to southern Washington State. This species is regularly discovered under cover objects, as well as foraging in the understory, or climbing in woody shrubs. Highly alert, they often see hikers and then freeze and wait to move until they are certain they've been discovered. Alligator lizards will flick their forked tongue to taste their environment. This species is sometimes mistaken for a snake, due to its relatively long body and tail, > 1 foot (30 cm) in total length, and undulatory movements. The head is large and they have a powerful bite. Southern Alligator lizards are generalist predators of invertebrates, small lizards, birds, eggs, and mammals. These lizards actively search for food, which sometimes leads them to be found in people's garages and homes. Dorsal coloration is a variation of narrow dark bands, highlighted with white, and wider bands of a medium brown base color, often with some reddish highlights. Some individuals have a large amount of red and the pattern, especially juveniles. Southern Alligator Lizard have keeled dorsal scales and smooth scales across their venter. This species readily bites when handled. They are not venomous but due to their strong jaws, their bite often draws blood. There are several accounts of snakes who end up bitten into submission by their presumed alligator lizard prey. Males also bite females during bouts of mating. Eggs are laid in spring or early summer.
Expect to find this species in intact habitat, especially when there is some structure

from shrubs. An individual was observed by a camera drift fence in 2025 on the side of Sheeps Flat with intact native vegetation. Hall Canyon, Aliso Canyon, Sheeps Flat, Apex Ridgeline, Sanjon Canyon, and East Canyon are all likely to support local populations of this species.

Accounts continue on the following page.



Western (Skilton's) Skink	*Plestiodon skiltonianus skiltonianus*

Our local subspecies of Western Skink is an excellent burrower and highly fossorial. Western Skink can be observed at the surface occasionally as they move through leaf litter foraging for insects. More frequently they are discovered under a cover object, often downed wood, where they can remain unnoticed and feed on termites and other invertebrate prey. This is a fairly small skink, reaching over 3 inches excluding the tail (8 cm), and is more slender than Gilbert's Skink, its inland counterpart. Western Skink retain the lateral stripes down their flanks and some adults may even retain the electric blue tail that is present in juveniles of this species. Adults will show breeding colors in spring, as orange coloration on the underside of their chin and tail. Western Skink have wedge or shovel-shaped heads and smooth, cycloid scales, that help them move through dirt while burrowing.
Coverboard surveys in 2025 detecting this species near the Stockpond and in upper Sanjon Canyon. Loose soils for burrowing, and organic matter to support its invertebrate food source are important factors for this species. Hall Canyon, Opuntia Fields, North Ridges, Sanjon Canyon, Stockpond, and Sheeps Flat all contain good habitat for this species.



Western (Coast Range) Fence Lizard	*Sceloporus occidentalis bocourtii*

The ubiquitous Western Fence Lizard, the Coast Range Lizard is our local form, is the most abundant lizard across much of its range in California. This species persists in suburban and urban backyards, on farms and ranches, and across nearly every vegetation assemblage west and north of the Sonoran Desert. Basking sites (rocks, logs, or fences), adequate insect prey, and loose soil for egg-laying sites, are basic requirements of this species. Otherwise they are highly adaptable to the physical structure of their environment, utilizing forests, grasslands, and rocky landscapes. This species is a sit-and-wait predator. Western Fence Lizard are adept at capturing flies or other flying insects as they hover or alight temporarily. While basking they are quite attentive to their surroundings and will dash from their post to grab an insect that is walking nearby. Males often accomplish feeding while also defending their basking sites from other males, allowing only females to remain. This species reaches 3.5 inches (9 cm) in length, tail excluded. The tail is often lost for this species but readily regenerates. Identification in our area is fairly straightforward given the bright blue that is present on the venter and throat of both males and females. This leads many to call them, “bluebelly lizards”. The extent and intensity of blue does vary between individuals, with color the most intense on large males and dullest on juveniles. The dorsum often appears black early in the day as lizards warm up. Once warm and active, those dark melanophores are moved and the underlying gray, brown, and blue scale colors are more easily visible.
In 2025 this species was observed even on steep and highly eroded hillsides that are

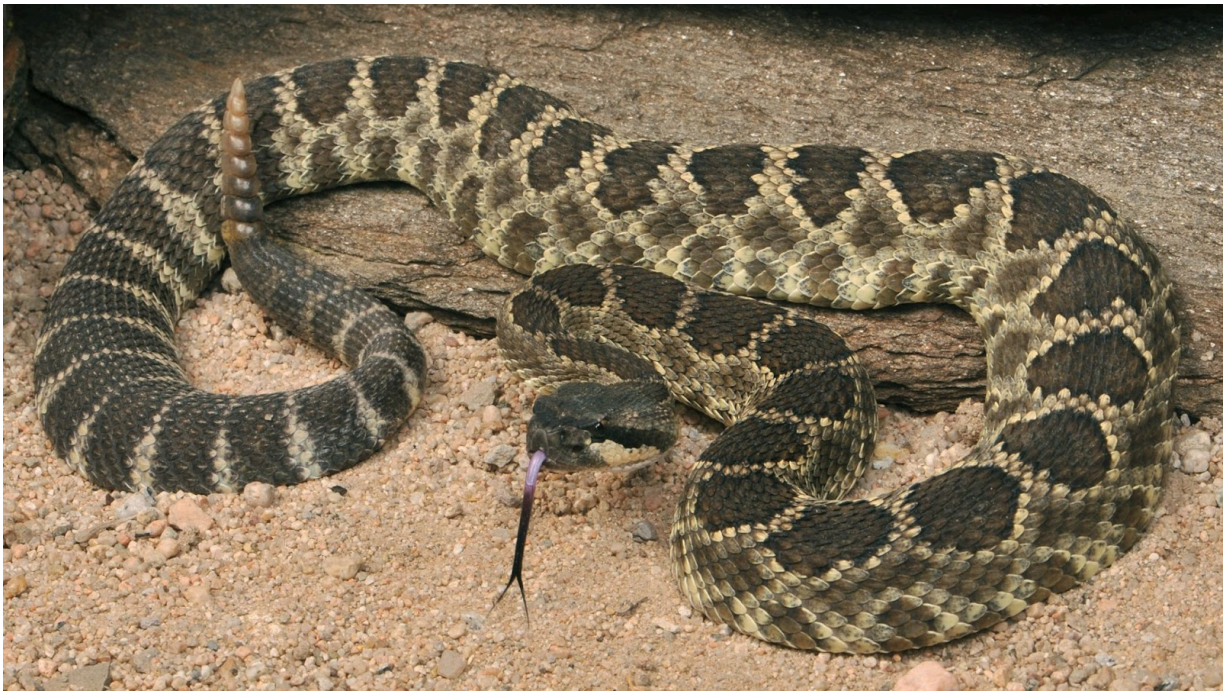
dominated by invasive plants. Western Fence Lizard is truly a pioneer species for Rancho Mariano as the first lizard, and possibly first vertebrate insectivore, to persist in highly disturbed areas. Charting their colonization of habitat after restoration work is a good indicator that things are moving in the right direction. This species is a food source for snakes, birds, and mammals on Rancho Mariano Preserve. This species is expected to be found on all parts of Rancho Mariano, though it will utilize the channel in Hall Canyon only after flows have subsided.

Accounts continue on the following page.



Common (Western) Side-blotched Lizard	*Uta stansburiana elegans*

Along with Western Fence Lizard, Common Side-blotched Lizard are important to the food web on Rancho Mariano Preserve. These small insectivores reach their full size, 2.4 inches (6 cm) excluding tail, within one year. This species is essentially an annual, completing its life cycle from hatching to breeding in just about 12 months. This rapid growth indicates how efficiently these lizards convert their invertebrate prey into lizard biomass, which is consumed by birds, snakes, and mammals. This species prefers areas with ample sun and basking sites. Males compete for the most desirable basking sites then allow only females to bask nearby, thus increasing their chances of copulation. Interestingly, alternative male strategies have been described that involve either a related pair of males distracting the dominant male to allow copulation by the partner, or female-mimic males infiltrating the basking area.
Common Side-blotched Lizard is distributed across the deserts of the southwest, from northeastern Mexico to the Great Basin as far north as eastern Washington State. Western Side-blotched Lizard is the subspecies found on Rancho Mariano, and its range extends southeast from the Sacramento River through Baja California and the Sonoran Desert. This species was observed less frequently than Western Fence Lizard during 2025. Historically, populations may have been concentrated on the south-facing slopes, which currently are so heavily degraded by erosion and invasive plants.
Core habitat on Rancho Mariano for this species is expected in the Opuntia Fields, hillsides adjacent to the Stockpond, North Ridge, and the Illegal Grazing area.



Southern Pacific Rattlesnake	*Crotalus oreganus helleri*

Our local rattlesnake is highly venomous but not aggressive. Handling these snakes should be avoided except by an expert. Southern Pacific Rattlesnake are sedentary and spend much of their time sitting in an optimal spot to wait for prey, or regulate their temperature for digestion. Both of these activities often occur under the canopy edge of woody shrubs, making them difficult to see and easy to step on when not attentive. Their cryptic coloration further allows them to blend into the mottled dark and light shadows under woody shrubs. Young are born live and the button on the tail can be quite difficult to see, especially on hatchlings who can coil small enough to fit in the bottom of a coffee mug. Adults regularly reach 2.5 feet in length (60 cm) but large individuals over 50 inches have been reported. Around 20 iNaturalist observation records exist for this snake on Rancho Mariano. During 2025 they were found to be active, crossing roads, during the day and night, even into the late fall. Male Pacific Rattlesnake will wrestle each other in order to impress a nearby female. If this behavior is observed they should be allowed to continue if possible and care should be taken to avoid the nearby female observer. Southern Pacific Rattlesnake are preyed upon by raptors and other snakes, such as Ring-necked Snake, California Kingsnake, and California Striped Racer. Southern Pacific Rattlesnake likely utilize all of the intact and even some degraded habitat on Rancho Mariano Preserve. They were observed moving through highly degraded habitat in Westridge Bowl in 2025, as well as in the dense vegetation of Aliso Canyon. Rodents and cover from shrubs, cactus, or rocks are present, expect to find Southern Pacific Rattlesnake.



(San Bernardino) Ring-necked Snake	*Diadophis punctatus modestus*

Snakes in the genus *Diadophis*, Ring-necked Snake, are thin and elusive semi-fossorial snakes who feed largely on salamanders, lizards, including California Legless Lizard, invertebrates, and other small snakes. This includes juvenile individuals of snakes that will be much larger as adults, such as kingsnakes. Despite their bright orange ventral coloration and neck band, it is rare to see Ring-necked Snake without turning cover objects during. They can be found during the spring when soils still retain some moisture from the wet season. They are occasionally found crossing roads in the afternoon during their active season from spring to early summer. Long and thin, they reach 16 inches (42 cm) in length but less than 2 cm in diameter. The dorsum is gray, brown or olive green. Ring-necked Snake will often coil and show their bright underbelly when discovered. Reproduction and oviposition are terrestrial, and hatchlings persist on a variety of invertebrates. This snake is venomous to its prey but is not dangerous to humans. San Bernardino Ring-necked Snake is most likely to be found in the Hall Canyon riparian corridor and adjacent intact coastal sage scrub, East Canyon, the Apex Ridgeline bowl, Aliso Canyon, and intact sage scrub adjacent to the Stockpond. Photo documentation is encouraged and coverboards will likely be an asset for detecting this species.



Coast (San Diego) Nightsnake	*Hypsiglena ochrorhyncha klauberi*

A small and secretive snake, nightsnakes in the genus *Hypsiglena*, are only occasionally seen, despite ranging across most of the desert, foothill, and montane habitats of California. San Diego Nightsnake occur from northern Santa Barbara county southward into Baja California. Adults typically reach 12-16 inches (40 cm) and all ages are distinct from other snakes found on Rancho Mariano in having vertical pupils. Dorsal coloration is typically a light gray-brown base with darker blotches running down the center of the body. These blotches may be singular or pairs. This is a fairly stout snake and combined with the dark mask across its eyes, could be confused with a small rattlesnake. Confirm identification by observing the end of the tail, if possible. The narrow neck and relatively wide head of Southern Pacific Rattlesnake should also be noticeable. Nightsnakes feed on endothermic vertebrates such as lizards, salamanders, and other snakes. Nightsnakes are rear-fanged and envenomate their prey, but are not considered dangerous to humans. Eggs are laid terrestrially and hatchlings emerge in spring or summer. This species is often associated with rock outcrops and shallow soils, rather than leaf litter. Opuntia Fields, Hall Canyon, lower Westridge Bowl, Center Ridges, and Aliso Canyon are likely core habitat for this species.



California Kingsnake	*Lampropeltis californiae*

California Kingsnake are found in all parts of California, save the highest elevation habitats, where they give way to the California Mountain Kingsnake. With distinct cream-colored bands alternating with a chocolate brown or black base color, this handsome snake is not easily confused with other species in our area. Adults of up to 4 feet (122 cm) have been found but individuals in the 2-3 foot range are common. The diet of kingsnakes often includes other snakes, but this species eats a variety of prey including lizards, small mammals, birds and eggs. Reproduction is terrestrial and hatchlings resemble miniature adults.
This species is fairly resilient and is found occasionally in yards and on school campuses. Aside from the highly eroded and steep slopes on Rancho Mariano, this species is likely well-distributed across the property. Hall Canyon, Apex Ridgeline, Aliso Canyon, and Sheeps Flat all contain suitable habitat for California Kingsnake.



California Striped Racer	*Masticophis lateralis lateralis*

The fast-moving, diurnal, California Striped Racer feeds primarily on lizards but will also take other snakes, including small rattlesnakes, birds and their eggs, salamanders, and small mammals. This species emerges in the morning and finds an open sunny place to bask, in order to adequately heat their body for a day of chasing lizards. This leads to frequent road strikes and a significant amount of mortality for our local population. California Striped Racer are often observed during the day basking on roads or actively foraging through grassland, sage scrub, chaparral, oak savannah, and other open scrub habitat, in search of prey. If threatened this species flees at a surprisingly fast pace and will seek refuge in a burrow or inside a woody shrub. When caught, whipsnakes bite repeatedly, often aiming for the face. Larger individuals may draw blood, adults regularly reach 4 feet in length, but this species is not venomous to humans. Reproduction and oviposition is terrestrial and hatchlings resemble adults. California Striped Racer are nearly ubiquitous in a variety of foothill habitats of coastal and inland mountain ranges from Mexico to the Cascade Range. California Striped Racer utilize all parts of Rancho Mariano Ranch in their search for lizards, bird nests, and other prey. Management practices that support lizard and nesting bird populations are also good for this species. Anyone operating a vehicle on Rancho Mariano should be aware that this species frequently basks on roads into the late morning.



San Diego Gopher Snake	*Pituophis catenifer annectens*

Our most conspicuous local snake is our local variety of the widespread Gopher Snake, the San Diego Gopher Snake. With their large size, diurnal activity, and use of roads for basking, hikers, bikers, and drivers are likely to eventually cross paths with this snake on Rancho Mariano Preserve. This species can reach 9 feet in length (279 cm) but large adults around 5 feet in length are more common. Both hatchlings and adults have a pattern of symmetrical dark blotches on their dorsum, over a light brown or sandy base color. The base color on the tail may appear reddish in some individuals. Gopher snakes primarily eat small mammals, often using constriction to overpower their prey, although birds, their eggs, and lizards may be taken as well. Gopher snakes are habitat generalists, and subspecies replace each other spatially, with transitions marked by differences in dorsal pattern and a shift in vegetation. San Diego Gopher Snake are largely found in coastal terraces and foothills of sage scrub, chaparral, grassland, oak woodland, and oak savannah.
This species can be found across Rancho Mariano Preserve and anyone driving on Preserve roads should be aware of basking snakes as vehicle strikes are common. The fact that power lines provide perches for raptors along most major roads likely increases the efficiency of these predators when hunting San Diego Gopher Snake.



Western Black-headed Snake	*Tantilla planiceps*

One of the most elusive snakes in California, the Western Black-headed Snake was recently documented on iNaturalist immediately adjacent to Rancho Mariano Preserve. These small fossorial snakes spend most of their time underground and are the diameter of a pencil and reach just over a foot in length (40 cm). As indicated by the name, the head is completely black with a light ring marking the boundary to the light brown dorsum. The venter is bright orange, but lacks the speckles seen in the Ring-necked Snake. Known to feed on centipedes, Common Black-headed Snake are found in a variety of semi-arid foothill habitat from grassland to mixed juniper, opuntia scrub, and chaparral. The species has an enigmatic distribution in California, with a disjunct range from San Diego and Imperial counties to just east of San Francisco Bay. Documenting presence of this species with opportunistic observations is crucial as surface activity for Western Black-headed Snake is extremely limited. A small clutch of eggs is laid terrestrially. This species is most likely to be found on fairly open slopes in the spring when some moisture remains in the soil. This is also the time of year when centipedes can be found under cover objects. Intact habitat in the Opuntia Fields, Sheeps Flat, North Ridge, Stockpond, and Aliso Canyon should be targeted.



Common (South Coast?) Gartersnake	*Thamnophis sirtalis*

Recent observations of Common Gartersnake on Rancho Mariano Preserve highlight the value of this property for the conservation of amphibians and reptiles in our region. California Department of Fish and Wildlife considers populations south of the Santa Clara River to be the subspecies South Coast Gartersnake (*T. sirtalis* ssp.). Assignment of individuals from Rancho Mariano Preserve is unknown. Their special status in southern California is largely due to extirpations caused by habitat degradation by humans, namely the modification of watercourses for flood control, changes in stream flows for human use, and loss of habitat due to urbanization and agricultural development. These practices have had significant impacts south of Rancho Mariano Preserve, through Los Angeles, Orange, and San Diego Counties. While all gartersnakes are at least semi-aquatic, Common Gartersnake are generalists and more terrestrial than the Two-striped Gartersnake. Both species can be in the Ventura and Matilija drainages where they coexist, although Two-striped Gartersnake is more abundant along streamcourses. Common Gartersnake eat a variety of aquatic and terrestrial prey including frogs, fish, lizards, salamanders, birds, eggs, and small mammals. Common Gartersnake will ingest the highly poisonous California Newt, where the two species occur together. They are preyed upon by birds, frogs (when small), and mammals. Eggs are carried by the female and young are born live (ovovivipary). This species is distinct from other snakes on Rancho Mariano in having a distinct pale dorsal stripe and red blotches along its sides. *Thamnophis sirtalis* are moderate in size, reaching up to 55 inches (140 cm) in length.