



Earth Discovery Institute

120 North Park Drive • El Cajon CA 92021 • (619) 654-3793 • www.earthdiscovery.org • info@earthdiscovery.org

San Diego Association of Governments
South San Diego County Community Outreach 3
Quarterly Progress Report for Reporting Period: July 1-September 30, 2016
SANDAG Contract Number: 5004737

Task 1: Community Outreach

Increase community awareness of priority species or habitats through at least 8 interpretive events for at least 60 participants. At least 2 will focus on SL/SO species and their habitats.

Date	Event	Interpretive Goal	SL/SO Species/Habitats	# of Participants	Volunteer Hours (if applicable)
Q1 Total	2 Interpretive Events		0 SL/SO Interpretive Events	74	30
Q2 Totals	3 Interpretive Events		1 SL/SO Interpretive Event	45	14
Q3 Totals	2 Interpretive Events		1 SL/SO Interpretive Event	101	19
7/21/2016	MSCP Workshop			50	0
8/25/2016	San Ysidro Middle School	Raise awareness of sensitive habitat/species in soon-to-be-closed adjacent SD County Furby-North parcel	coastal cactus wren	65	0
9/25/2016	Native Plant Sale	Encourage residents to use habitat-friendly and water-wise landscaping		51	36
Q4 Totals	1 Interpretive Events		1 SL/SO Interpretive Event	386	36
Project Total	8 Interpretive Events		3		99

Distribute 3 issues of electronic newsletters to increase community awareness of rare and sensitive species and habitats and the opportunities to participate in interpretive and volunteer events. Each issue will focus on at least one SL/SO species or habitat and volunteer contributions to or opportunities to support same.

Quarter	SL/SO Species/Habitats	Distribution
Q1	Coastal Cactus Wren	1,300
Q2	na	0
Q3	Quino Checkerspot and Hermes Copper butterflies	1,300
Q4	Harvester Ants/Coast Horned Lizard	1,550
Total: 3 newsletters	4 SL/SO Species/Habitats	4,100

Ants: Small But Mighty Members of our Ecosystem

Tritia Matsuda, Biologist and Ant Expert with the U.S Geological Survey, Western Ecological Research Center here in San Diego, recently trained our dedicated volunteer patrol members about native ants in San Diego county, their non-native competitors, and their role in our local ecosystem. We thought you might like to know about these important players in the local habitat.

Ants of San Diego County

If there is a list of all the native and non-native ants of San Diego County, we couldn't find it. According to our expert, Tritia Matsuda, there are quite a few types of native ants and two primary non-native ants in the county. "There are many native ants in San Diego County... Non-natives is a smaller list. There are basically two types of non-native, invasive species like Argentine ants and the Red imported fire ant that displace and cause damage to the ecosystem..." Antweb.org's CA page lists 25 introduced/non-native species of 270 total ant species in California.

About native harvester ants

What is a harvester ant? Are they all red or do they come in different colors, i.e. red and brown, brown and black?

Harvesting ants are species of ants that regularly use seeds as part of their diet" - Holldobler and Wilson 1990. This includes ants from the genera *Veromessor*, *Pogonomyrmex*, *Aphaenogaster*, and *Pheidole*. They come in different colors, some species are all red (from orangey red to various shades of red), some a deep burgundy red and black, some all black. Harvester ants can be distinguished by their large, square heads.



Is there more than one species of "harvester" ant in San Diego County?

There are actually two genera that we mainly refer to as harvester ants, *Veromessor* and *Pogonomyrmex* in CA. There are 7 species of *Veromessor* and 18 spp. of *Pogonomyrmex* that occur in CA. A great source to see pictures of them are on antweb.org. (<https://www.antweb.org/taxonomicPage.do?rank=genus&adm1Name=California&images=true>)

Do harvester ants bite and/or sting? Only the females?

Both genera can bite, and usually do. This is not very painful, less painful than a bee sting if it's only one ant. *Veromessor* has lost its stinger, so they can only bite as a defense. *Pogonomyrmex* has a stinger and this is their main form of defense. The venom and sting can be quite painful, though reactions vary widely. A side note on gender in ants; all workers are female. Males much like in bees, exist for only reproductive purposes. The only ants with wings are reproductive females and males, called alates. Males have a more wasp like head, so often they don't look very much like ants of their species.

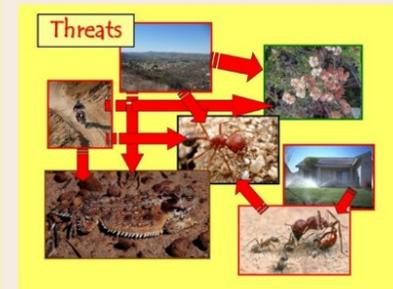
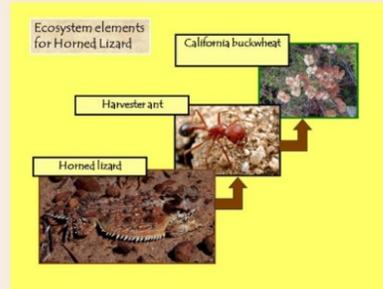
Ants: Small But Mighty, cont.

What is the role of harvester ants in the ecosystem?

Harvester ants are consumed by native birds, amphibians, reptiles, insects, spiders and other organisms. Harvester ants may make up as much as 90% of the diet of native horned lizards which are not affected by the ant's bites or stings. When harvester ants are displaced by non-native Argentine ants, horned lizard populations decline. Harvester ants contribute to plant distribution through seed dispersal and soil nutrient distribution (contribute to patchy plant growth, which is good during succession, which is good after a fire).

What is the importance of native ants in the environment?

All native ants are actually a good source of food for other native creatures like the arroyo toad and night lizards, as well as horned lizards. Horned lizards actually eat various other species of native ants on their way to becoming adult horned lizards (Suarez ref). Harvester ants as well as other native ants get displaced by Argentine ants (along with other invertebrates) and that affects things up the food chain like horned lizards. Ants are major soil turners (like earthworms), are predators of other insects and small invertebrates, and prey for other vertebrates and invertebrates (see previous answer).



About Argentine ants

What are Argentine ants and why are they a problem in the habitat?

The Argentine ant is native to Northern Argentina and it is a globally distributed invasive pest in urban, natural, and agricultural habitats. In addition to being a nuisance in urban settings, the Argentine ant is problematic in both natural and agricultural ecosystems. Argentine ants live cooperatively in large colonies consisting of several nests and queens covering a large area. This arrangement is possible because of unusually low levels of intraspecific aggression, which facilitates high population densities. As a consequence, Argentine ants can outnumber and compete effectively with other insects when foraging for food and habitat. Argentine ant presence can displace native ants and severely disrupt natural food webs. For example, in southern California, declining coast horned lizard (*Phrynosoma coronatum*) populations have been attributed, in part, to the displacement of its preferred prey, the native California harvester ant (*Pogonomyrmex californicus*), by the Argentine ant. (http://cisr.ucr.edu/argentine_ant.html)

Ants: Small But Mighty, cont.

What can be done to limit the impact of Argentine ants on local ecosystems?

Unlike native harvester ants, Argentine ants require a nearby water source. When irrigated residential and commercial properties sit adjacent to open space/conserved land, the Argentine ants will move into the adjacent habitat and out-compete native ants. If you live near, or especially next to, native habitat, use native and low-water plants so your yard is less appealing to the destructive Argentine ants. This will also minimize their invasions of your home!

About Fire ants

What is the difference between native Harvester ants and non-native Fire ants?

Size is the obvious difference. Harvester ants are quite large for what the public usually thinks of ants, although there are larger (Carpenter ants). They are pretty uniform in size, as in most workers you see on the surface are basically the same size. Fire ants are considered polymorphic, meaning workers come in different sizes (this can be two drastically different sizes or body types in other species). For fire ants around here, the size differences in workers are gradual, so you will see ants that are relatively smaller and larger to each other and sizes in between.

Size difference of harvester ants and the native fire ant (left to right: *Pogonomyrmex*, *Solenopsis xyloni*, *Veromessor*)



What's a fire ant? Are they all red? Where do they come from?

Fire ants are named for the sensation of their sting. There are six true species of fire ants in the US, they are in the genus *Solenopsis*. California has five of these fire ants. One is imported, the Red imported fire ant (RIFA). (There is also the Black imported fire ant in the US, but not in CA.) These imported ants come from South America. These invaders are known for the blistering pustules you develop on your skin after you have been stung and the economic impacts they have on agriculture, mainly the RIFA. RIFA are red and black as is the native Southern fire ant. The other native fire ants are all red or golden colored. RIFA has been found in San Diego County, but apparently is has been detected only in the northern part of the county. It does not currently seem to be spreading at a large scale as in counties north of us.

Do fire ants bite and/or sting? Is their bite/sting worse than a harvester ant?

Fire ants bite and sting. From personal experience (Matsuda), the fire ants sting when stung is an annoyance, and the venom leaves the spot itchy. Harvester ant stings are worse for sting/venom.

Which ant is more aggressive?

Only Red imported fire ants are very aggressive. This is probably where a lot of the concern from the public comes from. Most native ants in comparison are not very aggressive at all. I (Matsuda) frequently stand next to trails or nests of both Harvesters and native fire ants without worry of an aggressive response. I wouldn't

Ants: Small But Mighty, cont.

stand on top of ant activity, as having one crawl up your leg is where the problems start. However, I have even disturbed their activity with ants responding in alarm and running away more frequently than attacking.

How does one tell the difference in harvester vs. fire ant nests?

Harvester ants clear out large flat circles around the nest opening, closer to 1m sometimes. It usually has duff all around it from the seed husks they discard.

(photo from <http://waynesword.palomar.edu/CaveCreek149.htm>)



Their nest galleries can go 2-3m underground.

(left photo <https://www.sciencenews.org/article/harvester-ants-are-restless-enigmatic-architects?mode=archive&context=191494&tgt=nr>)



Native fire ants can have large mounds several feet wide and up to an inch in height. These super-structures occur when they nest in open areas. The structure can be a mound several inches wide with a single entrance or an irregular sandy mound at the base of a plant. Sometimes nests are little more than a hole or a few cracks in the ground and they can also build nests beneath stone.

(right photo <http://www.peachliving magazine.com/?p=663>)



Other Resources:

<http://www.desertusa.com/insects/harvester-ants.html>

http://cisr.ucr.edu/argentine_ant.html

Fire Ants, Taber, 2000, <http://www.tamupress.com/product/Fire-Ants,1134.aspx>

Create and post at least 3 educational habitat displays at least 3 information kiosks of land management partners. At least 2 displays will focus on SL/SO species and their habitats.

In the fourth quarter, a display about native ants and their importance to Coast horned lizard, along with ways community members can improve their habitat conditions was created and posted in 10 locations on 4 conserved land locations (7 kiosks) and 3 other community locations.

Date	Topic	Materials Produced	Locations Posted	SL/SO Species/Habitats
Q1	1 Topic	3 Types of Materials	4 Kiosk Locations	0 SL/SO Species
Q2	0	0	0	0
Q3	1 Topic	2 Types of Materials	10 Kiosk Locations	Quino Checkerspot and Hermes Copper butterflies
Q4	1 topic	2 Types of Materials	10 Kiosk Locations	Native Ants/Coast Horned Lizard
Total	3 Topics	3 Types of Materials	10 Kiosk Locations	3 SL/SO Species

The display is a vertical infographic with a yellow background. It features several images and text blocks connected by red and green arrows. At the top left, a sad face icon with a hand to its mouth is above a photo of a horned lizard. Below this is the text 'Not Enough Harvester Ants to Feed Horned Lizards' with a red arrow pointing up. Next is a photo of ants and the text 'Argentine Ants Displace Native Harvester Ants' with a red arrow pointing up. Below that is a photo of ants and the text 'Non-native Argentine Ants Thrive with Water' with a red arrow pointing up. At the bottom left is a photo of a lawn with a sprinkler and the text 'Lawns and Most Landscaping Plants' with a red arrow pointing up. On the right side, the text 'Native and Low-water Plants' is above a photo of desert plants. Below that is 'Need Little Water' with a green arrow pointing down, followed by a photo of a drip irrigation system and 'Fewer Non-native Argentine Ants' with a green arrow pointing down. Below that is a photo of ants and 'More Native Harvester Ants' with a green arrow pointing down. At the bottom right is a photo of a horned lizard and 'More Horned Lizards' with a green arrow pointing down. A thumbs-up icon is next to the lizard photo. At the very bottom, the text 'Save Water and Help Horned Lizards!' is written in large blue letters.

Not Enough Harvester Ants to Feed Horned Lizards

Argentine Ants Displace Native Harvester Ants

Non-native Argentine Ants Thrive with Water

Lawns and Most Landscaping Plants

Native and Low-water Plants

Need Little Water

Fewer Non-native Argentine Ants

More Native Harvester Ants

More Horned Lizards

Save Water and Help Horned Lizards!

Task 2: Volunteer Coordination

Coordinate the efforts of 5 agencies (USFWS, CDFW, EHC, TNC, CBI) to provide habitat stewardship opportunities for conservation volunteers, recreational users, and neighbors of the preserves by conducting at least 12 volunteer habitat events, for at least 80 total participants. At least 4 volunteer habitat events will focus on SL/SO species and their habitats.

The 9 habitat stewardship events this included a series of photo monitoring events in support of the South County Grasslands project and the Lakeside ceanothus populations at Crestridge Ecological Reserve.

Date	Event	Partner Agencies	SL/SO Species/Habitats	# of Participants	Hours of Participation	Product (if applicable)
Q1 Totals	4 Volunteer Events	4 Agency Partners	4 SL/SO Volunteer Events	35	140	
Q2 Totals	4 Events	4 Agency Partners	1 SL/SO Volunteer Event	87	189	
Q3 Totals	9 Events	5 Agency Partners	8 SL/SO Volunteer Events	56	252	
7/16/2016	Graffiti Removal CER	EHC/CDFW	Oak riparian	12	36	33 total species of native seeds
8/6/2016	Native Seed Cleaning	CDFW/CBI/EHC	Dehesa beargrass	13	39	
9/10/2016	Native Seed Cleaning	CDFW/CBI/EHC	spiny redberry (in support of Hermes Copper)	24	72	
Q4 Totals	3 Events	3 Agency Partners	3 SL/SO Volunteer Events	49	147	
Totals	20 Volunteer Events	5 Agency Partners	16 SL/SO Volunteer Events	224	728	

Coordinate at least 50 meetings of 2 weekly volunteer crews with at least 6 participants providing a total of at least 300 hours of service. At least 75 hours of weekly volunteer effort will focus on SL/SO species and their habitats.

Date	Activity	Partner Agencies	SL/SO Species/Habitats	# Participants	Hours Participation	Hours SL/SO Participation	Product (if applicable)
Q1 Totals	21 Meetings				192	24	
Q2 Totals	22 Meetings				221	39	
Q3 Totals	16 Meetings				162	42	
7/6/2016	Riparian area maintenance	EHC	Oak Riparian	2	6	6	
7/11/2016	RJER Oak Maintenance	CDFW	Oak Riparian	1	3	3	
7/13/2016	Seed Collection	EHC		3	9		
7/18/2016	Demo garden maintenance	CDFW		1	3		
7/20/2016	Grasses area maintenance	EHC	Native grassland	2	6	6	
7/25/2016	Demo garden maintenance	CDFW		2	6		

8/1/2016	RJER maintenance	CDFW		1	3		
8/3/2016	Grasses area maintenance	EHC	Native grassland	1	3	3	
8/8/2016	Seed Collection	CBI/CDFW		4	12		
8/10/2016	Grasses area maintenance	EHC	Native grassland	3	9	9	
8/15/2016	Demo garden maintenance	CDFW		1	3		
8/22/2016	FWS Clean up, Plantago Seed Cleaning	FWS	Quino	2	8	8	
8/24/2016	Tool Shopping	EHC		2	4		
8/29/2016	Seed Cleaning	CBI/CDFW/FWS		3	9		
9/7/2016	Riparian area maintenance	EHC	Oak Riparian	4	12	12	
9/12/2016	Demo garden maintenance	CDFW		1	3		
9/14/2016	Demo garden maintenance	EHC		4	12		
9/21/2016	Plant Sale Prep	EDI		5	20		
9/21/2016	Plant sale prep	EDI		2	6		
9/24/2016	Plant Sale Prep	EDI		8	48		
9/24/2016	Plant sale prep	EDI		3	12		
9/26/2016	Plant Sale Prep	EDI		4	12		
9/27/2016	Plant sale prep	EDI		2	11		
Q3 Totals	24 Meetings			10	251	47	
Totals	103 Meetings				795	152	

Maintain and support volunteer patrol efforts at Crestridge Ecological Reserve (CER) and San Diego National Wildlife Refuge (SDNWR). Provide at least 3 training sessions per patrol (6 total) at least 2 of which will focus on SL/SO species and their habitats. Record and report on numbers and types of incidents reported to land managers by patrol members.

In the fourth quarter, Tritia Matsuda of the USGS provided a training on native and non-native ants of San Diego County, including their role in the ecosystem.

Date	Patrol Training Topic	Partner Agencies	SL/SO Species/Habitats	# of Participants	Hours of Training	SL/SO Training Hours
Q1 Totals	2 sessions (1 each CER and SDNWR)	3 agencies	Mexican flannelbush, Quino checkerspot butterfly, and Coast barrel cactus	19	47	22
Q2 Totals	1 session for SDNWR Invasive Plants (2/20/2016)	1 agency	Coastal sage scrub/CA gnatcatcher habitat, Sahara mustard	13	39	39
Q3 Totals	1 session for CER Invasive Plants (4/9/2016)	1 agency	Coastal sage scrub habitat/native grasslands habitat, Erharta longifolia	8	20	20
Q4 Totals	1 combined CER/SDNWR training	2 agencies	Coast horned lizards	6	15	15
Totals	5 sessions	3 agencies	3 SL/SO-focused events	46	131	96

Seven incidents were reported in the July-September 2016 quarter; five by patrol members.

Reporting Period	Incident Date	Incident Type	Incidents Reported by Patrol Members Crestridge Complex and SDNWR	Incidents Reported by Others Crestridge Complex only	Volunteer Hours for Incident Reporting (1 incident=1hr)
Q1 Total			4	0	4
Q2 Totals			13	15	13
Q3 Totals			8	3	8
Q4	7/6/2016	Motor vehicle	1		1
Q4	7/10/2016	Use of fire works		1	
Q4	7/19/2016	Motor vehicle	1		1
Q4	8/8/2016	Motor vehicle		1	1
Q4	9/22/2016	Dumping		1	
Q4	9/26/2016	Motor vehicle	1		1
Q4	9/29/2016	Motor vehicles	1		1
			5	3	5
Total			30	21	30

Task 3: Long-term Stewardship Development/Environmental Education

Provide education, stewardship, and volunteer habitat assistance through school environmental science field trips to 1,000 elementary school students from at least 2 school districts. Students will visit at least 2 conserved properties. Student restoration work will focus on grasslands, oak/sycamore/willow riparian, coastal sage scrub, or pollinator habitat restoration.

This task was completed in the third quarter. The project served 1,245 students from 3 school districts who visited 3 conserved lands areas. Habitats included coastal sage scrub, grasslands, oak riparian, and pollinator-focused restoration areas.

Date	School	Grade	District	Partner Agency/Location	Habitat Focus	# of Students	Hours of Restoration
Q1			SDUSD, CVUSD			377	188
Q2			CVUSD, JDUSD			470	235
Q3			CVUSD, LMSPSD, SDUSD			398	199
Q4	na	na	na			0	0
Totals						1245	622

Task 4: Administration

General administration was conducted related to supervising personnel and managing budget, supplies, and contractors working in support of the program. The EDI Board Treasurer volunteered 12 hours/month for each month of the quarter, for a total of 36 hours.

Work Anticipated Next Period: NA