

Final Report

PILOT PROJECT: REDUCTION OF HUMAN SUBSIDIES OF RAVEN POPULATIONS IN THE CITIES OF RIDGECREST, CALIFORNIA CITY AND THE TOWNSHIP OF MOJAVE, KERN COUNTY, CALIFORNIA



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1.0 EXECUTIVE SUMMARY

- 1.1 The population of the common raven (*Corvus Corax*) has proliferated in California, increasing approximately 700% from 1969 to 2004 in the west Mojave Desert, bolstered primarily by human-provided subsidies of food, water, and nest sites associated with a variety of land uses.
- 1.2 Raven populations present a significant threat to California's wildlife, notably the federal and state listed desert tortoise (*Gopherus agassizii*), and negatively affect renewable energy, agricultural and other industries in the state.
- 1.3 In spite of decades of studying raven populations, federal, state, and local governments have implemented limited measures to address the exponential increase in raven populations and their negative effects.
- 1.4 The Coalition for a Balanced Environment (CBE) conducted field monitoring of compliance of commercial waste container ordinances and the presence of ravens from March 14 through April 12, 2016 in the cities of Ridgecrest and California City and the town of Mojave. During the survey period, the CBE performed 556 surveys of an average of 111 commercial business sites and government facilities. In aggregate, non-compliance 42% (46.2 open containers observed of 111 surveys performed). During the same survey period, 177 ravens were observed. The rates of non-compliance were 45% for the City of Ridgecrest, the city with the highest number of commercial establishments, followed by 40% for Mojave and 29% for the City of California City.
- 1.5 After CBE completed its baseline monitoring, the CBE field monitor performed community outreach between April 25 and May 6, 2016 to inform commercial business owners about the relationship between open waste containers and overpopulation of ravens. Shortly thereafter, between May 9 and 25, 2016, the CBE field monitor performed seven (7) follow up surveys focused on 111 commercial sites in Ridgecrest, California City, and Mojave. CBE found that non-compliance rates decreased to 35% in Ridgecrest and to 23% in California. However, non-compliance rates increased in Mojave from 40% to 44%. Forty-one ravens were observed during the post-outreach monitoring period, representing an average of 7 ravens on each survey day (290 total surveys performed divided by 41 ravens observed).
- 1.6 We recommend expanding the scope of the pilot project – human subsidies of raven populations including:
 - 1.6.1 Coordinating with City and County public health agencies to increase awareness of raven over-population and compliance with waste management ordinances;
 - 1.6.2 Encouraging contract waste haulers to affix large, visible decals on all

waste containers (both commercial and residential) and advising users to keep containers closed;

- 1.6.3 Advocating for increased penalties, sanctions, and other curative measures to increase compliance with waste management ordinances;
- 1.6.4 Replicating the CBE waste management ordinance compliance monitoring and outreach effort in major population centers in Kern County and neighboring counties such as San Bernardino, Riverside, and Los Angeles counties associated with critical habitat and other protected habitats for the tortoise; and
- 1.6.5 Improving survey methodology, implementation, and analysis to evaluate the correlation of raven presence and open waste containers.

2.0 BACKGROUND

Over the last several decades, the population of the common raven (*Corvus corax*) has proliferated in California bolstered primarily by human-provided subsidies of food, water, and nest sites associated with a variety of land uses (Desert Managers Group 2010). Large numbers of ravens are now nesting around landfills and water sewage facilities, swarming around open trash bins, and preying on threatened and endangered species including California's state reptile, the desert tortoise (*Gopherus agassizii*). California's unchecked raven population is causing an imbalance in California's native wildlife populations and is a major concern for the state's agricultural industry. Renewable energy projects are also subject to raven management mitigation fees and on-going raven management monitoring and reporting requirements.

Raven Population Growing Exponentially in California Due Largely to Human Subsidies

From 1969 to 2004 the numbers of common ravens in the west Mojave Desert increased approximately 700 percent (Boarman and Kristan 2006). Population increases have also been noted at other locations in the California deserts. From 1968 to 1988, raven populations increased 4.7-fold in the Colorado and Sonoran deserts (Bureau of Land Management et al. 1989, Table 1). The significant growth of raven populations above historic levels and a shift from a migratory species to a resident species is due in a large part to recent human subsidies of food, water, and nest sites (Knight et al. 1993, Boarman 1993, Boarman and Berry 1995). The U.S. Fish and Wildlife Service (USFWS) noted that from 1966 to 2006 the number of common ravens observed during surveys increased 1,685-fold while golden eagles, greater roadrunners, and red-tailed hawks increased 5-, 13-, and 57-fold, respectively.

Raven population numbers have increased at a rate that is disproportionately greater than other predatory birds in the California deserts. (U.S. Fish and Wildlife Service 2008)

Raven Predation on California's Wildlife is Causing an Ecological Imbalance, Especially on California's State Reptile, the threatened desert tortoise

The common raven is a highly adaptive and intelligent predator. Raven predation on hatchling and juvenile desert tortoises is especially intense (U.S. Fish and Wildlife Service 1994). Predation on desert tortoise hatchlings and juveniles by the common raven appears to have shifted the composition of the desert tortoise population to predominantly adult desert tortoises by removing a substantial proportion of hatchling and juvenile desert tortoises in some areas, and has adversely affected recruitment (Berry et al. 1986).

The USFWS cites reports from several researchers and field biologists of numerous carcasses of hatchling and juvenile desert tortoises beneath raven nests and perch sites (USFWS 2008) including:

- 136 carcasses of juvenile desert tortoises showing evidence of raven predation and found at the base of fence posts along the perimeter of the Desert Tortoise Natural Area (Campbell 1983).
- Within a 4-year period, 250 juvenile desert tortoise carcasses were located beneath one raven nest in the west Mojave Desert (Woodman and Juarez 1988).
- A scientific researcher reported that 29 and 44 percent, respectively, of the desert tortoise deaths or mortality at two study plots during a 6-year period, were probably caused by raven predation (Berry et al. 1986).
- At another location, 70 percent of the mortality of juvenile desert tortoises was attributed to raven predation (Berry et al. 1986).
- Ravens have been observed attacking and eating juvenile desert tortoises (Berry 1985, Boarman 1993).
- Ravens eat hatchling and juvenile desert tortoises by pulling off the head and limbs (40 percent) or pecking holes through the soft carapace (upper half of the shell) (46 percent) or plastron (lower half of the shell) (13 percent; n = 341) (Boarman and Heinrich 1999).

Federal and State Agencies Struggle with Growing Raven Populations

Federal and state management agencies have struggled with managing the raven and its impacts on the desert tortoise and other wildlife. The Bureau of Land Management (BLM) significantly curtailed its efforts to reduce raven predation of desert tortoises around 1994 (USFWS 2008). The USFWS, in conjunction with other federal agencies, issued a final Environmental Assessment (EA) to reduce raven predation on tortoises in 2008 and authorized implementation of raven management measures under a Finding of No Significance (FONSI) in March 2008. In its 2008 EA, the USFWS stated that *“currently there is no organized program being implemented to reduce the number of common ravens in the California desert.”* Now, 8 years after federal agencies adopted raven management measures, there are still no organized efforts to manage the growth and excessive size of the raven population.

In 2002, the California Department of Fish and Game (CDFG) (now renamed Department of Fish and Wildlife (CDFW)) published a comprehensive study of corvid predation on threatened and endangered species in California with a focus on the Common Raven, American Crows (*Corvus brachyrhynchos*) and Steller’s Jay (*Cyanocitta stelleri*). The CDFG observed:

*“Corvids have been documented preying on the nests or young of the following threatened or endangered species in California: California Condors (*Gymnogyps californianus*), Greater Sandhill Cranes (*Grus canadensis tabida*), Western Snowy Plovers (*Charadris alexandrinus nivosus*), California Least Terns (*Sterna antillarum browni*), Marbled Murrelets (*Brachyramphus marmoratus*), San Clemente Island Loggerhead Shrikes (*Lanus ludovicianus mearnsi*), Least Bell’s Vireo (*Vireo bellii pusillus*), and desert tortoises (*Gopherus agassizii*). American Crows and Common Ravens have been documented as the most important nest predators on Western Snowy Plovers and California Least Terns in several locations in California. In some cases, predation by crows and ravens has caused California Least Terns to abandon their nesting colonies for a season. In addition, predation by crows and ravens is the principal cause of nest failure for Western Snowy Plovers in many locations.” (Liebezeit, J.R. and T.L. George 2002)*

Similar to the USFWS conclusion that no organized program exists to address increasing raven populations, the CDFG also concluded in its 2002 report: “At this point, raven control has been short-term and sporadic.” To date, it is unclear if the state of California has implemented any of the recommendations of its own 2002 report.

Local Governments Lack of Enforcement of Trash, Water and Other Public Ordinances Contribute to Raven Population Increases

Similar to limited federal and state efforts, most local government agencies have failed to reduce human subsidies fueling raven population growth. All cities and counties have existing trash, water, and other public health and safety ordinances

that – if enforced – could have a significant impact on reducing raven population growth. Prior to conducting this study, the DTTC reported ravens scavenging in open commercial dumpsters in California City and Ridgecrest to local elected officials without any notable increase in enforcement of waste management ordinances.

Without Effective Raven Management, California's Leading Agricultural and Renewable Energy Industries are Hampered

In addition to having negative effects on California's sensitive ecosystems, California's excessive raven population is harming the State's agricultural concerns and delaying the development of renewable energy.

California's agricultural production is unparalleled globally and is a critical economic driver for both the state and country. Documentation of excessive raven populations affecting growers dates back decades. The over population of ravens is significantly affecting pistachio and tomato crops in particular and costing California growers millions of dollars annually (Salmon, T.P., et al 1986). Of course, this cost is ultimately borne by consumers in California and beyond.

Significant renewable energy production facilities are located in the California deserts. For years, companies developing renewable energy projects have been contributing funds on a per-acre basis specifically for raven management under a 2010 Memorandum of Agreement between the National Fish and Wildlife Foundation (NFWF) and the federal and state agencies organized as the Renewable Energy Action Team (REAT). In spite of the funds collected from renewable energy projects and other developers, federal and state agencies have yet to implement clear and effective raven management initiatives. Currently, the National Fish and Wildlife Foundation (NFWF) manages more than \$6 million dollars in developer fees for raven management (Marschand, Personal Communication 2015), but funds appear to be spent on monitoring ravens in desert tortoise habitats rather than implementing raven population control measures.

The Growth of Raven Populations is a Regional Problem Affecting Wildlife and Industries throughout California and in Other Western States

In April 2016, the San Bernardino County Board of Supervisors adopted a unanimous resolution urging the U.S. Congress and the USFWS to remove the raven from Migratory Bird Treaty Act protection and for further actions to reduce the population of common ravens, especially in the California deserts.

In neighboring Nevada, raven predation issues similar to those in California deserts are threatening Nevada's sage-grouse population. In response, Nevada Governor

Brian Sandoval established the Governor's Greater Sage-grouse Advisory Committee by executive order in March 2012 (Greater Sage-grouse Advisory Committee 2012a). According to sources cited by The Greater Sage-grouse Advisory Committee in Nevada, the common raven was identified as the most frequent predator during the sage-grouse nesting season. The Nevada committee also noted that raven populations increased 600 percent in the Great Basin over the past 20 or more years. (Greater Sage-grouse Advisory Committee 2012b). The Great Basin comprises more than 72.7 million hectares (more than 179 million acres) across five states: Nevada, Utah, Idaho, Oregon and California. In 2014, citing ravens as a primary nest predator of sage-grouse eggs and chicks, the Idaho Department of Fish and Game announced that it would conduct both lethal and non-lethal control actions on ravens in three study areas in southern Idaho and evaluate whether raven removal improves sage-grouse populations (Idaho Fish and Game 2014). Similar raven issues and management efforts are underway in Wyoming and Montana.

3.0 PILOT PROJECT: REDUCTION OF HUMAN SUBSIDIES OF RAVEN POPULATIONS

As indicated earlier, local government agencies have failed to reduce human subsidies that contribute to raven population growth. From March 14 to May 25, 2016, the Coalition for a Balanced Environment (CBE) conducted a pilot project to monitor compliance with commercial open-trash receptacle ordinances in the cities of Ridgecrest and California City and the unincorporated town of Mojave, all located in eastern Kern County. (See **Exhibit "A" – Project Site Maps**)

3.1 Project Sites

CBE's monitoring and community outreach efforts were conducted in the cities of Ridgecrest and California City and the unincorporated town of Mojave. Selected provisions of waste management ordinances are cited:

City of Ridgecrest. The City is located in northeastern Kern County and is adjacent to the Naval Air Weapons Station China Lake (NAWS, or China Lake). The U.S. Census estimates a population base of 28,780 in 2015 and a total of 1,572 business firms as of 2012. (U.S. Census, Ridgecrest). The City of Ridgecrest solid waste ordinances require that waste containers "*shall have the lids of such portable containers kept closed or shall be kept covered if a lid is not available, except when depositing waste.*" (Section 13-2) Additionally, "*such containers must include close-fitting lids or covers which shall be kept closed at all times, except when necessarily opened to permit waste to be taken there from or deposited therein.*" (Section 13-3)

City of California City. The U.S. Census estimates a population base of 13,277 in 2015 and a total of 808 business firms as of 2012. (U.S. Census, City of California City).

The City's waste management ordinance states that containers "*shall have the lids of such portable containers kept closed or shall be kept covered if a lid is not available, except when depositing waste, to prevent the loss of any waste material.*" (Section 6-2.106) Further, the City requires that "*the property owner or occupant shall make reasonable effort to maintain the receptacle in a serviceable condition, ensure lids are closeable.*" (Section 6-2-115)

Mojave. The area known as "Mojave" is a census-designated place (CDP) in Kern County, California, United States. Mojave is located 50 miles (80 km) east of Bakersfield. The town is located in Antelope Valley, in the southwestern region of the Mojave Desert, below and east of Oak Creek Pass and the Tehachapi Mountains. The population was 4,238 at the 2010 census, up from 3,836 at the 2000 census. The Census does not include information about business establishments. As an unincorporated area of Kern County, the waste management ordinances of the County of Kern apply to waste management practices in Mojave. Under the Kern County waste management ordinance, "*the cover [of waste containers] shall not be removed except when necessary to place solid waste therein or to remove solid waste therefrom.*" (Section 8.28.030). Non-compliant responsible parties are subject to abatement orders to protect the "*public health, welfare, the environment or natural resources*" of Kern County. (Section 8.28.110)

3.2 Project Scope and Design

The pilot project involved four (4) main phases as described below:

Phase 1 – Mapping. Prior to initiating field monitoring, the CBE designed survey routes through the key commercial sections of Ridgecrest, California City and Mojave, identifying 78, 18 and 17 target locations respectively. The 113 sites surveyed were primarily comprised of a wide range of commercial businesses, along with a park and several schools. (See **Exhibit "B" – Maps of Pilot Areas**)

Phase 2 – Field Monitoring. Field monitoring was conducted in two (2) distinct time periods. First, baseline surveys were conducted for a five (5) week period. Second, CBE's field monitor engaged local businesses with an informational brochure, and third, the field monitor conducted follow-up surveys to determine evidence of increased compliance. In Ridgecrest, baseline monitoring was conducted March 14, 2016 to April 11, 2016; and follow-up surveys were conducted from May 9 to May 25, 2016. In California City and Mojave, baseline monitoring was performed from March 15 to April 12, 2016; and follow-up surveys from May 10 to May 25, 2016. Monitoring data were logged in an Excel Spreadsheet including business name, time of day, geospatial location information, trash bin status (open/closed), and presence or absence of ravens at each site. Additionally, the field monitor photographed each site with a digital camera with time of day and geospatial location information.

Phase 3 – Data Analysis. Photo monitoring data collected during the surveys were compiled for each study area and weekly data collection information was consolidated in a master spreadsheet. Photo monitoring data sheets (See: “CBE DATASET – Ridgecrest Photos.xlsm, CBE REPORT DATASET – California City Photos.xlsm, CBE DATASET – Mojave Photos.xlsm) and consolidated monitoring data sheets (See: CBE REPORT DATASET – Ridgecrest, Cal City, and Mojave Data compiled data.xlsx) are submitted in separate data files.

Phase 4 – Community Outreach. On April 25–26 and May 5-6, 2016, CBE’s field monitor disseminated an informational brochure to business owners, managers and other staff for posting at each monitored location. (See **Exhibit “C” – Outreach Brochure**) The relationship between open trash containers and raven population growth was discussed with each recipient (See: CBE REPORT DATASET – Ridgecrest, Cal City, and Mojave Data compiled data.xlsx; entities receiving the CBE Outreach Brochure are identified in the dataset in the column titled “flyer). Additionally, on May 2, 2016, CBE contacted the following elected officials and agency personnel of each target jurisdiction to initiate discussions about waste management practices, compliance, and enforcement: Ridgecrest Mayor Breeden and Dennis Speer, Director of Public Works, Ridgecrest; California City Mayor Jennifer Wood and the City Manager of California City; and Kern Waste Management Agency.

3.3 Baseline Monitoring Results

CBE conducted field monitoring of compliance of commercial waste container ordinances and the presence of ravens from March 14 through April 12, 2016 in the cities of Ridgecrest and California City and the town of Mojave. During the survey period, the CBE performed 556 surveys of an average of 111 commercial business sites and government facilities. In aggregate, non-compliance 42% (46.2 open containers observed compared to 111 surveys performed). During the same survey period, 177 ravens were observed. The rates of non-compliance were 45% for the City of Ridgecrest, the city with the highest number of commercial establishments, followed by 40% for Mojave and 29% for the City of California City.

3.3.1 City of Ridgecrest

An average of forty-five percent (45%) of containers were open in the City of Ridgecrest during the baseline survey period (average of 34 open containers divided by an average 76 containers monitored). On average, 28 ravens were observed during each survey date, ranging from 15 to as high as 41.

**Table 1
City of Ridgecrest Baseline Monitoring Surveys (Weeks 1-5)**

Date	Total surveys performed	Open containers observed	Closed containers observed	Percentage Open containers	Ravens observed
3/14/16	78	38	40	49%	41
3/21/16	75	26	49	35%	24
3/28/16	78	41	37	53%	37
4/4/16	76	32	44	42%	24
4/11/16	74	34	40	46%	15
TOTAL	381				141
AVERAGE	76	34	45	45%	28

3.3.2 City of California City.

An average of twenty-nine percent (29%) of containers were open in the City of California City during the baseline survey period (average of 5.2 open containers divided by 18 containers monitored). On average, just over 5 ravens were observed during each survey date, ranging from 2 to as high as 10.

**Table 2
City of California City Baseline Monitoring Surveys (Weeks 1-5)**

Date	Total surveys performed	Open containers observed	Closed containers observed	Percentage Open containers	Ravens observed
3/15/16	18	5	13	28%	4
3/22/16	18	3	15	17%	10
3/29/16	18	5	13	28%	5
4/5/16	18	6	12	33%	2
4/12/16	18	7	11	39%	5
TOTAL	90				26
AVERAGE	18	5.2	12.8	29%	5.2

3.3.3 Mojave

An average of forty percent (40%) of containers were open in Mojave during the baseline survey period average of 7 open containers divided by 17 containers monitored). On average, 2 ravens were observed during each survey date.

**Table 3
Mojave Baseline Monitoring Surveys (Weeks 1-5)**

Date	Total surveys performed	Open containers observed	Closed containers observed	Percentage Open containers	Ravens observed
3/15/16	17	7	10	41%	1
3/22/16	17	6	11	35%	6
3/29/16	17	7	10	41%	0
4/5/16	17	8	9	33%	2
4/12/16	17	7	10	47%	1
TOTAL	85				10
<i>AVERAGE</i>	<i>17</i>	<i>7</i>	<i>10</i>	<i>40%</i>	<i>2</i>

3.4 Post-Outreach Monitoring Results

After CBE completed its baseline monitoring, the CBE field monitor performed community outreach in the last week of April and first week of May 2016 to inform commercial business owners about the relationship between open waste containers and raven overpopulation. CBE Outreach Brochures were hand delivered to monitored businesses in Ridgecrest. On site manager were requested to post the flyer in a visible area at each location and the managers were supportive and accommodating.

Shortly thereafter, between May 9 and 25, 2016, the CBE field monitor performed seven (7) follow up surveys focused on 111 commercial sites in Ridgecrest, California City, and Mojave. CBE found that non-compliance rates decreased to 35% in Ridgecrest and to 23% in California City. However, non-compliance rates increased in Mojave from 40% to 44%. Forty-one ravens were observed during the post-outreach monitoring period, representing an average of 7 ravens on each survey day (290 total surveys performed divided by 41 ravens observed).

3.4.1 *City of Ridgecrest*

Within one week after distributing the CBE brochure, non-compliance rates decreased from 45% to 35%. There was a significant decline in ravens observed, dropping from a daily average of 28 to 11, or a 61% decrease.

**Table 4
City of Ridgecrest Post-Outreach Monitoring Surveys (Weeks 9-11)**

Date	Total surveys performed	Open containers observed	Closed containers observed	Percentage Open containers	Ravens observed
5/9/16	72	30	42	42%	6
5/18/16	74	26	48	35%	16
5/25/16	74	20	54	27%	12
TOTAL	220				34
<i>AVERAGE</i>	73	25	48	35%	11

3.4.2 City of California City

After distributing the CBE brochure, non-compliance rates of open containers decreased from 29% to 23%. The average number of ravens observed declined from 5.2 to 3, or a 42% decrease.

**Table 5
City of California City Post-Outreach Monitoring Surveys (Weeks 9-11)**

Date	Total surveys performed	Open containers observed	Closed containers observed	Percentage Open containers	Ravens observed
5/10/16	18	3	15	17%	5
5/25/16	18	5	13	28%	1
TOTAL	36				6
<i>AVERAGE</i>	18	4	14	23%	3

3.4.3 Mojave

After distributing the CBE brochure, non-compliance rates increased from 40% to 44%, although the absolute number of open containers observed remained relatively equal between the baseline and post-outreach surveys. The average number of ravens observed declined from 5.2 to 3, or a 42% decrease.

**Table 6
Mojave Post-Outreach Monitoring Surveys (Weeks 9-11)**

Date	Total surveys performed	Open containers observed	Closed containers observed	Percentage Open containers	Ravens observed
5/10/16	17	8	9	47%	0
5/25/16	17	7	10	41%	1
TOTAL	34				1
AVERAGE	17	7.5	8.5	44%	.5

4.0 OBSERVATIONS

4.1 Poor to Moderate Waste Management Compliance. In general, non-compliance rates (open containers versus total surveys performed) during the baseline monitoring effort were generally poor to moderate, with an average non-compliance rate of 42% among all monitored commercial establishments in Ridgecrest, California City, and Mojave.

4.2 Ravens Occur in and around Commercial Waste Containers; Closed Waste Containers Deter Ravens. During the CBE baseline monitoring period from March through April, 2016, 177 ravens were observed during 556 monitoring surveys of commercial waste containers performed at 111 sites. During CBE's post-outreach monitoring activities, 41 ravens were observed during the post-outreach monitoring period.

4.3 Commercial Managers are Responsive to Community Outreach Efforts. In all three municipalities, on-site commercial managers were cooperative with CBE's field monitor and readily posted CBE's brochure about raven overpopulation.

4.4 Compliance and with Closed-Waste Receptacle Ordinances Improves with Community Outreach and Awareness. After CBE's community outreach to onsite commercial site managers, CBE found that non-compliance rates of open waste containers decreased.

4.5 Survey Methodology to Compare Baseline and Post-Outreach Compliance Requires Refinement to Ensure Accurate Analysis. The post-outreach surveys for compliance should equal the number of surveys performed during baseline monitoring. The non-compliance results in the pilot study may understate or overstate the level of compliance due to the short timeframe and limited number of post-outreach surveys completed.

4.6 Survey Methodology to Determine Presence and Absence of Ravens Should Be Better Designed and Implemented. The pilot project documented the absolute number of ravens observed during each survey visit. Without additional details it is difficult to establish a correlation between presence or absence of ravens relative to open and closed waste containers. For example, raven presence may be affected by time of day, feeding patterns, and heat and other climate factors. Future surveys should include additional survey metrics.

5.0 RECOMMENDATIONS

5.1 City and County public health agencies should include informational materials about waste management ordinances and raven population management in public postings and mailings to both businesses and residents. Potential avenues for distributing outreach materials include utility bills, property tax invoices, business license and permit renewal notices, and postings in public libraries, parks, and other public facilities.

5.2 Contract waste haulers should affix large, visible decals on all waste containers (both commercial and residential) advising users to keep containers closed and inform users of the risk of subsidizing vermin and ravens.

5.3 CBE should enter into cooperative agreements with Ridgecrest, California City, and Kern County to assist these jurisdictions in increasing consistent compliance with waste management ordinances and in implementing other raven management measures.

5.4 CBE should expand its raven management efforts to include cooperative efforts with waste management hauler companies and municipal waste management authorities in Kern County.

5.5 CBE should support increased penalties, sanctions, and other curative measures to increase compliance with Ridgecrest, California City, and Kern County waste management ordinances.

5.6 CBE should expand the scope of the pilot project to include major population centers in Kern County and neighboring counties such as San Bernardino, Riverside, and Los Angeles counties.

5.7 CBE should continue to improve survey methodology, implementation, and analysis to evaluate the correlation of raven presence and open waste containers.

6.0 ABOUT THE COALITION FOR A BALANCED ENVIRONMENT

The Coalition for a Balanced Environment (CBE) is composed of a diverse group of environmental and industry leaders dedicated to implementing on-the-ground measures to alleviate the devastating impacts of raven populations on California's wildlife and ecosystems.

CBE is endorsed by prominent environmental organizations such as the Desert Tortoise Preserve Committee, Inc., Desert Tortoise Council, Defenders of Wildlife, Solar Environmental Conservancy, Inc., and The Turtle Conservancy. CBE is also endorsed by business associations and entities such as the Newberry Springs Hi-Desert Pistachio Association, Lucerne Valley Economic Development Association, Ovocontrol, and renewable energy companies such as Oasis Lifecycle Solutions, LLC, AquaHelio Resources, LLC. Governmental partners are essential to CBE's mission and the CBE is pleased to be supported by the Mojave Desert Resource Conservation District.

The CBE and its coalition partners support the following initiatives to address raven overpopulation in California:

- Initiate public information and awareness campaigns through local media, social media, and government channels.
- Support additional research on effective raven management controls with a special emphasis on reducing raven predation on threatened and endangered species.
- Encourage local and regional health departments to enforce existing ordinances requiring closed waste containers, thereby reducing available trash and subsidies that contribute to growth of raven populations.
- Advocate for and support the implementation of raven management actions consistent with the USFWS Environmental Assessment to federal, state, and county agencies.
- Create and manage raven control programs in Desert Tortoise Management Areas, critical habitat for the desert tortoise, federal management areas, and other sensitive areas covered by USFWS Environmental Assessment.
- Support changes in federal and state laws and regulations to permit more productive raven population control measures.

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Exhibit "A"

Area Map

Exhibit "A-1"

Area Map

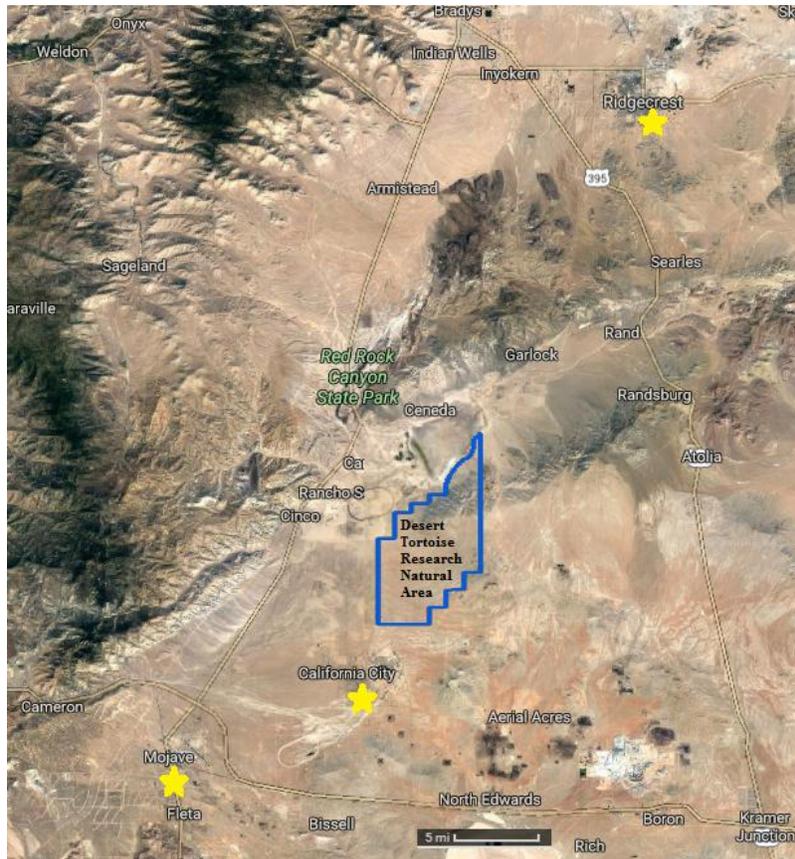


Exhibit "B"

Maps of Pilot Areas

Exhibit "B-1"

Project Area Map – City of Ridgecrest

Ridgecrest: Area bounded by South / North Mahan Street on west, West Upjohn Avenue on south, North China Lake Blvd on east, and West Inyokern Road on north; Ridgecrest public parks; and Ridgecrest public schools. Stars depict businesses surveyed for waste container compliance.

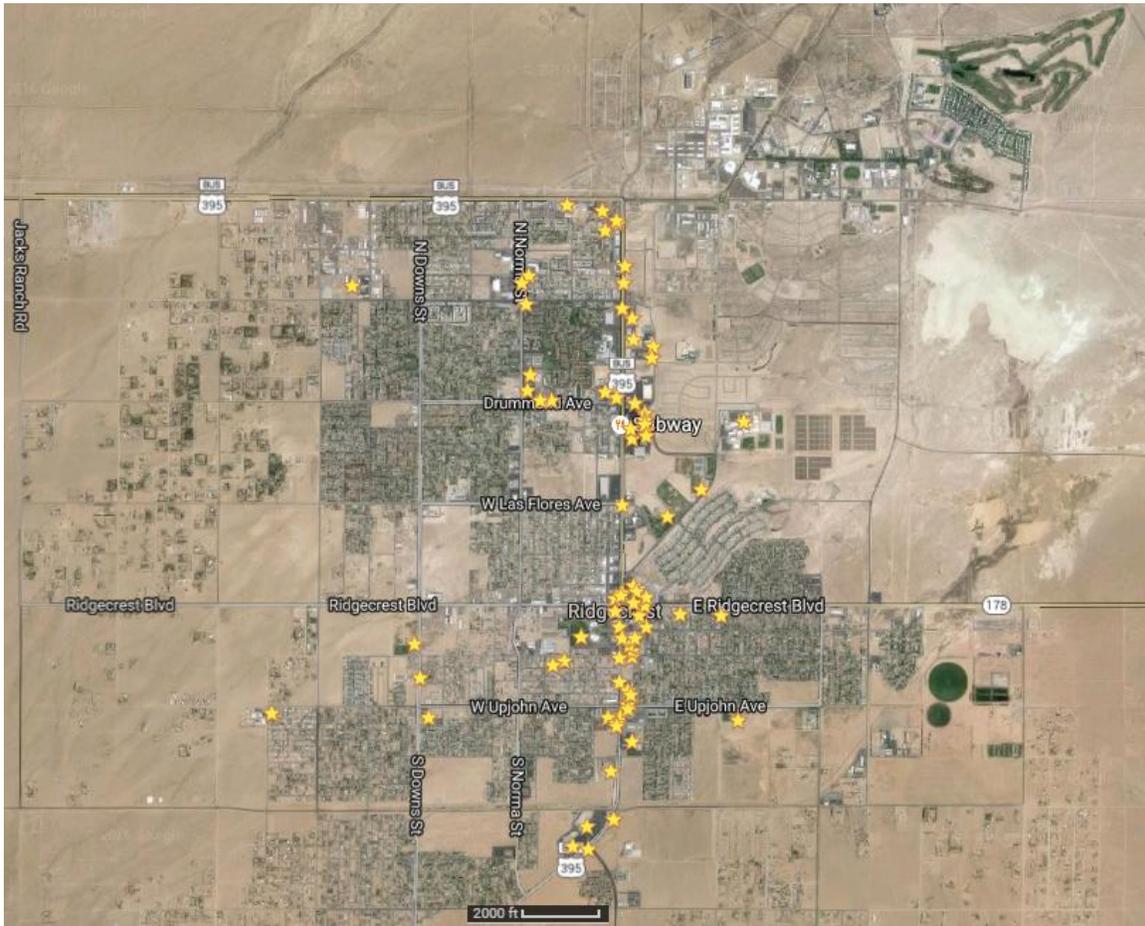


Exhibit "B-2"

Project Area Map – City of California City

California City: Area bounded by Mitchell Blvd on west along California City Blvd to Randsurg Mojave Road; California City Public Golf Course, Tierra Del Sol Golf Course and the California City public parks; and California public schools. Stars depict businesses surveyed for waste container compliance.

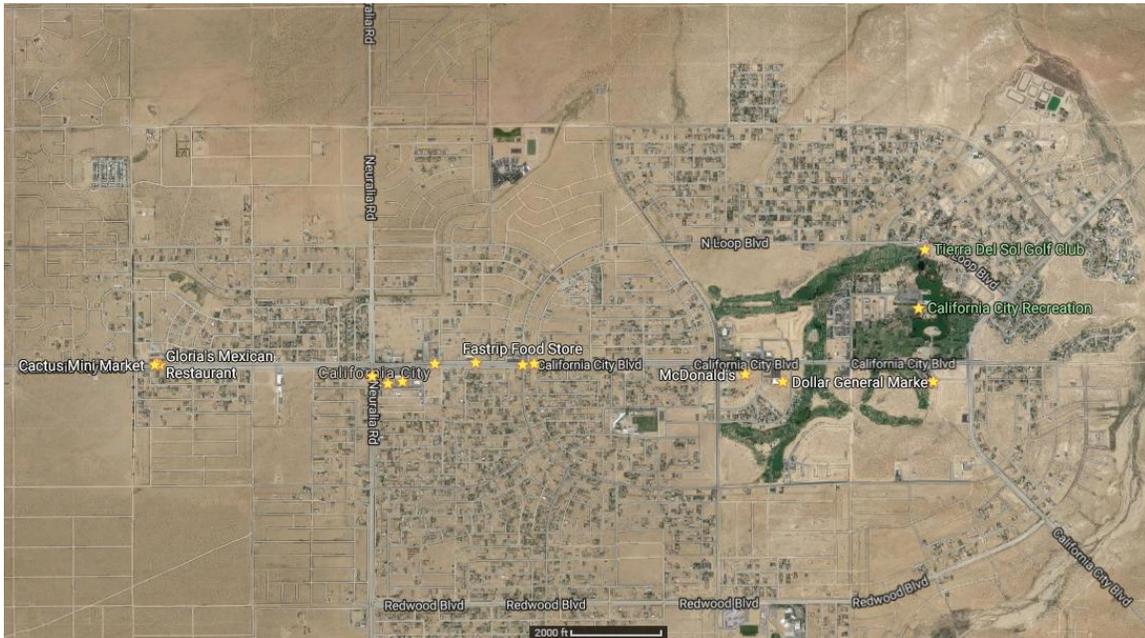


Exhibit "B-3"

Project Area Map – Township of Mojave

Mojave: Area bounded by Interstate 14 on west, Hwy 58 on south, Dominion Street / Sucko Way on east, and Benton Avenue on north; Mojave public parks, and Mojave public schools. Stars depict businesses surveyed for waste container compliance.



Exhibit "C"
Outreach Brochure



PLEASE KEEP YOUR BINS CLOSED



Over 75% of local businesses are not regularly keeping their trash dumpsters closed, contributing to a significant over-population of common ravens. Ravens in turn are preying heavily on threatened local species.



Local Desert Tortoise remains after raven attack

Raven predation poses a significant threat to the Desert Tortoise and other local species, while seriously compromising the overall balance of our California desert ecosystem.

Please do your part and take the simple step of closing and securing your trash dumpsters to preserve the environment and beauty of the community.



For more information or to join our coalition:
WWW.CBECALIFORNIA.ORG • INFO@CBECALIFORNIA.ORG • 415.699.0228