

2019 Year End Report for Conservation and Research Partnerships

This is a summary of the research and conservation efforts supported
by CuriOdyssey's Conservation Fund in 2019

1. AZA S.A.F.E.
2. Bay Area Bobcat Study (*Felis rufus*)
3. Bay Area FrogWatch (Anurans)
4. CuriOdyssey Beach Cleanup
5. CuriOdyssey Conservation Crew
6. Marsh Research by Catherine Brett (LIRA)
7. Marsh Restoration Project
8. Northern Pacific Tree Frog Pond (*Psuedacris regilla*)
9. Ringtail Research Project (*Bassariscus astutus*)
10. River Otter Ecology Project (*Lontra canadensis*)
12. Urban Wildlife Research Project (*Urocyon cinereoargenteus*)
13. Western Pond Turtle (*Emys marmorata*, *Emys pallida*) Ecology and Conservation
14. Mammal Ecology and Conservation Unit UC Davis – Salt Marsh Harvest Mouse Research
15. Party for the Planet



1. AZA S.A.F.E.

No funds requested

Summary written by Nikii Finch-Morales

CuriOdyssey continues to cooperate with other facilities for AZA's S.A.F.E. initiative- Saving Animals From Extinction. Western pond turtles were one of the first species unveiled by AZA to focus conservation efforts on. CuriOdyssey is home to seven western pond turtles- two adults and five juveniles that live in the walk through aviary that are the offspring of the two adults. In the springtime of 2018, we collected blood samples on our two adults to determine if our turtles are the northern or southern subspecies. The results revealed that the male was___ and the female was___. The five juveniles were also tested and their results showed that they were hybrids of both the Northern Western Pond Turtles and the Southern Western Pond Turtles. Although the juveniles will not be added to the future breeding program for this species, we will continue to display them to educate visitors on the species and why they need to be protected.

2. Felidae Conservation Fund

Funds requested: \$ 1,000.00

Funds granted: \$ 1,000.00

Summary written by Courtney Coon, FCF



Figure 1. Puma photographed near La Honda area (San Mateo County).



Felidae received funding in spring2019 to continue our bobcat genotyping study in the Marin headlands. Using our optimized protocols for confirming bobcat samples and identifying individual bobcats, we identified 12 unique bobcats from the first round of scat collection. A second round of scat collections took place in April 2019 in the original study location and also at urban parks also in southern Marin county. In the coming year, these samples will be sent off for genotyping and the data collected for this project will be compared to our camera data to identify specific individuals. This data is being used to determine the rate of turnover in the population and the genetic differentiation between 'wildland' and 'urban' bobcats. We hope to use the data to write a National Science Foundation (NSF) proposal to further study this population including more samples and screening them for toxic chemicals like rodenticides and infectious diseases to test the interaction between genotypes / family groups, toxin exposure and disease susceptibility.



3. Bay Area FrogWatch

Funds requested: \$105.25

Funds granted: \$105.25

Summary written by Catherine Brett

The 2019 FrogWatch season saw 18 newly certified volunteers join our group. Volunteers are expected to go to wetland sites and listen for frog and toad calls and record that data in an online database. Of the six species that are found in the Bay Area, volunteers observed a total of three different species during the season- the Pacific tree frog (*Pseudacris regilla*), the western toad (*Anaxyrus boreas*), and the American bullfrog (*Rana catesbeiana*). The California red legged frog (*Rana aurora draytonii*), which is CA's state amphibian and a threatened species, was seen at one of the wetland sites, although we did not hear it calling. Conservation budget was used to purchase memory sticks for the volunteers and snacks for the training.



4. CuriOdyssey Beach Cleanup

Funds requested: \$125.32

Funds granted: \$125.32

Summary written by Roisin Altreuter and Catherine Brett

CuriOdyssey collaborated with Coyote Point Park Rangers to organize two beach cleanups at Coyote Point Park, one during Earth Day week in April and one on California Coastal Cleanup Day in September. Volunteer Manager Lee Cauble has taken the lead on organizing these events for several years, with the help of CuriOdyssey staff and park rangers. Between the two cleanups, 792 volunteers total participated, and 737 gallons of litter was removed plus over 200 gallons of recyclables. Funds were used to buy refreshments volunteers that attended the events. Funds from the conservation budget were used to purchase snacks for the Earth Day beach clean up.



In-House Sustainability Projects

No funds requested

Summary written by Roisin Altreuter

CuriOdyssey's interdepartmental task force, the Conservation Crew, aims to weave conservation into our organizational habits and to help CuriOdyssey become a conservation leader in our community. The CC and its members collaborate with CuriOdyssey staff to promote environmentally friendly practices among staff and volunteers. Projects this year included:

- Completed Green Business Certification
- Updated and strengthened event and vendor sustainability guidelines
- Started HEAT program (Highschool Environmental Action Team) to empower and amplify the voices of young environmental activists).
- Supported 3 high school aged interns in a sustainability internship
- Added 4 new compost bins (2 in classroom, 2 in public)
- Paper Straws and compostable k-cups in store
- 23 staff participated in the commuter challenger, preventing 3050 tons of CO2 emissions (almost half of staff!)
- Defy Plastic July Initiative to help staff reduce use of single-use plastics
- Maintained swap spot for staff to divert from landfill
- Holiday gift wrap table with ideas for sustainable wrapping
- Plastic-free keeper bake sale
- Conservation Speaker: Cheetah Conservation Fund
- Significantly reduced the number of stickers given out to school groups



6.

LIRA Research Project by Catherine Brett (*Limonium ramosissimum*)

Funds requested: \$69.03

Funds granted: \$69.03

Summary written by Catherine Brett

CuriOdyssey has been conducting an in-house, authentic research project in collaboration with the California Invasive Plant Council (Cal-IPC) since 2017. Four teenage volunteers from San Mateo High School gather data on LIRA percent coverage from digital images using free programs found on the internet. Additionally, 39 sixth graders and 12 adults from St. Matthew's Episcopal Day School participated in collecting data from the LIRA plots in April 2019. On April 10th and 11th 2019, we presented a poster of our findings at the California Society for Ecological Restoration (SERCAL) conference in Santa Barbara. We paid for the poster with conservation budget.



7.

Marsh Restoration Project

Funds requested: \$259.52

Funds granted: \$259.52

Summary written by Catherine Brett

In addition to cleaning up the beaches in Coyote Point Park, CuriOdyssey also organizes marsh restoration projects, coordinated by Sr. Educator and Science Research Manager Catherine Brett and Volunteer Manager Lee Cauble. Bay Area saltmarshes are threatened by the presence of invasive plants such as *Limonium ramosissimum*, or LIRA for short, which outcompete native plants such as pickleweed. In 2019, CuriOdyssey hosted 5 restoration events that brought 114 volunteers from groups such as Genentech, the Hillsborough Garden Club, and the National Charity League, as well as students from various middle and high schools. We estimate that over 700 gallons of LIRA was removed from our marsh in 2019! We will continue these projects throughout 2020 and continue to get our local community involved in these essential habitat restoration efforts. Conservation budget was used to purchase new gloves and weeding tools.

8. Pacific Tree Frog Pond (*Psuedacris regilla*)

Funds requested: \$251.00

Funds granted: \$251.00

Summary written by Nikii Finch-Morales & Roisin Altreuter

A new frog breeding pond was purchased in FY2019 in preparation for the 2020 breeding season. We believe that our previous pond was not successful due to its tall and narrow shape. This year, we purchased a shallow and wide pond similar to our first pond that was very successful as a breeding site for the Pacific Tree Frogs residing in our gardens. We are hopeful that we will have a successful 2020 breeding season with our new pond in place.



9. Ringtail Research Project

Funds requested: \$1000.00

Funds received: \$1,000.00

Summary written by Kristyn Schulte, Graduate Student, California State University, Sacramento.

With the \$1000 CuriOdyssey grant, I have purchased genotyping primers to allow for population genetics analysis of ringtails. These primers assist in completing the main goal of my thesis research. It took a while (months actually) to negotiate the cost down with ThermoFisher (originally around \$1500) but I now have the primers ordered and will begin genotyping reactions at UC Davis. The additional \$107.02 came out of pocket.

In the meantime, I underwent two trapping expeditions, attended one Wildlife Society seminar and one conference, and was awarded Honorable Mention by the National Science Foundation's Graduate Research Fellowship Program. I have extracted DNA from 98 samples and sequenced three plates of DNA allowing me to identify at least 2 distinct mitochondrial DNA haplotypes in these populations at cursory glance. Additionally, I defended my thesis proposal to my committee and advanced to candidacy.

The next step of my research to obtain additional samples from the populations surrounding the Sutter Buttes, specifically Gray Lodge Wildlife Area, Sutter National Wildlife Refuge, and Colusa National Wildlife Refuge. We are in talks to begin trapping at these areas in the Spring.

10. River Otter Ecology Project

Funds requested: \$1,000.00

Funds granted: \$1,000.00

***Summary written by Megan Isadore,
ROEP***



Photo credit: Carlos Ferrata

The funding has not yet been used, and is held in the account for use this year. Of the 548 fecal samples collected, 543 (99%) contained at least one prey item. Of these 732 individual prey occurrences, 439 (60%) were fishes, 131 (18%) were crustaceans, 85 (12%) were water birds, 56 (8%) were insects, 10 (1%) were mammals, and 11 (2%) were unknown vertebrates (Table 4-5). Additionally, one plastic fragment (approximately 9x4x1mm) was recovered from a single scat sample collected from the Drakes Bay focal study site. We will use the funding to identify otoliths, bones, feathers, fur and scales to complete the study. We are currently gathering additional funds in order to send all samples in for identification together.

12. Urban Wildlife Research Project

Funds requested: \$1,000.00

Funds granted: \$1,000.00

***Summary written by Bill Leikam,
the Fox Guy***



We used a substantial part of the \$1,000 donation to purchase a Wildlife Acoustics Song Meter SM4 Acoustic Recorder with stereo microphones for \$876.44. (The remaining \$123.56 is in our Collaring Project bank account and there it will be put to good use to help purchase the equipment such as GPS tracking collars.) We are using this unit to record the sounds of the gray fox and to try and analyze the possible meaning of such vocalizations. Of course, we also pick up many more sounds and sometimes like a furious fight between raccoons can be informative as well.

To date the data from this unit is sparse as gray foxes do not tend to be very vocal as they hunt. That will increase as we get closer to when the foxes are calling for a mate. This will be toward the end of December and into early February of 2020.

13. Western Pond Turtle Ecology Project

Funds requested: \$1,000.00

Funds granted: \$1,000.00

***Summary written by
Maria Wojakowski, PhD***



The field work and data collection components of this project were completed from Spring 2016 to Autumn 2017. 100 western pond turtle blood samples are currently stored on FTA cards and awaiting analysis. I have been corresponding with the UC Davis Genome Center about the schedule for the project. At this point, the only impediment to sending in the samples for analysis is obtaining the rest of the funding for this project. I retain the \$3000.00 awarded to this project from CuriOdyssey in 2015, 2018, and 2019. In its first year of operation, Conservation Informatics has been able to set aside \$1500.00 in profits to fund this research. I expect to acquire the remaining funding by the end of 2020, and at this time the samples will be sent to UC Davis for DNA extraction and analysis.

14. Mammal Ecology and Conservation Unit UC Davis – Salt Marsh Harvest Mouse Research

Funds requested: \$787.00

Funds granted: \$787.00

Summary written by Dr. Mark Statham



We used the funds to purchase a DNeasy Plant Mini Kit (250). This kit allows us to recover plant DNA from feces of rodents. We then used the DNA to identify which plants made up the diet of the different species of rodents.

We collected 250 scats from salt marsh harvest mouse (SMHM; *Reithrodontomys raviventris*; n = 142), western harvest mouse (WHM; *R. megalotis*; n = 17), house mouse (*Mus musculus*; n = 24), and California vole (*Microtus californicus*; n = 9). Scats were collected at three sampling locations: Hill Slough Area 9, Goodyear Slough, and Joice Island. Goodyear and Joice sites were samples across four seasons (Summer 2018, Fall 2018, Winter 2019, Spring 2019) and Hill Slough sites were sampled only in Summer 2018.

We identified 50 genera of plants in rodent scats collected from three sites over four seasons. Thirty-nine genera were present in SMHM scats. The two most common plant in the diets of all mouse species (SMHM, WHM, and house mouse) were *Atriplex* (FOOD = 44%-72%) and *Salicornia* (FOOD = 56%-72%). Overall, diets of mouse species were similar, although WHM consumed upland grasses (38%) more frequently than SMHM (3%) or house mouse (14%). Voles also frequently consumed *Salicornia* in addition to *Grindelia* and *Baccharis*, whereas *Atriplex* was relatively uncommon in vole diets.

The PCA indicated substantial overlap of dietary space among the three mouse species. Vole diets did not overlap with mouse diet niche space, although sample size was small (2 sites).

15. Party for the Planet (AZA Grant Funding)

Summary written by Roisin Altreuter

Funds used: \$2,723.60

Party for the Planet is an AZA initiative that offered grants to zoos in 2019. We received a grant to fund a series of PFP events at CuriOdyssey.

Our Earth Day celebration was our biggest ever since we were able to expand our marketing efforts. We hosted nearly 400 people at the beach cleanup, which included an education station. Back at CuriOdyssey, we hosted three special activities:

- Elementary school volunteer running a conservation activity table
- River Otter Ecology Project presentation and tabling
- Kenny Elvin's flighted falcon presentations

In addition, Save Nature brought in endangered terrestrial invertebrates to share with our guests for Endangered Species Day. For World Ocean's Day, we hosted children's author BLAH for a conservation themed storytime, had Surfrider running a conservation activity station, and our Highschool Environmental Action Team (HEAT) signing visitors up for our Plastic Free July initiative.