Southwestern Riverside County Multi-Species Reserve

Reserve Management Committee Meeting

Santa Rosa Plateau Nature Center
39400 Clinton Keith Road
Murrieta, California 92562
951-677-6951

Wednesday, March 13, 2018 -- 1:00 P.M.
Agenda

1. Call to order and introductions

2. Public comments

3. Approval of meeting notes – The RMC will review the 12/5/2018 meeting notes for approval.

4. RMC will consider a research proposal for Ms. Yuwei Cui to conduct research on the Reserve. CDFW issued collecting permit.

5. Reserve Manager Report – The Reserve manager will present the quarterly update on Reserve management activities addressing (a) natural resources management, (b) patrol, (c) maintenance, and (d) interpretative program.

6. Reserve management RFP scope of work – The RMC will be provided an update on status

7. Roundtable – RMC members will provide updates on Reserve-related activities of their agencies.

8. Adjourn

Southwestern Riverside County Multi-Species Reserve
Reserve Management Committee Meeting
Wednesday, December 5, 2018 – 1:00 pm
Multi-Species Reserve Office (Alamos Schoolhouse)
Lake Skinner Recreation Area, 37701 Warren Rd, Winchester 92596

Meeting Notes

RMC Members Present
Kyla Brown (Riverside County Regional Park and Open-Space District/Parks)
Eddy Konno (California Department of Fish and Wildlife)
Alex Marks (Metropolitan Water District of Southern California)
Brian Shomo (Riverside County Habitat Conservation Agency/RCHCA)

Other Attendees
Gail Barton (member of the public), Tania Asef (MWD), Bill Wagner (consultant/MWD), Robert Williams (Reserve Manager, Parks), Dustin McLain (Parks), Melanie Niemen (Eastern Municipal Water District),

1. **Call to order and introductions** – The meeting was called to order at 1:02 pm.

2. **Public comments** – Gail Barton, in reference to the Reserve Manager's annual report, commented on the intent and purpose of creating the reserve.

3. **Approval of meeting notes** – September meeting notes were presented and discussed.

   MOTION to approve the meeting notes as presented for September.
   Motion – Eddy Konno; Second – Brian Shomo; Motion approved

4. **Reserve manager report** – Robert provided the September through December 2018 quarterly report and annual report for fiscal year 2017/2018 on progress of management tasks pertaining to natural resource management, technological updates, trespass, outreach, and training. Highlights from the written reports were as follows.

Quarterly Report:

- Concluded weed abatement at the 8-acre Bassia site. A total of 4.4 acres of non-native grasses were removed during the quarter to enhance habitat for Quino checkerspot butterfly and Munz onion.
- Reserve Ranger conducted numerous patrols during dove, quail, and deer hunting seasons with no issues to report.
- Field staff completed the native plant nursery. The nursery will be able to hold up to 500 1-gallon potted plants to be used for restoration in the creeks that flow into Lake Skinner.
- RCHCA hosted a 2-day Endangered Species event at the Alamos Schoolhouse. MSR staff assisted with programs and site preparation.

- 995 visitors came to the Alamos Schoolhouse Nature Center this quarter and 120 visitors attended one of five Nature Walks/Bird Walks this quarter.

Annual Report:

- 1,440 patrol hours was conducted in 2017-2018.
- To prevent unlawful entry, staff installed 175 boundary and no trespassing signs. Skinner Trailhead was upgraded and posted with trail use rules and regulations.
- Nine MSR Research Proposals were submitted and approved by the Reserve Manager; three are anticipated to be completed in 2019.
- A 3-Year Habitat Restoration Plan for Stephens Kangaroo Rat was developed, which established four units along Rawson Road targeted at increasing habitat. The plan also identified 64 acres located on RCHCA land within the Reserve that could be abated of non-native grasses and managed annually.
- Exceeded the Reserve objective to mow 220 acres of non-native grassland by mowing nearly 375 acres.
- The Nature Center was open to the public 149 days and 2,665 visitors attended nature walks, daily programs, and events.

5. Reserve Management RFP Scope of Work – The RMC will discuss reserve management scope for future RFP process – Alex presented the item and that MWD is drafting the RFP utilizing the existing management scope of work and recent Santa Rosa Plateau Ecological Reserve RFP as examples. One of the tasks required of the selected manager would include updating the management plan for the reserve. Alex added that the interpretive program could be included in the RFP as an optional management task.

6. Trail Update - MWD will update the RMC on trails planning efforts – Alex presented the item and that MWD is moving forward with the trails planning effort. He noted that MWD has decided to pursue a trail along the San Diego Canal to provide the north-south connection between Diamond Valley Lake and Lake Skinner rather than the two connecting trails approved by the RMC at the March 2017 meeting, including the Goldrich Trail Extension. Alex indicated that the canal trail was included in the Eastside Reservoir (DVL) Project EIR and SWRMSHCP. The effort would also include two interpretive trail options at Lake Skinner, the alignment approved by the RMC in March 2017 and an alignment previously supported by the RMC and included in Addendum #7 to the Eastside Reservoir EIR in 2002. He provided an exhibit depicting the proposed trail alignments. Alex indicated that although the current trails planning effort would not include all of the trails approved by the RMC in March 2017, those could be proposed for development in the future. He stated that MWD's planning effort would include an environmental constraints analysis to inform the trail alignments and development of the plan.

MOTION to approve moving forward with the trails plan with the alignments presented.
Motion – Kyla Brown; Second - Eddy Konno; Motion approved

7. Roundtable – RMC members will provide updates on Reserve-related activities of their agencies - (a) Eddy stated that with his retirement from CDFW this would be his final meeting. He noted that Gold Spotted Oak Borer has been identified in Oak Glen and in the San Jacinto

Wildlife Area. (b) Brian reported that RCHCA had been incorporated into the Western Riverside Council of Governments and that in coordination with USFWS would be conducting an SKR status review, which will be published by USFWS. Brian asked about the status of the Reserve office building project and whether the RMC should consider a maintenance shop instead. Robert suggesting erecting a chain-link fence around the old reserve building for safety purposes. The members recommended including a discussion of Reserve Management Needs at the next meeting. (c) Alex reported that he received an email from Michael Horton at the Western Center Academy that the recent insect collection study conducted by the students in Reserve was mentioned in the Emergent Investigators Journal and that the improvements on Angler Avenue were completed. Bill reported that he planned to install the railroad ties along the Lake Skinner Trail in the winter to support opening of the trial for year-round use in 2019.

8. Adjourn – The meeting was adjourned at 2:07 PM.

The next meeting will be March 13, 2019.

Southwestern Riverside County Multi-Species Reserve
RESEARCH USE APPLICATION

Please sign and submit completed application to: Robert Williams Natural Resources Manager, 11401 Arlington Ave. Riverside Ca. 92505 or scanned application to Robwilliams@rivco.org. For questions, you may telephone us at (951) 712-2039. Please do not fax this application. Please print clearly or type. Illegible applications will not be reviewed nor returned. Please allow at least one month for review and processing before expecting a response.

Current Date:_____02/14/2019_____

1. **APPLICANT INFORMATION**:

Applicant Name:_____Yuwei Cui_____

Address:_____Spieth Hall 3346, UC Riverside_____

City/State/Zip:_____Riverside_____

Cell phone number:____(951)-455-0325_____ Email:___ycui004@ucr.edu_____

Principal Investigator (if different from applicant): _____Leonard Nunney_____

Affiliation/University (do not abbreviate):____University of California, Riverside_____

2. **PROJECT DURATION DATES**

Begin: Month/Year:____03/2019_____
End: Month/Year:____10/2019_____

REQUESTED ARRIVAL AND DEPARTURE DATES: Exact dates of use requested, if you cannot provide exact dates, please provide an estimation of the frequency of visits. If approved, you will be required to sign in at the Lake Skinner Park Kiosk each visit:

The visits may happen anytime during the trapping seasons. The trapping will take several nights in a row, and we plan to trap only once or twice.

4. **TITLE OF RESEARCH:**

Comparative genomics of two previous conspecific kangaroo rats, *D. simulans* and *D. agilis*

5. **INTRODUCTION OF NON-NATIVE GENOTYPES**: Does your project involve the transfer of animals, plants, and/or microorganisms from outside the reserve to within the reserve, or between different parts of the reserve? ☐ Yes ☐ No

6. **STATEMENT OF PROPOSED RESEARCH PROJECT: Please append to this application, and include details of the following:**

   a. What species and/or habitats you intend to study;
   b. Where you want to conduct the research on the Reserve (identify on map below, or provide one);
   c. Clearly describe (and/or include photograph of) the markings that will be used to identify points on the ground. Describe anything that will be used on-site to identify your location. You will be responsible for removing these items within one month of the end date of your research;
   d. When you will be conducting the research (if exact dates are not available, then please identify as best as possible). Also include the date the research will begin and the estimated end date;
   e. Who will be conducting the research. Identify all individuals who will be visiting the Reserve and include their cell phone number and email address (cell phone numbers are important if we need to reach you while you are in the Reserve);
   f. Provide a detailed description of the study methodology for EACH species to be studied; and
   g. Please clearly state the hypothesis or goal of the research and the proposed methodology. Also, please identify how the results of the research will aid in future Reserve management.

The application will be evaluated using the following considerations: potential impacts to natural systems; potential impacts to present or future long-term use of the Reserve for research purposes; compliance with state and federal law and any stated Reserve research policies; scientific merit and feasibility; funding constraints (for Reserve staff to track and monitor the project); potential conflicts with on-going reserve Research; and availability of alternative sites.

h. **PERMIT REQUIREMENTS**

Please read and answer the following items carefully. Researchers will not be allowed access to the Reserve until they obtain the appropriate permit(s), or the Reserve has been informed by the agency(ies) involved that no permits are required for the project described in this application. It is the user's responsibility to obtain the appropriate permit(s) and to provide the Reserve Manager with copies of all necessary permits.

- Will any animals be captured and/or marked? ▢ Yes ▢ No
- Will any birds be banded and/or color marked? ▢ Yes ▢ No
- Will the use of invasive techniques (needles, tags, surgery, etc.) be used? ▢ Yes ▢ No
- Will plants be collected? ▢ Yes ▢ No
- Does this project involve State or Federal listed species? ▢ Yes ▢ No

a. The activities of this project require the following permits (please append copies of any relevant permits to this application):

▢ Federal ▢ State

MULTI-SPECIES RESERVE REGULATIONS

- If the research application is approved, the user must comply with all applicable Reserve regulations and provide copies of all state and federal permits to the Reserve Manager.

- On an annual basis, all researchers must provide a description of the status of their research on the Reserve and a summary of research results. Minimum required information includes the title of the research, date(s) of research, the investigator's name, mailing address, email address, and an abstract. Information regarding the status of the research will include: 1) a description of the methods being used, 2) preliminary results, and 3) anticipated schedule until completion. Final reports will include: investigator's name; mailing address, email address; title of the research; dates of research; abstract; methodology; results; conclusion; and management recommendations. These reports (either annual or final) are due by **December 31 of each year, unless otherwise scheduled with the Reserve Manager**.

- Firearms are prohibited on the reserve unless specifically authorized.

- Smoking and/or any other incendiary devices is/are prohibited within Reserve boundaries.

- Gates will be kept closed and locked at all times.

- The speed limit on the reserve is a maximum of 15 m.p.h.

- The user shall remove all evidence of work (flagging, stakes, etc.) within one month of the expiration date of this application (as identified in the Project Duration description), unless otherwise arranged with the Reserve Manager.

- Cultural resources may not be disturbed or removed.

- All researchers **will notify the Reserve Manager AND the Patrol Ranger** by phone (951-926-7416) and/or email (robwilliams@rivco.org, tash@rivco.org) at least 48 hours prior to visiting the reserve. Please also inform us of the make/color of the vehicle you will be driving. IN ADDITION: All researchers must sign in at the Lake Skinner Kiosk prior to entering the Reserve, unless otherwise arranged with the Reserve Manager.

- The Reserve will be closed to all use for at least three days following rains of ½ inch or more to protect the roads.

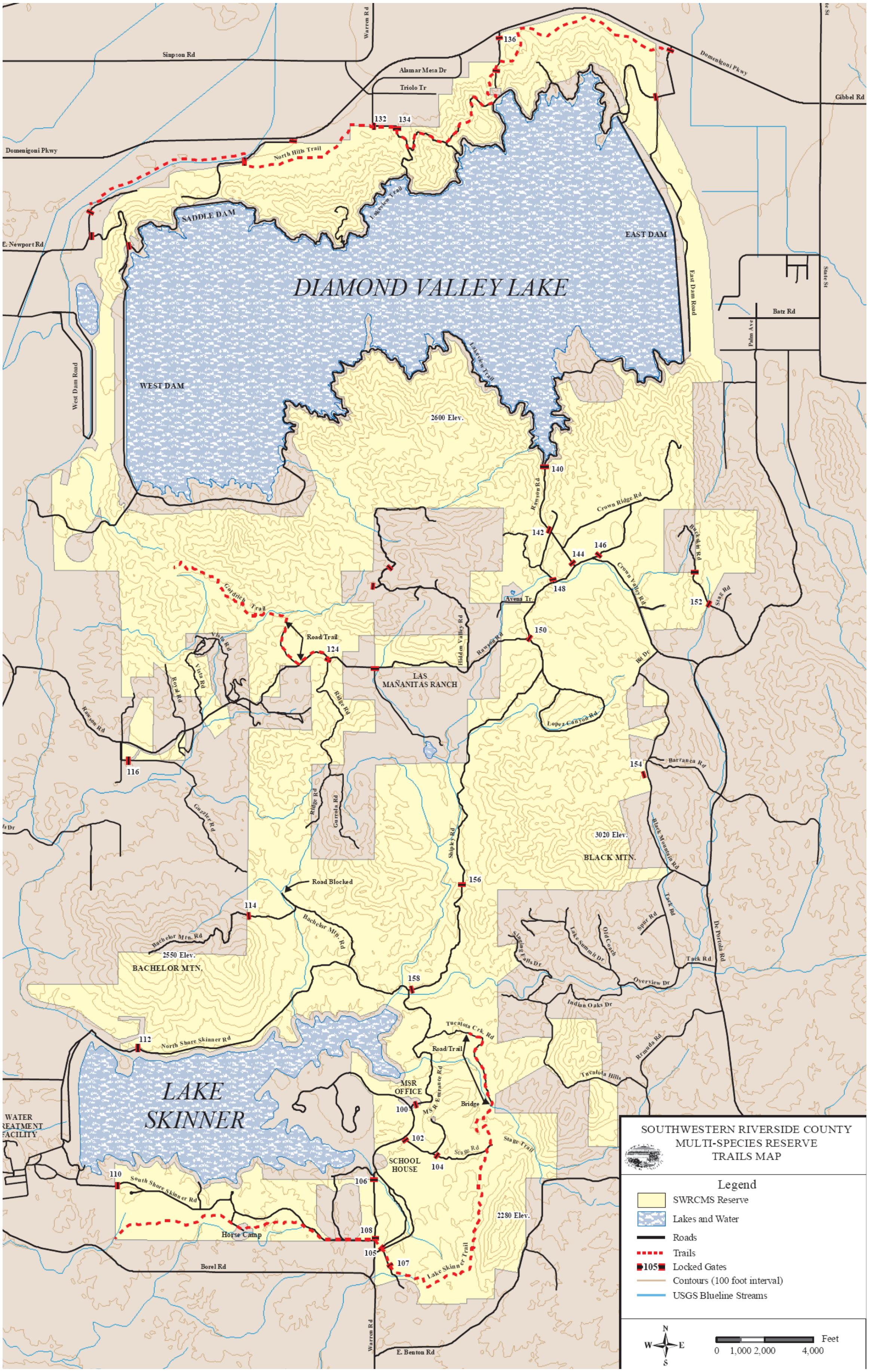
- Failure to comply with the reserve regulations, any special limitations, or unnecessary damage to roads or other Reserve resources may result in the revocation of privileges or access.

I have read and agree to comply with the MSR regulations listed above and any specific terms and conditions appended to this application and I am aware that it is my responsibility to disseminate this information to all members of my party.

02/15/2019

Applicant's Signature Date

Reserve Manager's Approval Date


SOUTHWESTERN RIVERSIDE COUNTY
MULTI-SPECIES RESERVE
TRAILS MAP
Legend
SWRCMS Reserve
Lakes and Water
Roads
Trails
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Contours (100 foot interval)
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LAKE SKINNER
SADDLE DAM
EAST DAM
WEST DAM
2600 Elev.
3020 Elev.
BLACK MTN.
2550 Elev.
BACHELOR MTN.
2280 Elev.
LAS MAÑANITAS RANCH
MSR OFFICE
SCHOOL HOUSE
Horse Camp
Bridge
Road Blocked
Road/Trail
Simpson Rd
Warren Rd
Alamar Mesa Dr
Triolo Tr
Domenigoni Pkwy
Gibbel Rd
North Hills Trail
E. Newport Rd
East Dam Road
Batz Rd
Palm Ave
State St
West Dam Road
Rawson Rd
Crown Ridge Rd
Crown Valley Rd
Goldrich Trail
Hidden Valley Rd
Avena Tr
Lopez Canyon Rd
Ridge Rd
Garrola Rd
Barranca Rd
Black Mountain Rd
Shipley Rd
Bachelor Mtn. Rd
North Shore Skinner Rd
South Shore Skinner Rd
Tucalota Crk. Rd
Tucalota Hills
Stage Rd
Stage Trail
Lake Skinner Trail
Indian Oaks Dr
Overview Dr
Tack Rd
De Portola Rd
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Southwestern Riverside County Multi-Species Reserve trapping proposal

Target species:

Dipodomys simulans (Dulzura kangaroo rat)

Research project:

We will perform a genome-wide comparison on two previous conspecific kangaroo rats, *D. simulans* and *D. agilis*. They were found constantly different in morphology and karyotype thus were separated into two species (Sullivan and Best 1997). The boundaries of their distributions are not clear, and their ranges overlap. They are hypothesized to be separated by the climate change causing marine transgressions and San Gorgonio Pass becoming a barrier (Sullivan and Best 1997). Though they are different in chromosome numbers, hybridization between the two species is possible, since karyotype polymorphism is common in rodents (Fagundes, Christoff & Yonenaga–Yassuda 1998). It is not known how much local adaptation have evolved in two species and whether there is/was gene flow between them. I will conduct a comparative genomic study between the two species to see how different their genomes are and whether there are genomic signatures of gene introgression. Also, the genomic variation in the two species will be documented and be contributed to their management and conservation.

Time:

The trapping activities may happen anytime during the trapping seasons (through March to October 2019). We will go trapping once or twice or until enough samples are taken (up to 30). Because the kangaroo rats are nocturnal, the trapping will take place during the night. The trapping activities may take several nights in a row. Also, we only go out to trap when the lowest temperature is above 40 degrees. We will report the time before trapping.

Conductor:

The trapping will be conducted by the permit holder, Yuwei Cui, and one of her lab mates/volunteers.

Methods:

All the procedures will be performed under the guide of the Institutional Animal Care and Use Committee (IACUC), and an animal use protocol will be approved by the Office of Research Integrity at University of California, Riverside.

1) Trapping: There will be 3-5 trapping grids at each site, and 5 × 5 Sherman traps will be set in each grid. Traps will be set up at dusk and checked within every 3-5 hours. All the traps will be baited with appropriate kinds of seeds or sterilized seeds, which will also provide food and water resources to the kangaroo rats. After checking, target species will be sampled and released as quick as possible, and non-target species will be released immediately without handling. All traps will be collected before dawn. Trapping will be approximately two nights or until enough samples are collected.

2) Data collection: Target species will be sexed, and ear length, foot length, and weight (optional) will be measured and recorded. The coordinates will be recorded.

3) Tissue collection: Target species trapped will be sampled, except for individuals that

are immature, nursing, or injured. A ~10 mg slice will be taken from the edge of each ear by use of suture wire cutting scissors. Cotton swabs with alcohol will be used both before and after sampling to sterilize the surface of the ears to avoid infections. All the samples will be stored on dry ice before transporting to lab. The sampled animals will be marked on their bellies by color pens, the mark is not harmful and will fade within a few days.
4) Disposition: All the target species will be sampled, marked and released within 10 minutes. All non-target species will be immediately released. In the very unlikely event that an animal is seriously injured and probably would not survive in the wild, they will be euthanized by the applicant using cervical dislocation. All euthanized animals and animals found dead will be recorded and notified to lab PI, IACUC, and CDFW. All the dead animals will be salvaged or collected for the research project and may be donated later for research or education purposes.

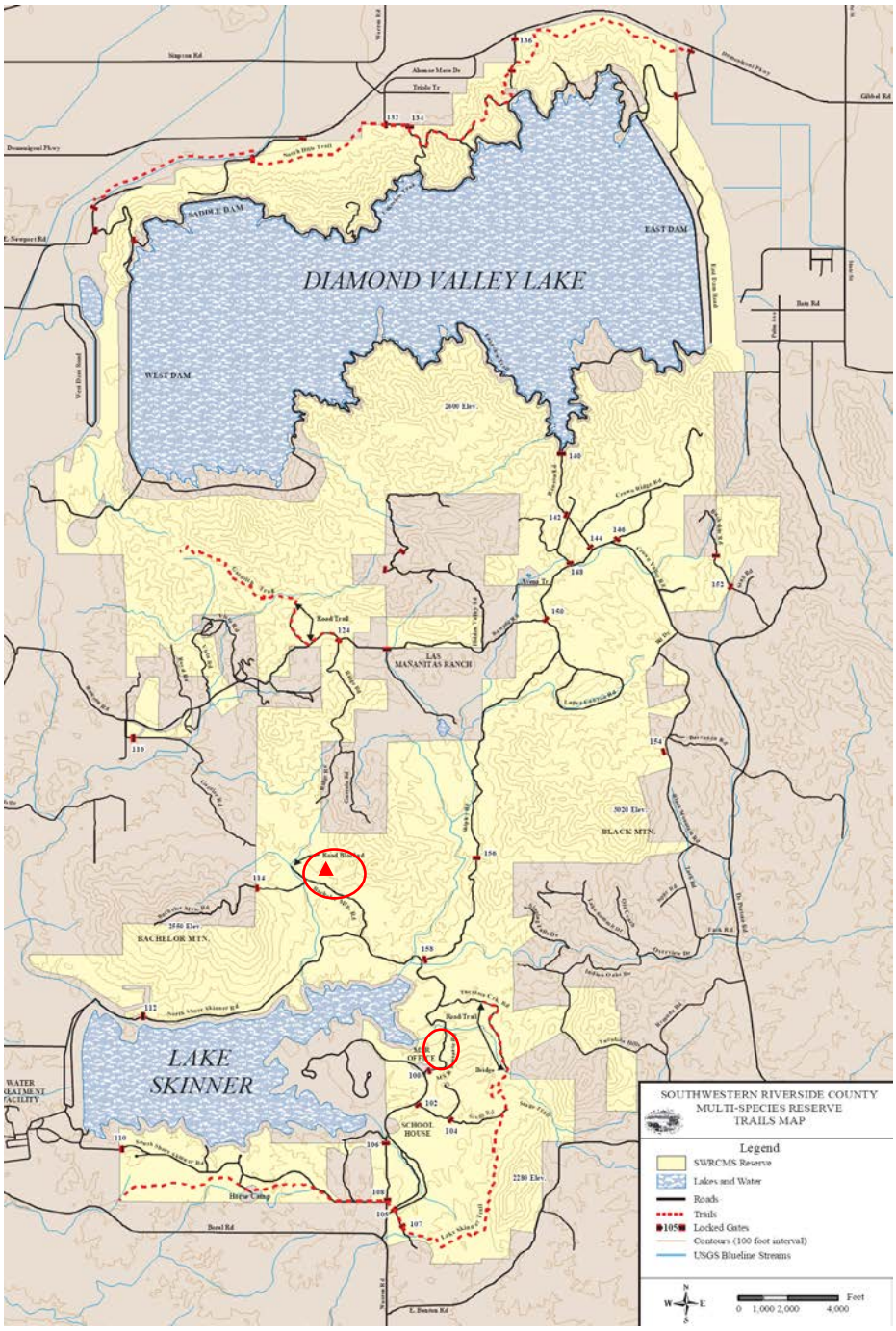
Justification for methods:

There are lethal and non-lethal alternatives to the Sherman live-trap (Sikes 2016). We have opted not to lethally trap animals because it is unnecessary for our research. An alternative non-lethal method for trapping is pitfall traps. This method is indiscriminate in that multiple taxa (reptile and arthropods) are frequently caught and can be caught simultaneously in a single trap (Williams 1983). Also, pitfall is less effective and results in higher mortality rates in rodent sampling (Stephens 2014).

Very small tissue or blood samples are required for modern genomic studies. However, collecting blood from veins of rodents requires more training for handling (Hoff 2000). Also, the estimated handling time is longer so that the animals can be more stressed. Collecting blood using needles requires more thorough sterilization too, so it is more appropriate under lab conditions than under field conditions. Toe clipping is an option but there is some concern that it could affect the performance of a burrowing/jumping animal. Ear punches were also considered, but relative to ear slices, it results in more serious perforating wounds and the ear punch equipment is harder to clean. Collecting hair samples is a non-invasive genetic sampling method, but the yield and the quality of DNA extracted from a limited amount of pulled hair is relatively poor making it only appropriate for targeted genetic studies (Clevenger 2010). Pulling more hair would be very stressful. Thus, we decided to collect ear slices, which is generally considered to result in the least amount of pain, cause almost no bleeding, and does no harm to the animals' survival in the wild.

Initial sampling goal is to sample 20-30 individuals from each site in order to estimate genome-wide genetic variation using RAD-seq markers. 2-4 sites will be sampled to estimate both within-taxon and within-population variation. To calculate allele frequencies, genetic variance within populations and genetic differentiation between populations and taxa, the sample size of about 10 per population and 20-30 per taxon is considered the minimum. A similar study that investigated adaptive selection in stream versus lake-adapted threespine stickleback fish sampled 22-25 individuals from each population (Roesti et al 2015).

Location:



Labelled on the map is where RCA people have trapped the kangaroo rat. We want to select 1-2 additional trapping locations near the road, and the decisions can be made after we go to see the locations.

Reference

Clevenger, Anthony, and Michael Sawaya. "Piloting a non-invasive genetic sampling method for evaluating population-level benefits of wildlife crossing structures."

Ecology and Society 15.1 (2010).
Fagundes, V., Christoff, A.U. and Yonenaga–Yassuda, Y., 1998. Extraordinary chromosomal polymorphism with 28 different karyotypes in the neotropical species Akodon cursor (Muridae, Sigmodontinae), one of the smallest diploid number in rodents (2n= 16, 15 and 14). *Hereditas*, *129*(3), pp.263-274.
Hoff, Janet. "Methods of blood collection in the mouse." (2000).
Roesti, Marius, et al. "The genomics of ecological vicariance in threespine stickleback fish." *Nature communications* 6 (2015): 8767.
Sikes, Robert S. "2016 Guidelines of the American Society of Mammalogists for the use of wild mammals in research and education." *Journal of Mammalogy* 97.3 (2016): 663-688.
Stephens, Ryan B., and Eric M. Anderson. "Effects of trap type on small mammal richness, diversity, and mortality." *Wildlife Society Bulletin* 38.3 (2014): 619-627.
Sullivan, R.M. and Best, T.L., 1997. Systematics and Morphologic Variation in Two Chromosomal Forms of the Agile Kangaroo Rat (Dipodomys agius). *Journal of Mammalogy*, *78*(3), pp.775-797.
Williams, Daniel F., and Suzanne E. Braun. "Comparison of pitfall and conventional traps for sampling small mammal populations." *The Journal of Wildlife Management* 47.3 (1983): 841-845.

California Department of Fish and Wildlife (Department) - Wildlife Branch **SC-011898**
Authorizations and Conditions for Scientific Collecting Permit (SCP) **Student**
Yuwei Cui
University of California; Riverside
November 15, 2018

APPROVED
By Rebecca Spranger at 9:31 am, Nov 15, 2018

You are authorized to ***capture, mark, collect biological tissue samples, and release*** the Panamint kangaroo rat (*Dipodomys panamintinus)*, Agile kangaroo rat (*D. agilis*), Dulzura kangaroo rat (*D. simulans*) and Merriam's kangaroo rat (*D. merriami*) (***excluding Threatened, Endangered, CESA-Candidate, Fully Protected, and Mammal Species of Special Concern***) is authorized in accordance with the conditions below. Any non-target species that are incidentally captured shall be released at the point of capture.

Permitted activities are restricted to the following geographic areas:

Riverside and San Diego County, UC Reserves, National Parks, and other authorized preserves

The Department contact for the kangaroo rat research is Dr. Scott Osborn, Osborn.Scott@wildlife.ca.gov, 916-324-3564, Wildlife Branch, 1812 9th Street, Sacramento, CA 95811-7000.

Conditions to Scientific Collecting Permit
SC-011898

1. **When a Memorandum of Understanding Is Needed**

Intentional take of species listed as Threatened, Endangered, or Candidate under the California Endangered Species Act (CESA), or intentional take of Fully Protected species, is not authorized without a Memorandum of Understanding (MOU) from the Department on which you are specifically named.

To apply for a State MOU (e.g., for **Stephens' kangaroo rat (*D. stephensi*)**), contact the Department Research MOU Coordinator(s), Esther Burkett (Esther.Burkett@wildlife.ca.gov) and Scott Osborn (Scott.Osborn@wildlife.ca.gov), for study proposal requirements.

2. **When Additional Authorization on Your SCP Is Needed**

Intentional take of Federally-listed species is not authorized without a valid federal permit **and** additional written authorization from the Department (*e.g.*, Wildlife Authorization #8), on which you are specifically named or otherwise authorized.

You may not capture, handle, or otherwise take the **San Bernardino kangaroo rat (*Dipodomys merriami parvus*)** without a valid federal permit (Section 10(a)1(A) recovery permit or Section 7 Biological Opinion) on which you are specifically named or otherwise authorized, and additional authorization from the Department.

Intentional capture of California Species of Special Concern (amphibians, reptiles, mammals) requires special authorization on your SCP.

Intentional capture of rabbits, hares and pika, bats, beaver, porcupine, carnivores (e.g., foxes, bear, ringtail, raccoon, marten, fisher, mink, badger, otters, bobcat, mountain lion, seals, sea lions), or big game mammals (e.g., deer, elk, antelope, bighorn sheep) requires special authorization on your SCP.

Incidentally-captured individuals of non-target wildlife taxa shall be released at the capture site immediately, once identified, without further handling, unless otherwise authorized for work on that species or subspecies in this permit.

You can find a list of species and subspecies designated as Threatened, Endangered, Candidate, Fully Protected, Species of Special Concern, or "Taxa to Watch" in the Department's Special Animals List at the following link: http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406&inline=1.

Marking of any species requires special authorization by the Department (See Standard Condition I).

Quarterly Report December-February 2019

Natural Resources Management

- Staff treated stinknet, Sahara mustard, and star thistle at multiple locations in the Reserve. Stinknet management sites are showing lower germination rates or no sign of the invasive plant. The field team will continue to monitor for new growth throughout the spring.

- Munz onion site preparation is complete. Staff hand cleared 3 acres of non-native grasses on the north shore of Lake Skinner. A population density survey will be completed once the plant flowers.

- Field staff and Cal-Fire crews cut and treated 5 acres of tamarisk in Tucalota Creek. Dozens of debris piles have been established and are scheduled to be burned next year. During nesting season staff will begin installing native trees and shrubs that are being grown in the Reserve nursery.

- The Quino checkerspot butterfly habitat expansion project was completed on the South Shore Management Unit. Approximately, 2 acres of non-native grasses have been removed by using hand tools and Fusilade. The Biological Monitoring crew will be conducting QBC surveys in this unit later this year.

- Reserve Manager attended the newly formed Burrowing Owl working group hosted by CDFW. Members from the RCA, CNLM, and San Diego Zoo were in attendance. All artificial burrowing owl sites on the Reserve were surveyed by the RM and cleared of vegetation by field staff. Three game cameras were also installed in order to observe possible nesting pairs.

- Reserve researcher Tessa Shates has published an article in the journal *Frontiers in Microbiology.* The article will be printed and filed in the Reserve library. https://www.frontiersin.org/articles/10.3389/fmicb.2018.03305/full

Ranger Patrol

- Two volunteers are currently being processed and are expected to start in April. These individuals will be able to assist with trail patrols, nursery management, and invasive plant management.

- A very quiet quarter for the Reserve Ranger. Only a single trespass issue reported and one mobile homeless that set up on the edge of the Reserve. All three hunting seasons' deer, dove, and quail closed with no problems.

- Reserve Ranger oversaw the bulldozer line repairs created during the Patterson fire. All segments in the Reserve have been repaired. A vegetation assessment will be conducted this spring.

Maintenance

- Cal-Fire crews were utilized to remove ladder fuels in Lopez Canyon and Rawson rift in order to protect the oak groves in the event of a wildfire.

- The Reserve saw 12 inches of rain during the last few rain events. Staff repeatedly graded roads and cleared culverts. During this time the Skinner trail remained closed to trail users.

- The Reserve nursery has been built and 100 plants are currently in pots. We expect to have all plants installed this spring. The field crew has started rooting another set of plants including Emory's baccharis.

- Field staff worked on preventive maintenance of tractors, weed eaters, and other hand tools. Repairs and maintenance was also conducted on the Alamos schoolhouse.

Interpretive

- A total of 709 visitors came to the Alamos Schoolhouse Nature Center this quarter and 38 visitors attended one of 5 Nature Walks/Bird Walks this quarter.
- Alamos Schoolhouse is now open to the public one Sunday a month.

- New displays include table of learning activities, a chalkboard, and a recent bird sightings board.

- The upcoming Earth Day special event has been expanded and will include several new activities. The event will take place on April 20th.