

## Appendix A

### Ripple Effect Mapping

Sixteen California Naturalist staff, stakeholders, and review committee members participated in the California Naturalist Ripple Effect Mapping exercise on May 14, 2018 at 2801 2<sup>nd</sup> Street, Davis, CA. During the exercise, the participants shared their experiences which led to program outcomes. The outcomes were grouped into nine broad themes. One additional stakeholder responded to an email request to share their ripple effect experience from working with California Naturalist program. This stakeholder shared seven outcomes, for a total of 56 outcomes within the nine themes.

California Naturalist staff, stakeholders, and review committee members identified both short- and medium-term outcomes. Short-term outcomes are defined here by someone gaining knowledge through an experience with the program, or possibly changing their attitude towards something based on knowledge they have gained. A medium-term outcome is defined here by someone taking an action or changing their behavior as a result of knowledge they have gained. During the exercise no one reported a long-term outcome. A long-term outcome is defined by a change in condition.

**Outcome themes** (because some outcomes align with multiple outcome themes, the count below exceeds 56).

#### List of All Shared Outcomes

##### 1. Gained experience practicing/developing a new skill

Short-term

- California Naturalist graduates had practice using iNaturalist
- Teachers that participated feel more confident teaching their students ecology and helping them identify plants.
- Birding- this particular example included anecdotal evidence where the student explained that he thought the first bird he saw using the birdhouse was a bluebird, but actually wasn't. He took photographs of the birds that visited the houses over time, monitoring their progress as the birds built nests inside, laid eggs, hatched the babies, and fed them. Eventually, upon conferring with other students in the class about the photographs he took, he learned to distinguish a western bluebird from the others using the bird houses.

##### 2. Gained knowledge that could be or is being extended to others including in underserved communities

Short-term

- Park rangers that participated in the course had increased interest in participating in other programs that reach diverse audiences.
- The knowledge and skills I gained from the course and through my work with CEEIN related primarily to the specific natural history of California, a better understanding of the key players involved in environmental education in California, a more nuanced understanding of Community and Citizen Science, and a much better sense of how the California Naturalist program connects with the different members and partners involved in the California Environmental Education Interagency Network. With this knowledge, I was able to explore institutional partnerships and collaboration with these key groups.
- Supported the development of a publication for CA Foundation for Agriculture in the Classroom with a focus on citizen science.
- For instance, at the historic Wakamatsu farm, one student wanted to know if it was feasible to grow tea there, and she got in touch with some world-renowned experts in tea to learn what types and what soil, climate, etc work be best.
- Another learned what plants grew along a popular stretch of trail in order for her to create a checklist.

- Another learned which plants to plant in a native pollinator garden.
- Two participants decided to become volunteers together at the same place. These individuals have since made a connection with each other and are now close friends
- Students in this particular class are now volunteering as land stewards
- Gained knowledge through ANROSP on best practices to incorporate into California Naturalist from around the country
- Learned how to put together citizen science programs
- Confirmed that I enjoy working with the Naturalists on citizen science projects. I'm hoping to work with Certified Diablo Naturalists on future projects, including citizen science and outreach projects.

#### Medium-term

- 115 Naturalists, doing 16,000 hours of service and reaching 78,000 people through 21 differing organizations
- Many public school teachers have participated in the UC Merced courses and are extending what they've learned to their students in underserved communities
- Other participants got excited about what they learned and shared it in their communities, explaining, "if not me than who?"
- Naturalists utilize the knowledge they learned in the program to lead hikes and activities for students at SF REC.
- Teachers that participated feel more confident teaching their students ecology and helping them identify plants.
- Graduates have become involved with the California Rangeland Conservation Coalition.
- Saw ideas and opportunities in first course on how to effectively engage students and run the course that were incorporated into all future Instructor Trainings.
- Now able to draw on California Naturalist Program experiences to provide input to other states through ANROSP on how to improve their naturalist programs
- Capstone project was a citizen science project that has expanded enormously since the class.

### **3. Increased comfort level engaging in science or naturalist communities**

#### Short-term

- Feel at home and have a voice in the naturalist community created by the program
- One California Naturalist grad explained that now they can understand science talks and scientific articles
- Continued to communicate with people from the course that shared similar interests
- The conference helped Naturalists understand and see that they were part of a bigger picture, one participant said, "Before the California Naturalist course, never felt welcome in naturalist communities, but now does".
- Broadening my local network of professional contacts in conservation organizations.

#### Medium-term

- First experience with public speaking during the course and now has given a number of talks and joined up with a number of different projects

### **4. Graduates contribute data collection to research projects**

#### Medium-term

- California Naturalist graduates use iNaturalist to post citizen science data from bio blitzes, on climate change impacts etc. Sagehen is able to use the data to respond to research requests and submit research publications.
- CN Graduates are contributing to citizen science through projects like the Live Fuel Moisture Project to help measure fire danger
- Course graduates have gone on to be leaders: one leads the Sedgewick Phenology Training Programs,

- California Naturalists assist with invasive monitoring and control programs for invasive grasses. It would not have been possible to get the program started without the Naturalists.
- Students in this particular class are now volunteering in long term water quality monitoring projects

#### **5. Graduates and instructors take on new leadership roles**

Medium-term

- Course graduates have gone on to be leaders: one leads the Sedgewick Phenology Training Programs,
- Another naturalist that completed the Sagehen course started a new California Naturalist course for Chumash Tribal members
- Networking further led to California Naturalist courses being developed at Yosemite and Sequoia National Parks, creating more communities of naturalists
- Another graduate received an award for the most hours volunteered
- First experience with public speaking during the course and now has given a number of talks and joined up with a number of different projects
- Several certified Diablo Naturalists are currently preparing to co-teach the next iteration of the class this Fall.

#### **6. Course participation contributed to professional development or a new academic or professional path**

Short-term

- Two students were in an AmeriCorps program and another was a wildlife photographer. The course allowed them to develop their capstone project surrounding their work, and served as professional development for their respective fields.
- Used the information learned in the course to help with work.

Medium-term

- Allowed teenagers to participate in the course, and three graduates are now all pursuing degrees in science
- Path of developing new courses led to getting into a Masters degree program at UC Davis
- One California Naturalist grad went to graduate school after taking the course to study pollutants from hydraulic mining operations.
- Maintenance workers now also function as natural resource managers (ex. Know what questions to ask when mowing will stop and identify the species in a nest to make sure they are mowing at the right distance from the nest)
- Applied for a job to work for the California Naturalist Program and became a California Naturalist Community Education Specialist
- I got a contract for statistical consulting with a local ecological consulting firm. I now know people I could write grants with to fund further statistical and community-based conservation work.
- One graduate wanted to make a job change and got their first job doing youth education near the end of the course
- Now teaching middle- and high-school kids in a conservation class at a local nonprofit informal education center.

#### **7. Expanded reach of the California Naturalist Program**

Medium-term

- Another Naturalist from the Sagehen course started a new California Naturalist course for Chumash Tribal members
- Networking further led to California Naturalist courses being developed at Yosemite and Sequoia National Parks, creating more communities of naturalists
- UC ANR VP Glenda Humiston signed Memorandum of Agreement including UC ANR as a formal member organization of the California Environmental Education Interagency Network.
- The California Naturalist program was invited to serve on the steering committee for the Association for Environmental and Outdoor Educators initiative to develop an a formal State of California certification for environmental education
- Now able to draw on California Naturalist Program experiences to provide input to other states through ANROSP on how to improve their naturalist programs

- Developed 8 California Naturalist courses in Southern California for underserved communities (total of 16 programs)

#### **8. New or improved relationships across organizations**

Medium-term

- Local non-profits are "sharing" the California Naturalist volunteers and working better together instead of competing
- ANR VP Glenda Humiston signed Memorandum of Agreement including UC ANR as a formal member organization of the California Environmental Education Interagency Network.
- Established a relationship with the California Conservation Corps headquarters in Sacramento to further opportunities to make the CalNat course available to CCC corps members.
- Developed relationships with the Department of Water Resources Climate Change Education Team for the development of the Climate Stewards initiative.

#### **9. Increased diversity of program participants**

Medium-term

- Another Sagehen graduate started a new California Naturalist course for Chumash Tribal members
- California Naturalist Instructors coming from the DOLI program won't look like what the population of California Naturalist participants usually look like.
- The training and field trips from the California Naturalist course provides access to a system that they would not have had entry to before.

The following pages include a digital version of the map that was created during the activity, and verified by participants afterward. The first image shows the complete map zoomed out, followed by sections of the map.















