



Audubon CALIFORNIA

Conservation of *Aechmophorus* Grebe Colonies at Six Northern California Lakes
Interim Report for Year Three
Submitted to the National Fish and Wildlife Foundation
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Photo: Gae Henry

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Summary of Accomplishments

April 2017 – October 2017

Audubon California, Redbud, Plumas and Altacal Audubon chapters continue to engage the public in wide-reaching and successful grebe conservation efforts in Northern California with generous support from the Luckenbach Council, National Fish and Wildlife Foundation (NFWF), and National Oceanic and Atmospheric Administration (NOAA). Year Three of our grebe conservation effort continues to focus on public outreach and education with our signature event being the Grebe Festival organized for the second year by Plumas Audubon and supported by Audubon California, Redbud, and Altacal Audubon chapters. By engaging participants in a scientific symposium, art projects, and field trips to view colonies, the Grebe Festival showed what grebe conservation looks like on-the-ground and highlighted this charismatic species. Additional activities completed between April 2017 and October 2017 are detailed below.

Project Activities & Outcomes

Project Management

Audubon California

Activities

- Desiree Loggins and Ariana Rickard provided administrative support to chapters, sending reminders and regarding grant reports and reviewing invoices for compliance with budgets prior to submitting for processing.
- Chapter member from Mt. Diablo Audubon Society attended second annual Grebe Festival and wrote a blog post with photos for Audubon California [website](#).
- Desiree Loggins trained Ariana Rickard on how to manage Grebe project and shared history and relevant files to facilitate transition.
- Audubon California staff communicated with chapters, funders and supervising agencies to ensure timely compliance with grant requirements.

Outcomes

- Supporters and members of Audubon California were able to read about the grebe festival and learn about efforts to conserve the species through the blog post on our website. When the blog was shared on our Facebook page, it received likes and views, furthering broadening the reach of the Grebe Festival beyond the people who were able to attend.

Public Outreach and Education

Redbud Audubon Society – Clear Lake

Activities

- Redbud's Heron Days event was expanded from two days to four days in 2017, which allowed 289 people to participate in Audubon-Guided Boat Tours on Clear Lake.
- Audubon guides on Clear Lake boat tours provided information to visitors about grebe behavior and the conservation work of the grebe project.

- The grebe exhibit booth at the September Pear Festival was staffed with knowledgeable chapter members for the entire seven hours of the event. Over 3,000 people attended the festival.
- The Clear Lake Rotary Club invited grebe project manager Marilyn Waits to address the group's luncheon meeting on May 30. Ms. Waits presented the 18-minute video produced by Dr. Floyd Hayes during the summer of 2012, explaining both grebe behaviors and the grant project's conservation goals and then answered questions from the 32 attendees.
- Marilyn Waits made a presentation about the grebe project at the Clear Lake State Park Visitor Center. Besides showing Dr. Hayes video, she presented a series of PowerPoint slides illustrating the various outreach activities conducted during the project. About 15 people attended this talk.
- Three articles related to the grebe project appeared in local news media during these months:
 - *"Clear Lake a Birdwatching Paradise,"* by Terry Knight, Lake County Record-Bee, June 14, Sports section, page 1-2. Article on local bird-watching includes seeing Western grebes by boat on the lake.
 - *"The Living Landscape: Heron Days,"* by Kathleen Scavone, lakeconews.com, online daily news, May 21. Article/photos about courting and nesting grebes at Heron Days.
 - *"Those Amazing Dancing Grebes,"* by Julie Berry, Lake County Record-Bee, August 22, page 3. Article about Redbud grebe talk at Clear Lake State Park.
- Redbud Audubon maintains 21 fishing line recycle bins around the 19-miles of shoreline on Clear Lake to protect grebes and other wildlife from injury or death caused by discarded fishing line. Redbud volunteers Rob Patton (who has constructed all 21 recycle bins) and Tom McFarling currently handle all the maintenance of the recycle bins, visiting each one to remove the fishing line (and, unfortunately, trash that people put in the bins), and send it to an Iowa recycling manufacturer.

Outcomes

- The Clear Lake 90-minute pontoon tours provide views of colonies of tree-top nesting herons and egrets and Western and Clark's grebes in the early stages of springtime courtship and nest building. Guests could also visit the grebe exhibit booth staffed by grebe project staff to explain the project and answer questions.
- The Grebe Project Booth at the Pear Festival allowed chapter members to talk with the public and provide handouts and information about the county's most beloved bird species.
- Project manager Rob Patton reported that in January of this year, he mailed to the recycled products manufacturer over 12.8 pounds of fishing line retrieved from the 21 recycle bins. This is significant evidence of the number of fishermen who are cooperating with the effort to protect the grebes and other wildlife from the discarded plastic line.

Plumas Audubon Society – Lake Almanor, Davis, Antelope, Eagle

Activities

- The second annual [Grebe Festival](#) reached a large and focused audience with education on the ecology and conservation of grebes. This year's schedule was larger than the last with

added field trips, including birding in Lassen National Park and a wildlife photography workshop, a new activity involving local artists who painted outdoor landscapes live for visitors to watch, and a family-friendly social mixer and silent auction on Saturday night with live music, games, vendors, a food truck, and local craft beer.

- Plumas Audubon Society (PAS) interns and staff, as well as community volunteers, conducted a variety of grebe outreach and education efforts in 2017 including the Grebe Art Contest, Grebe Festival, tabling, classroom presentations, and youth field trips.
- The Grebe Festival Art Contest held during spring 2017 semester educated local youth about Western and Clark's Grebes and encouraged and promoted community involvement in the 2017 Grebe Festival.
- In June, Plumas interns took ten kids from a youth program that offers therapy to children out on Antelope Lake to explore and learn about the grebes. This year the students joined interns in kayaks to complete the grebe survey for the day.
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Outcomes

- The festival attracted over 200 participants from the Bay Area, Southern California, all over Plumas County, the Reno area, and beyond and gave more than half of these individuals up close views of the grebes nesting at their colonies.
- Festival goers enjoyed 40 different activities, fieldtrips, bird walks, and workshops. Thirteen activities were completely sold-out; nearly all twelve of the pontoon boat and Northshore kayak tours offered were full, taking almost 150 people out to see the grebes up close nesting on Lake Almanor.
- All submitted artwork were displayed for the entire duration of the Grebe Festival in the entrance to the Almanor Recreation Center, which was the Grebe Festival Headquarters. Students (K-12) across the county submitted 78 original pieces of art.
- Pluma's table at the Sierra Valley Art+Ag September event was visited by about 250 people.

Altacal Audubon Society – Thermalito Afterbay

Activities

- The chapter tabled at the Endangered Species Faire in Bidwell Park in Chico in May and at the 23rd Annual Salmon Festival at the Feather River Fish Hatchery in Oroville in September.
- Another exhibit at the July Summer Carnival at the Chico Creek Nature Center allowed the chapter to share information about grebes with very young children. Some of these children had never seen or heard of a grebe before.
- Board member and Natural Resource Scientist, Dawn Garcia, gave a talk to about 40 visitors at the Oroville Nature Center in July titled "Charismatic and Romantic Grebes!"

Outcomes

- Chapter members informed festival attendees about grebes, including residents who were not aware that the birds live in the area.
- Presentation at Oroville Nature Center educated participants on the natural history, habits, and life cycle of the Grebes as well as the history, purpose and implementation of the Grebe Grant.

Monitoring and Evaluation

Redbud Audubon Society – Clear Lake

Activities

- Formal surveys of grebe nesting began on 30 April and continued through 15 September. Most surveys were conducted by canoe; some were conducted from land or a motorboat. All surveys were conducted by two or more observers.
- From 14 May to 28 July Redbud deployed up to six Bushnell 8MP Trophy Cam Bone Collector Trail Cameras at selected nests in relatively shallow water < 1.75 m deep. Photos were examined to identify any disturbance events or unusual behaviors.

Outcomes

- Nesting began much earlier than in the previous seven breeding seasons. The first chick was observed on 6 May, indicating that egg laying began prior to 13 April. The breeding season was more prolonged than in previous years, with more than 4 months of continuous breeding at Anderson Marsh.
- We estimated a total of 5,075 nests in 11 colonies, of which 70.0% were attended by Western Grebes and 30.0% by Clark's Grebes ($n = 249$ nests). Nearly all of the nests were shore nests (99.7%; $n = 5,062$); the remaining were open water nests (0.3%; $n = 13$) placed up to 150 m from shore.
- A brood survey by motorboat at the end of the breeding season, on 15 September, recorded 4,560 adult grebes, of which 60.8% were Western Grebes ($n = 1,443$), 42.1% were Clark's Grebes ($n = 931$) and 2,186 were unidentified. We counted 599 juvenile grebes within the transect area, of which 59.3% were Western Grebes ($n = 355$) and 40.7% were Clark's Grebes ($n = 244$). Our ratio of 0.25 juveniles per adult (0.25 for Western Grebes, 0.26 for Clark's Grebes) was our highest, greatly exceeding our previous high ratio of 0.16 in 2014.
- Extrapolating the ratio of juveniles to adults within the transect area to the total number of adult grebes counted, Redbud estimates a total number of 1,151 juveniles for the lake. The estimate of 1,151 juvenile grebes greatly exceeds the previous high estimate of 704 juveniles in 2016.
- We recorded only 11 disturbances during 32.25 hours of observation, for an average of 0.34 disturbances per hour. Birds accounted for 10 (91%) of the disturbances (Table 3). We observed egg predation by the American Crow (*Corvus brachyrhynchos*) on six occasions and by the Common Raven (*Corvus corax*) on two occasions. Humans in a kayak accounted for only one (9%) minor disturbance.
- Cameras focused on one or more active grebe nests for 2,026 hours documented ten instances of egg predation by the Northern Raccoon (*Procyon lotor*) and nine instances by the American Crow. Humans in a motorboat accounted for one disturbance.
- The number of nests were our second highest, the number of chicks was the highest and the water levels were the highest since our study began in 2010. Given the reuse of nests during a prolonged breeding, the number of nests that we counted likely underestimates number of breeding attempts relative to previous years. Our results suggest that reproductive success is enhanced by high water levels, when nest failure due to wind-

generated waves and motorboat activity is unlikely to occur.

Plumas Audubon Society – Lake Almanor, Davis, Antelope, Eagle

Activities

- The chapter continued their monitoring efforts and observed successful reproduction at all four lakes, seeing breeding at Eagle Lake for the first time since 2011!
- Plumas is examining the effect of Lake Almanor water holding events on nest success as these events seem to moderate the water level drop rate at various times across the breeding season. A management strategy that includes water holding events, such as those in 2017, during the grebe nesting season, may result in more consistent reproductive success on Almanor in the future.

Outcomes

Table 1. Summary of adult counts, nests, and young on each lake.

Lake	Peak # nests	Ave. adult census	Peak ratio juv:adults	Est. # young
Almanor	1254	3008	0.30	906
Antelope	9	56	0.12	9
Eagle	Unk	2272	0.68	1556

NOTE: No complete census surveys were conducted on Lake Davis in 2017

- The great amount of precipitation that Northern California received this past winter and spring brought Eagle Lake's water level back up to where tules could successfully grow and once again provide suitable breeding habitat for the grebes. This breeding season was the most productive on Eagle Lake since the beginning of the study (Table 1).
- Reproduction on Lake Davis was confirmed, but a full lake census was not attempted so an estimate of the scale of reproduction cannot be produced. Antelope Lake produced fewer young than any of the previous reproductive years during this study (Table 1).
- The total number of adults on Almanor (Table 1) was lower than the past five years previous years (4,716 average adult census, averaged across 2012-16).
- While Plumas continues to maintain their recommendation of maximum water level drop rate during peak breeding season, regular water holding events (eg. at 3-5 week intervals for periods of 3-5 days) between June 25 and September 15 may be a more feasible management strategy for PG&E to implement to benefit grebe conservation efforts at such an important breeding ground as is Lake Almanor.

Altacal Audubon Society – Thermalito Afterbay

Activities

- Nine grebe colony surveys were conducted at the Thermalito Afterbay from May 2017 to September 2017. Boat surveys have been conducted for numerous years with a representative from the California Department of Fish & Wildlife (CDFW), one or two representatives from the California Department of Water Resources (DWR), and a representative from Altacal Audubon. Full surveys of the Afterbay are conducted as conditions permit. This year there were nine surveys, six of which covered the entire

Afterbay. The surveys count Western Grebes (WEGR) and Clark Grebes (CLGR), number of nest, eggs and young of year (YY). Water elevations and current conditions of vegetation and weather conditions are also recorded.

Outcomes

- The 2017 breeding success ratio was 0.077 (18/233), which is lower than the 2016 (0.17) and 2015 (0.18) breeding seasons.
- Survey results estimate only 20 nest attempts and all of these were within the Saddle Dam Cove.
- Average of adult counts (end of July – September during nesting period) = 233.
- Young of Year estimate = 18 (15 back-brooders on August 23 and 3 back-brooders on September 6).
- Overall, Grebe counts were quite a bit lower this year, possibly due to the high elevation of the water levels of the Afterbay throughout the breeding season. The high water levels might have had an impact on the behavior patterns of grebes and the population levels of fish that grebes depend on for food.

Conclusion

Audubon California, Redbud, Plumas and Altacal Audubon chapters are midway through the third year of Grebe Conservation Project's Phase II work. Our team has led grebe conservation and colony protection efforts in Northern California using a multi-layered approach that includes community engagement, community science, and cross-organization collaboration. We are on track to meet and exceed goals detailed in the Scope of Work for 2017 – 2018 and look forward to sharing those successes as they come. The Grebe Team and the many communities we connect with thank our funders for their support and confidence in this project.