



Conservation of *Aechmophorus* Grebe Colonies at Six Northern California Lakes
Interim Report for Year Two
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Photo: Floyd Hayes

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Summary of Accomplishments

April 2016 – October 2016

Audubon California, Redbud, Plumas and Altacal Audubon chapters – together, the Grebe Team – continue to lead 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). The Grebe Team has refined its work based on lessons learned from six years of monitoring, evaluation, public outreach, and education. By leveraging partnerships internally and with key external allies, the Grebe Team has recently included statewide engagement as a priority. Year Two of our grebe conservation effort continues to focus on public outreach and education with the most significant win to report being the 2016 Grebe Festival organized 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 the value of this charismatic species. Outside of the Grebe Festival, Audubon chapters engaged an estimated 5,000 individuals so far this season. Additional activities completed between April 2016 and October 2016 are detailed below.

Project Activities & Outcomes

Project Management

Audubon California

Activities

- Board contacts at PG&E were leveraged to begin a conversation about how sudden water level drops at Lake Almanor directly impact breeding success of grebes, and what management decisions can be made to reduce disturbance.
- Audubon California attended the first annual Grebe Festival organized by Plumas Audubon Society. Media was released to the National Audubon Snapchat account and on Audubon California's Instagram page to expand the reach of the festival events.
- Staff from Audubon's Seas and Shores team participated in a post-breeding season meeting to discuss monitoring data, and how to connect inland breeding grebes with coastal wintering grebes, providing a holistic view of the population.
- Project Manager Desiree Loggins met with the Luckenbach Trustee Council in October to discuss 2016 budget priorities, breeding season updates and various ways additional funds could be leveraged to elevate the project to a state level.

Outcomes

- Six years of grebe breeding data were summarized and made available by Plumas Audubon Society to engage PG&E in the project's mission to protect grebe colonies. PG&E representatives attended the Grebe Festival science symposium and agreed to be in regular contact with Audubon about how PG&E manages the Lake Almanor reservoir. This partnership is critical as the majority of Plumas County grebes breed on Lake Almanor.
- The 116,000 members of National Audubon Society's Snapchat account throughout the United States were able to view grebe breeding sites in real-time. Additionally, video and photos from the Grebe Festival were uploaded to Audubon California's Instagram account where they received a total of 582 likes and 441 views. This category of engagement broadens the reach of the grebe project and could influence the behavior of future lake users who now understand the impacts of human colony disturbance.

Public Outreach and Education

Redbud Audubon Society – Clear Lake

Activities

- Newly recruited Grebe Team member Lisa Prather is a local high school science educator. . As co-chair of the Redbud Audubon Education Committee she has helped organize classroom presentations and programs on grebes.
- The chapter exhibited a grebe project booth at the dedication of Berryessa Snow Mountain National Monument in March (attended by 350 people), Lake County Pear Festival in late September (attended by 3,000 people), and a health and recreation festival in Clear Lake State Park in August (attended by 100 people).
- For the 21st annual Heron Days Festival, organized by Redbud Audubon, guided pontoon boat tours of Clear Lake were featured where participants could observe “dancing” grebes while Audubon bird guides explained project goals and accomplishments.
- Marilyn Waits was invited to present a talk on grebes next February for the monthly “Get to Know Lake County” series sponsored by the Lake County Public Library system. .
- The May 2016 issue of the Redbud chapter newsletter *the Western Grebe* included several grebe-related articles that can be viewed [here](#).

Outcomes

- Educational booths were operated at three local events, reaching over 3,400 attendees. Festivals draw families and community members from around the Northern California region and are a good tool to familiarize visitors with grebes and reduce accidental disturbance caused by lake recreation near colonies.
- 231 people participated in the pontoon boat tour and received an up-close education on grebe behavior and threats to the population that may prevent recreational disturbance to colonies on the lake.
- The project update published in the *Western Grebe* chapter newsletter reached 300 Redbud Audubon members, maintaining an active relationship between interested members and the project.
- Two new fishing line recycle bins installed since April 2016 now bring the chapter’s total to 21 bins since the project’s inception. These bins, maintained by Redbud Audubon volunteers, prevent diving grebes from being entangled in fishing line.

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

Activities

- The [2016 Grebe Festival](#) was planned, organized, and implemented for the first time this year with the support of Plumas Audubon volunteers, interns, and staff. Additionally, various local sponsors provided funding to match the Grebe Project budget supporting three days of engaging programs and activities. The goal of the festival was to reach a larger and more focused audience with the grebe conservation message, and in its first year the goal was reached.

Outcomes

- The festival attracted over 200 participants with more than 50 attending the grebe research symposium, and more than half of the 25 field trips and events sold out. Eleven researchers from throughout the state presented.
- Two hundred thirty-one art submissions were received from K-12 students. All artwork was displayed at the Grebe Festival Headquarters at the Almanor Recreation Center. The Grebe Art Contest was held during the spring 2016 school year to educate local youth about grebes and promote community involvement in the 2016 Grebe festival.
- In addition to the enormous undertaking of the Grebe Festival, David Arsenault, Executive Director, gave two presentations on grebes, one reaching across borders in Reno in March, and another to Quincy Rotary in May. Additional presentations are planned for the fall, winter, and spring.
- Eight fishing line recycle bins were installed around Lake Davis.

Altacal Audubon Society – Thermalito Afterbay

Activities

- The chapter ran a booth at the Endangered Species Faire at Bidwell Park in May and at the 22nd Annual Salmon Festival at the Feather River Fish Hatchery in September. They distributed stickers and materials on grebe conservation. A third exhibit and learning station was managed at the Summer Carnival held by the Chico Creek Nature Center in July
- Currently, volunteers are working on developing presentations for local classrooms.

Outcomes

- Grebe booth exhibits were displayed at three events for the public to interact with at local festivals

Monitoring and Evaluation

Redbud Audubon Society – Clear Lake

Activities

- Formal surveys of grebe nesting began in June 2016 and continued through September 2016 where volunteers went out several times a month to monitor the breeding population. Most surveys were conducted by canoe; some were conducted by motorboat, and all surveys were conducted by two or more observers.

Outcomes

- Nesting began much earlier than in the previous six breeding seasons with nests and eggs first reported in early May. Colonies peaked between mid-June and July. Chapter members observed 4,993 nests in 17 colonies. Most of the nests were shoreline nests (96.4%; n=4,814) attached to emergent vegetation. The remaining nests were open water nests placed up to 230 m from shore.
- The mid-summer brood surveys found 259 juvenile grebes, of which 90.6% were Western Grebes (n=232). A second brood survey in September found 353 juvenile grebes within the transect area. During both surveys we recorded an overall ratio of 0.11 juveniles per adult. Extrapolating the ratio of juveniles to adults within the transect we estimated 704 juveniles on the lake, greatly exceeding all previous years since our study began in 2010.
- The number of nests observed was the second highest since our study began in 2010. Because of the high water levels in 2016, the vast majority of nests were constructed along the shore in protected areas with very few nests exposed far from shore in open water. As a consequence, we did not observe any instances of nest failure due to wind-generated waves or disturbances by boats. However, we recorded an unusually high level of predation on eggs by Raccoons.
- Surveyors recorded only ten disturbances during 33.25 hours of observation for an average of 0.30 disturbances per hour. Birds accounted for five of the disturbances (50.0%) and humans accounted for five of the disturbances (50%), including two by canoe or kayak, and three by motorized boats. In each case the boats were moving slowly and disturbance of the grebes was minimal.
- Motion-activated cameras focused on one or more active grebe nests for 3,509 hours. The cameras documented 16 confirmed and six inferred instances of egg predation by a Raccoon and one instance of an American Crow flying from a nest with an egg in its beak.

Plumas Audubon Society

Activities

- The Chapter is continuing a dialogue with PG&E to manage water in Lake Almanor for nesting grebes. The goal is that continued efforts to work with PG&E will help increase grebe reproductive success at Lake Almanor in future years. Steps have been taken to strengthen the relationship by inviting PG&E scientists out on colony surveys and inviting representatives to the Grebe Festival.
- Staff and volunteers participated in multi-lake surveys by boat during the breeding season and continue to compile and analyze data.

Outcomes

Lake	Peak # of nests	Ave. adult census	Peak ratio juv: adults	Est. # young
Almanor	1,090	4,457	0.04	178
Antelope	34	83	0.74	68
Davis	Unk	180	0.60	115
Eagle	0	3,484	0.0	0

- There were significantly fewer nests at Lake Almanor this year compared to the last three years (average 2,766 nests/ years 2013 -15). The first Chester Meadows colony peaked at 701 nests at the beginning of August. However, due to a rapid water level drop, this colony was abandoned on August 8th.
- Eagle Lake continued to have no nesting grebes, but the lake is still very important to migrating grebes (5,044 grebes counted on August 8th). Reproduction on Davis and Antelope Lakes was higher this year than the past five years. The number of young produced on Davis and Antelope Lakes combined was greater than the number produced on Lake Almanor, yet those lakes had just 6% of the number of adults on Lake Almanor (263/4,457).

Altacal Audubon Society – Thermalito Afterbay

Activities

- Grebe colony surveys were conducted at the Thermalito Afterbay from May 2016 to September 2016. Boat surveys of the Thermalito Afterbay have been conducted by Altacal Audubon for numerous years in collaboration with representatives from the California Department of Fish and Wildlife and the California Department of Water Resources. Surveys of the full lake are done monthly from a Mud Buddy Boat and additional weekly surveys are conducted in coves and other nest sites at the height of the breeding season.

Outcomes

- In August the breeding success ratio was 0.16 (82/503) and in September it was 0.17 (63/356), which is consistent with 2015 and 2014 breeding seasons.
- Breeding adult grebes peaked at 632 in early May.
- Grebes in Larkin Cove abandoned a total of 32 nests between July 7th and 21st while the lake levels were still very high, which allowed them to move to Ski Cove and rebuild their nests. There was no evidence that human disturbance caused the move, however thick layers of pond weed found at the abandoned colony could have prevented grebes from foraging easily, causing nest abandonment.
- Motorboats, jet skis, and water skiers near colonies provoked very little disturbance response from grebes. The disturbance intensity on average was 2 on a 1-10 scale while predator disturbance, primarily attributed to raptors, averaged at 5 and were more frequent.

Conclusion

Audubon California, Redbud, Plumas and Altacal Audubon chapters are midway through the second year of Grebe Conservation Project’s Phase II work. The Grebe Team has led grebe conservation and colony protection efforts in Northern California using a multi-layered approach that includes community engagement, volunteer science, and cross-organization collaboration. The Grebe Team’s strategies draw upon six years of lessons learned and tried methods. We are on track to meet and exceed goals detailed in the Scope of Work for 2016 – 2017 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.