

**Conservation of *Aechmophorus* Grebe Colonies at Clear Lake**  
**Redbud Audubon Society**  
**Report for July – October 2010**

**Summary**

Beginning in July of the 2010 grebe breeding season at Clear Lake, the Redbud Audubon chapter monitored an estimated 1,322 nests in nine colonies on this 19-mile-long natural lake with 100 miles of shoreline (Clear Lake is the largest natural lake within California's boundaries).

The first meeting of the project team took place on July 15<sup>th</sup>, with Redbud Audubon represented by President Marilyn Waits and Ornithologist Dr. Floyd Hayes, and Redbud kayak-birders Brad and Kathy Barnwell; the County of Lake Department of Water Resources represented by Deputy Director Pamela Francis; and Audubon California represented by Director of Bird Conservation Dr. Gary Langham and Director of Communications Garrison Frost. Also attending was local Outdoors Writer Terry Knight.

The following day the project team spent four hours touring nest areas at the north end of the lake, from Clear Lake State Park to Rodman Slough. DWR Director Scott DeLeon piloted the DWR boat for this tour. Afterwards the project team met for detailed planning for the initial phase of the project.

The results of the first four months on this project are presented in the next three sections of this report: Public Outreach and Education, Seasonal Breeding Colony Protection, and Monitoring and Evaluation.

**Section 1 -- PUBLIC OUTREACH AND EDUCATION**

Boaters, fishermen, jet-skiers, and water-skiers all are potential sources of human disturbance of grebe colonies on Clear Lake. Because this is such a broad public to reach with an education program, Redbud focused its initial outreach efforts through the local newsmedia. Two major front-page articles appeared in the Lake County *Record-Bee* which reaches a circulation of 8,078 people throughout the county.

The first article "*Don't Rock the Nest*" appeared on July 22 (see attached two-page article) at the beginning of the project. Totalling 54 column-inches with photos, the article discussed the nests' vulnerability to wakes and the goals of this conservation grant.

The second front-page article "*Babies on Board*" appeared on Labor Day weekend, Saturday September 4 (see attached two-page article). This article reached not only local residents, but many out-of-county boating visitors during that major holiday weekend.

A third outreach effort to Lake County residents was featured at the Redbud Audubon exhibit booth at the annual Pear Festival on September 25. This county-wide event in Kelseyville draws over 3,000 people. Redbud prepared a large 4'x3' poster on the grebe project (see attached poster photograph). During the seven hours of the festival, Redbud volunteers engaged the public by explaining how human disturbance can cause grebe egg/chick mortality.

Redbud also distributed at the Pear Festival over 100 copies of the color brochure "*Western and Clark's Grebes – Putting on a Show*," which the chapter developed cooperatively with a number of public agencies four years ago. Several thousand of these brochures have been given out to the public at Redbud's annual Heron Festival in recent years.

The strong degree of public interest in the grebe poster and brochure confirmed that these birds are highly valued by local residents, and this broad public awareness will provide a broad base for more targeted outreach efforts through this grant.

The next outreach step will take place on November 18 when the project will be the featured topic for Redbud's monthly chapter meeting. Dr. Gary Langham will speak, and the Clear Lake grebe project team will present first-season results of all three aspects of the grant. Suggestions will be solicited for specific community and business organizations for future educational presentations, and volunteers will be sought to serve as presenters and liaisons to key local groups.

The plan is to develop a systematic outreach to these organizations prior to and during the 2011 breeding season on Clear Lake.

## **Section 2 -- SEASONAL BREEDING COLONY PROTECTION**

An important function of the County of Lake Water Resources Department (WRD) is Lakebed Management, established in 1973 to oversee the trust of Clear Lake. Elements included in the trust are Wildlife and Habitat Protection and Navigation. Lakebed Management staff oversee the installation and maintenance of navigational and informational buoys. In addition, Lakebed staff has expertise regarding sensitive habitat areas of Clear Lake.

This grebe conservation project has the full support of the Water Resources Department staff. The Grebe Colony Protection goals are consistent with the Clear Lake Integrated Watershed Management Plan, Action 4.6.3.1 "Protect Critical Lake Habitat" pages 4-25.

On July 16 WRD staff facilitated a boat tour of Clear Lake areas of known prior grebe breeding colonies to initially scope for nests. The monitoring team identified nests in six areas, and WRD agreed to place 5-mph buoys near the nesting areas.

On September 3, WRD staff placed eight lighted buoys from the department's existing inventory, along with newly-created temporary signs in Rodman Slough, to alert boating traffic of no-wake areas (see attached map showing buoy locations).

Because of high winter flows in Middle Creek at Rodman Slough, the buoys will be removed when the nesting season appears to be over in the Fall. It is expected the buoys will be removed the first week of November.

Further research indicated that currently, the County does not have legal authority to place 5-mph buoys in areas that have not been identified as protected fish areas in County Code Chapter 15 – *Recreation*. The relevant sections are 15.11.1. Fish Areas and 15.11.2 Speed Limits. Although these existing specified areas include many of the grebe nesting areas, the Rodman area outside the bridge is not included. Department staff has begun the required legal process to change Chapter 15 of the County Code to expand the protected fish areas (see attached map showing existing Protected Fish Areas).

Many additional 5-mph buoys and permanent signs for launch facilities will be purchased once the County has legal authority to place them in the newly identified Protected Wildlife Areas. It is anticipated that the additional signs and buoys will be in place prior to the beginning of the grebe breeding season next Spring 2011.

## **Section 3 -- MONITORING AND EVALUATION**

### **METHODS FOR NEST SURVEYS**

On 16 May, FH and DW censused waterbirds along the perimeter of Clear Lake from a

motor boat. Although 2076 *Aechmophorus* grebes (89% Western and 11% Clark's) were counted, the only evidence suggestive of nesting was a pair of grebes within water primrose near the mouth of Manning Creek, but closer inspection did not reveal any nest-like structure near the grebes.

Formal surveys of grebe nesting began on 16 July and continued through 7 October. Nearly all surveys were conducted by canoe, but some were conducted by motor boat or from land. Most were conducted by two observers, occasionally by three or four, and rarely by one observer. Observers mentioned in the accounts below include: Brad Barnwell (BB), Kathy Barnwell (KB), Dustin Baumbach (DB), Hunter Gutierrez (HG), Brett Hayes (BB), Pamela Francis (PF), Floyd Hayes (FH), Marta Hayes (MH), Madelyn McDonald (MM), Thomas Smythe (TS), and Douglas Weidemann (DW).

We periodically searched areas where *Aechmophorus* grebes were known to breed in the past and counted the number of all obvious nests of *Aechmophorus* grebes. Nests that appeared to be in the incipient stages of construction were noted but not included in our final estimates of active nests. Because our counts were conducted sporadically, we decided to count all nests that appeared to be well constructed even if no eggs were present, because our counts were conducted sporadically and those without eggs may well have had eggs at some point within a few days before or after observation. In the larger colonies the estimated number of nests was increased by adding a conservatively estimated number of nests not detected and, if warranted by data, by adding a conservatively estimated number of nests that were reused by the same pair or a different pair of grebes.

For as many nests as possible we identified the species attending the nest. However, our identification was often based on a single parent and may have overlooked nests attended by a mixed pair of Western Grebe and Clark's Grebe, or a hybrid grebe paired with either a Western or a Clark's Grebe.

For colonies located in open water, we measured the minimum and maximum distances of nests from the shore or emergent vegetation, usually based on measurements from a laser range finder or, in the case of more distant nests, a GPS unit. For several colonies we measured the nearest neighbor distance between all or a portion of nests by using either an extendable aluminum pole, a laser range finder, or a simple visual estimate. Nearest neighbor distances were not measured for some open water colonies due to the fragile nature of the nests which we did not wish to disturb by approaching too closely. For a few of the larger colonies we measured the density of nests in all or a portion of the colony using a transect of known length and width, based on measurements obtained with a laser range finder. For most colonies we measured the water depth of all or a portion of nests by using either an extendable aluminum pole or a nylon line attached to a weight.

## **RESULTS AND DISCUSSION**

We estimated a total of 1322 nests in nine colonies at Rodman Slough (400), north end of Clear Lake (346), Nice (23), Manning Creek (1), Rumsey Slough (13), Big Valley Rancheria (6), Adobe Creek (2), Corinthian Bay (3), and Anderson Marsh (528). Eight of the colonies were in the northern arm of the lake and one in the southwestern arm of the lake. Four colonies with an estimated 936 nests were located in emergent vegetation near the shore. Five colonies with an estimated 386 nests were located on open water 18-950 m from emergent vegetation near the shore.

The breeding season was well underway when surveys first began on 16 July and ended

at some point between 3 October, when 32 nests still had eggs, and 7 October, when no nests could be found. The timing of nesting activity varied among colonies and even among subcolonies within a colony, peaking between early August (Anderson Marsh) and late September (Nice).

We confirmed the identity of the species attending 435 nests, with 92.0% comprising Western Grebes, 7.1% comprising Clark's Grebes, and 0.9% comprising mixed pairs or a Western Grebe with an apparent hybrid. However, the latter category was probably underestimated because the identity of the species attending a nest was often based on the identity of a single parent rather than both parents.

Nearest neighbor distances varied from an average of 2.9 m at Anderson Marsh to 96.5 m in the nearshore colony at the north end of Clear Lake. The density of nests was much greater in colonies along the shore than in open water, ranging from 51.9 nests / ha in the main colony at the North End of Clear Lake (but undoubtedly lower in the farshore colony, where data were not obtained) to 432.5 nests / ha at Rodman Slough.

Nests along the shore were placed in shallower water than nests in open water. The shallowest colony was along the shore at Anderson Marsh, where water depths averaged 0.44 m with a minimum of 0.29 m. All nests in open water at Nice were at least 2.6 m deep. The deepest nest at the north end of Clear Lake was 3.1 m, but water depths were measured for only a few nests far from shore so some may have been in deeper water.

Below we provide details for each active colony, which are arranged from north to south. Within each colony the details of breeding activities are arranged chronologically by date. A summary of breeding data for each colony is presented in Table 1.

### **Rodman Slough**

16 July: BB reported observing an active colony of about 15 nesting grebes. FH and the grebe planning team observed 5 nests on the northwest bank of the slough 75-350 m northwest of the bridge along the Lucerne-Nice Cutoff Road (southern subcolony), and another 20 nests on the northwest bank of the slough 475-900 m northwest of the bridge (northern subcolony). The nests were mostly within water primrose along the edges of the slough, with some situated within the tules and a few out in the open water but within a few m of emergent vegetation along the shoreline.

6 August: FH and DW counted 25 nests in the southern subcolony and estimated that 50% of the nests were detected, providing an estimate of 50 nests. In the northern subcolony we counted 90 nests and estimated that only 25% were detected, providing an estimate of 270 nests. We estimated a total of 320 nests for the entire colony. At least 37 nests were attended by Western Grebes (82.2%) and eight nests by Clark's Grebes (17.8%). In 76 nests with eggs we counted a total of 174 eggs, with an average of 2.29 eggs per nest (range = 1-5). We saw two adults carrying tiny chicks on their backs, one with one chick and the other with two. A half-grown chick swimming in the water was begging and being fed multiple times by a Western Grebe and a Clark's Grebe, so we assumed it was a mixed pair with a hybrid chick that had hatched in mid-to-late July.

13 August: FH and DW conducted a more intensive survey and counted 334 nests, including 61 in the southern subcolony and 273 in the northern subcolony. We estimated that we detected 90% of the nests, providing a total estimate of 371 nests for the entire colony. At least 54 nests were attended by Western Grebes (88.5%) and seven nests by Clark's Grebes (11.5%). We counted a total of 226 eggs in 101 nests, with an average of 2.24 eggs per nest (range = 1-7).

Of 18 relocated nests that had been mapped on 6 August, the number of eggs decreased for six, remained equal for seven, and increased for five, suggesting that nesting activity was relatively stable. Nearest neighbor distance between nests averaged 3.2 m (range = 1-13 m,  $n = 107$  nests). Water depths of the nests averaged 0.78 m (range = 0.47-1.06 m,  $n = 93$  nests). Using a laser range finder we conducted a transect 200 m long and 20 m wide (total area = 0.40 ha) through the middle of the northern subcolony and calculated a density of 432.5 nests per ha. Based on our estimates of the number of nests and density, we estimated that the entire colony covered an area of 0.86 ha. We saw several chicks within the colony, including a hatching egg, two on the backs of incubating birds, and several on the backs of adults swimming in the channel. One recently hatched Pied-billed Grebe (*Podilymbus podiceps*) chick was alone on a nest in the middle of the colony—we surmised that it came from an egg which had been dumped on a Western Grebe or Clark's Grebe nest and was abandoned once it had hatched.

20 August: FH and HG relocated 67 mapped or flagged nests that had been monitored on 13 August. Of these, the number of eggs decreased for 22, remained equal for 34, and increased for 11, indicating a decrease in nesting activity. One egg was observed hatching. Several nests appeared to be new. About five adults with one chick each on the back were observed swimming in nearby open water.

27 August: FH and MM relocated 56 mapped or flagged nests that had been monitored on 20 August. Of these, the number of eggs decreased for 21 nests, remained equal for 27, and increased for eight, indicating a decrease in nesting activity. Several chicks were seen either on the back of adults or swimming beside adults in nearby open water.

31 August: FH, BH, and MH relocated 48 mapped or flagged nests that had been monitored on 27 August. Of these, the number of eggs decreased for 24, remained equal for 19, and increased for five, indicating a decrease in nesting activity. Only about 30 nests appeared to be active. Several chicks were seen either on the back of adults or swimming beside adults in nearby open water.

3 September: BB and KB observed six nests attended by grebes and 26 chicks accompanying adults within Rodman Slough.

5 September: FH and BH failed to find any nests in the southern subcolony but did not visit the northern subcolony.

Our data suggest that nesting activity peaked around 13 August, when we encountered the highest number of nests ( $n = 371$ ). Of 59 nests monitored three or more times during a period of at least 10 days, the number of eggs declined and then increased for ten nests (17%) or remained the same for at least a week and then increased for four nests (7%). These data indicate that nearly a quarter of the nests (23.7%) were either reused by the same pair or a different pair of grebes, or parasitized by a non-attending female grebe. Taking into account the construction of new nests and reuse of old nests since our maximum estimate of 371 nests on 13 August, we conservatively estimated an additional 29 nests (7.8% increase) for an estimated total of 400 nests for the colony.

### **North End of Clear Lake**

16 July: FH and the planning team for the Clear Lake grebe project encountered extensive floating mats of sago pondweed and algae on both sides of the channel created by the inflow of water from Rodman Slough. We noted a pair of Western Grebes building a nest along the channel margin of the eastern floating mats, but the nest was no longer present when checked on 6 August.

6 August: BB and KB reported a large colony of grebes on the floating mats of pondweed and algae between the mouth of Rodman Slough and the mobile home park at Robin Hill Drive, approximately 275-600 m from shore. FH and DW counted 126 nests, including unattended nests. Many appeared to be under construction. We observed 92 nests attended by Western Grebes (95.8%) and four by Clark Grebes (4.2%). BB and KB counted about 800 grebes in the area. We saw no chicks.

15 August: FH and DW counted 250 nests but did not attempt to tally the number of each species. However, counting nests was difficult because many were extremely low on the water and in several nests the eggs were actually floating on the water. Because the nests were flimsy we did not attempt to flag any nests or measure water depth or nearest neighbor distances. The zone of pondweed and algae surrounding the colony appeared to have grown and become more effective at buffering waves from passing motor boats than when we first visited the colony 9 days earlier. Using a laser range finder we conducted a transect 292 m long and 60 m wide (total area = 1.752 ha) through the middle of the colony, and calculated a density of 51.9 nests per ha. Based on our estimates of the number of nests and density, we estimated that the entire colony covered an area of 4.81 ha. We took two depth measurements, 2.4 m in the middle of the colony and 2.7 m at the nest most distant from land. We saw no chicks in the colony but there was a steady stream of chicks on the backs of adults swimming out into Clear Lake from the Rodman Slough colony.

22 August: FH and MH counted 225 nests with the aid of a telescope in a canoe, including 197 nests attended by a Western Grebe (93.8%), 13 nests attended by a Clark's Grebe (6.2%), one nest attended by an apparent hybrid Western - Clark's Grebe, and one nest by a mixed pair (male Clark's Grebe observed mounting a female Western Grebe). The depth of the nest nearest to shore was 2.2 m. We saw no chicks in the colony but we saw several chicks on the backs of adults or in the water beside adults in open water in the channel just south of the mouth of Rodman Slough.

27 August: FH and MM observed that the colony had been split into two with a large stretch of open water separating two subcolonies, but many nests were still scattered in the open water. No evidence for further nesting was found during a search along the north end of Clear Lake to the east of Rodman Slough. We saw no chicks in the colony but we saw several chicks on the backs of adults or in the water beside adults in open water in the channel just south of the mouth of Rodman Slough.

29 August: Although heavy winds on the lake were reported on 28 August, the maximum gusts recorded at nearby weather stations (11.6 mph at Lakeport, 14.1 mph at Lower Lake; data from Weather Underground) were moderate, but probably underestimated the strength of wind gusts out on the open water. FH, BH and MH observed that most of the floating pondweed and algae had blown away from the colony and were scattered across the lake several hundred meters to the east and south of the colony. We counted 165 nests in the main colony, which were more widely scattered than before. Most of the nests were in open water and appeared to be attached to vegetation anchored to the bottom of the lake. An additional eight nests (six with eggs) were found 200-400 m south from the main colony, from which they appeared to have drifted. In the main colony we counted 125 eggs in 40 nests with eggs, with an average of 3.13 eggs per nest (range = 1-8). The six nests with eggs that appeared to have drifted south had 15 eggs, with an average of 2.50 eggs per nest (range = 1-5). Several nests appeared to be under construction, including a few near the nests presumed to have drifted south of the main colony. The nests appeared to be much more vulnerable to waves from passing motor boats than during previous

weeks. We saw no chicks in the colony but we saw several chicks on the backs of adults or in the water beside adults in open water in the channel just south of the mouth of Rodman Slough.

31 August: FH, BH, and DB observed that the nests were still widely scattered and were mostly in open water, with most apparently still attached to vegetation anchored to the bottom of the lake. A laser range finder revealed that the nest closest to land was 275 m from the shoreline. We counted 142 nests in the main colony. Using a laser range finder, we conducted a transect 319 m long and 60 m wide (total area = 1.914 ha) through the middle of the main colony, and calculated a density of 40.8 nests per ha, revealing a marked decline in nest density from 51.9 nests per ha since 15 August. A few hundred m to the south of the main colony we encountered 17 widely scattered nests with eggs and an additional six obvious nests without eggs at an estimated distance of 750-950 m from shore. We counted 44 eggs in the 17 nests, with an average of 2.59 eggs per nest (range = 1-6). Several eggs were whitish or bluish in color and appeared to have been recently laid, suggesting the establishment of a second farshore subcolony a few hundred m south of the main colony where the density of floating pondweed had become greater than in the main colony. We saw no chicks in the colony but we saw several chicks on the backs of adults or in the water beside adults in open water in the channel just south of the mouth of Rodman Slough.

3 September: During a survey by motor boat (when buoys with warning signs were deployed around the main colony), FH, DB, and TS observed 32 nests about 750-950 m from shore. An additional seven new nests were observed near the shore just west of the mouth of Rodman Slough, forming a new nearshore subcolony. The 950 m distance was obtained from a GPS unit by TS.

5 September: FH and BH observed eight new nests in the nearshore colony near the southwest mouth of Rodman Slough located 18-260 m from shore (mean = 126 m). Six of the eight nests were attended by Western Grebes; the identity of the other two was undetermined. Only four of the eight nests contained eggs. We counted 11 eggs in four nests with an average of 2.75 eggs per nest (range = 1-5). Nearest neighbor distance between nests averaged 96.5 m (range = 60-200 m). Water depths of the nests averaged 1.19 m (range = 0.97-1.47 m). The main subcolony still had many nests but we did not count them. To the southwest, south, and southeast of the main colony we encountered many new nests in the farshore colony at an estimated distance of 750-950 m from shore. We found 57 nests of which 33 contained eggs. At least 43 nests were attended by Western Grebe (93.5%), one by Clark's Grebes (2.2%), one by a Western Grebe and an apparent hybrid Western  $\times$  Clark's Grebe (2.2%), and one by a mixed pair of Western Grebe and Clark's Grebe. We counted 56 eggs in 33 nests, with an average of 1.70 eggs per nest (range = 1-5). The nest farthest from shore was in water 3.1 m deep. To the east of the main colony we found an additional five new nests, forming an eastern subcolony, located 240-450 m from shore (mean = 367 m) between the mouth of Rodman Slough and Tule Island to the east. Four of these nests were attended by Western Grebes and two had eggs, one with one and the other with three. The fifth nest was being constructed by Clark's Grebes.

9 September: TS failed to locate any nests in the main subcolony.

19 September: FH and DW failed to locate any nests in the nearshore subcolony and in the main subcolony. In the farshore subcolony we counted 40 nests of which 23 had eggs. At least 15 nests were attended by Western Grebe (93.8%) and one by Clark's Grebe (6.2%). We counted 41 eggs in 23 nests with an average of 1.78 eggs per nest (range = 1-3). A Western Grebe nest with one white and one blue eggs suggested recent laying. In the eastern subcolony only one nest was found with one white egg, only 60 m from Tule Island and much closer than

any previous nests, suggesting that it was a new nest.

26 September: FH, DW, and EW observed 20 nests in the farshore subcolony from a motor boat. The single nest by Tule Island could not be relocated. However, extensive pondweed mats prevented us from approaching closely, thus we may not have observed all of the nests present.

3 October: FH, DB, and DW counted 17 nests in the farshore subcolony, of which 14 had eggs. At least 11 nests were attended by Western Grebes (91.7%) and one by Clark's Grebes (8.3%). We counted 26 eggs in 14 nests, with an average of 1.86 eggs per nest (range = 1-3). No fresh eggs were noted.

7 October: FH scanned the area from shore at the mouth of Rodman Slough and was unable to observe any nests, although it is possible that one or more nests in the farshore colony was overlooked.

Based on the maximum counts of nests attended by each species for each subcolony, 92.9% were attended by Western Grebes, 5.6% by Clark's Grebes, and 1.5% by mixed pairs or an apparent hybrid ( $n = 269$  nests). Our data suggest that nesting activity in the main subcolony peaked around 15 August, when we observed the highest number of nests. We estimate that an additional 25 nests (10%) in the main subcolony were constructed after 15 August, increasing our estimate of nests from 250 to 275. Our data suggest that nesting activity in the other subcolonies peaked around 5 September, when we observed the highest number of nests.

## Nice

9 September: TS observed 12 nests in two groups, five to the west and seven to the south, within a few hundred m of the Boathouse Bar.

19 September: FH and DW observed 18 nests from shore near the Boathouse Bar. The western subcolony had 12 nests, all attended by Western Grebes. Eggs were visible in three nests. The eastern subcolony had six nests, of which four were attended by Western Grebes (88.9% for the colony) and two by Clark's Grebes (11.1%).

26 September: FH, DW, and EW observed 21 nests from a motor boat near the Boathouse Bar, including 15 nests attended by Western Grebes in the western subcolony and six nests in the eastern subcolony, of which five (one more than on 19 September) were attended by Western Grebes (95.2% for the colony) and one (one less than on 19 September) by Clark's Grebes (4.8%). Eggs were confirmed in two Western Grebe nests and one incubating Western Grebe had a recently hatched chick on its back. In addition an isolated nest with a Western Grebe sitting on it was found about 1.2 km to the east (at 3367 East State Highway 20). Because the grebe did not abandon the nest when we approached within 3 m, it was almost certainly incubating eggs.

3 October: FH, DB, and DW observed 20 nests near the Boathouse Bar. The two subcolonies were probably 100-200 m apart (not measured or estimated during any visit). We counted 15 nests attended by Western Grebes in the western subcolony, of which 14 contained 35 eggs with an average of 2.50 eggs per nest (range = 1-5). The water depth was  $> 2.7$  m (length of our pole plus extended arm). The nests were placed 93-115 m from shore. Using a laser range finder, we conducted a transect 90 m long and 20 m wide, covering an area of 0.18 ha, and calculated a density of 83.3 nests per ha. The eastern subcolony had five nests of which four were attended by Western Grebes and one by Clark's Grebes. The nests were placed 80-96 m from shore, all within 45 m of each other. Four of the nests had nine eggs, with an average of 2.25 eggs per nest (range = 2-3), including three nests attended by Western Grebes and one by



Clark's Grebe (the only nest with three eggs). The isolated nest 1.2 km to the east was empty. It was located 70 m from shore in water 2.6 m deep.

7 October: FH scrutinized the colony from land but failed to locate any nests.

Our data suggest that nesting activity peaked on 26 September, when we observed the maximum number of nests.

### **Manning Creek / Lakeport**

16 July: FH and the planning team for the Clear Lake grebe project failed to find any nests.

13 August: BB, KB, FH and DW failed to find any nests.

20 August: FH and HG failed to find any nests.

5 September: FH and BH observed one Western Grebe sitting on an empty nest 100 m from shore in water 2.1 m deep.

19 September: FH and DW failed to find any nests.

26 September: FH, DW, and EW failed to find any nests.

### **Rumsey Slough**

16 July: FH and the planning team for the Clear Lake grebe project failed to find any nests.

13 August: BB, KB, FH, and DW found 11 Western Grebe nests with eggs plus one nest being built, all on floating mats of sago pondweed and algae in open water 60-185 m from shore. The nests were arranged in two subcolonies in separate coves, separated by about 500 m. Four nests were in the western subcolony and eight in the eastern subcolony. We counted a total of 25 eggs with an average of 2.3 eggs in the 11 nests with eggs (range = 1-5). Nearest neighbor distance between nests averaged 33.9 m (range = 3-130). Water depths of the nests averaged 1.84 m (range = 1.20-2.30 m). No chicks were seen.

20 August: FH and HG found 12 Western Grebe nests with eggs, including three in the western subcolony (decrease of one nest) and nine in the eastern subcolony (increase of one nest). We counted a total of 21 eggs with an average of 1.8 eggs per nest (range = 1-3). No chicks were seen.

31 August: FH, BH, and DB found 3 Western Grebe nests in the western subcolony and none in the eastern subcolony. Although adults were attending all three nests, only one of the nests in the western subcolony had eggs, with a clutch of three; one had been laid since 20 August, when two eggs were present. Several chicks were seen accompanying adults swimming farther out in the open water.

5 September: FH and BH found two empty nests attended by Western Grebes in the western subcolony.

26 September: FH, DW, and EW failed to find any nests.

Our data suggest that nesting activity peaked between 13 and 20 August, based on the increased number of nests and decreased number of eggs between the two dates.

### **Big Valley Rancheria**

13 August: Just outside the entrance channel of the casino, BB, KB, FH, and DW found three Western Grebe nests with eggs, one empty nest, and one nest under construction in water primrose. The nearest nest was only 105 m from the nearest dock just north of the Konocti Vista Casino. The three nests with eggs had a total of 6 eggs with an average of 2.0 eggs per nest

(range = 1-4). Nearest neighbor distance between nests with eggs averaged 26.0 m (range = 19-40 m) and water depths of three nests averaged 0.62 m (range = 0.55-0.71). No chicks were seen.

20 August: FH and HG found six nests with eggs along 135 m of shoreline. The nests had a total of 13 eggs with an average of 2.2 eggs per nest (range = 1-4). Nearest neighbor distance between nests averaged 23.5 m (range = 7-100 m). Water depths of the nests averaged 0.57 m (range = 0.47-0.73 m). No chicks were seen. Pied-billed Grebe nest with two eggs and a chick vocalizing from nearby vegetation was located within the colony. We noticed that much of the water primrose was dying off, apparently after being sprayed.

31 August: FH, BH, and DB failed to find any nests. Few adults were in the vicinity and no chicks were seen.

Our data suggest that nesting activity peaked around 20 August, based on the increase numbers of nests and eggs 7 days earlier and the dramatic absence of nests and eggs 11 days later.

### **Adobe Creek**

16 July: FH and the planning team for the Clear Lake grebe project failed to find any nests.

13 August: FH and DW found two nests with eggs and one possible nest under construction in tules about 50 m north of the mouth of Adobe Creek (Holiday Cove). The two active nests each had two eggs on nests that were 12 m apart in water that averaged 1.20 m deep (range = 1.18-1.22). No chicks were seen.

20 August: FH and HG observed two eggs in each of the two nests. Two adults each with one small chick on the back were seen among a small group of nearby grebes out in the open water.

31 August: FH, BH, and DB could not find any active nests. No chicks were seen nearby.

### **Corinthian Bay**

16 July: FH and the planning team for the Clear Lake grebe project failed to find any active nests.

10 August: FH and DW failed to find any active nests.

26 August: PM observed three nests with eggs built on floating platforms about 35 m from land. A few other nests appeared to be under construction.

31 August: FH, DB, and BH failed to find any active nests, which were probably destroyed by high winds on 28 August.

3 September: FH and DB failed to find any active nests.

26 September: FH, DW, and EW failed to find any nests.

### **Anderson Marsh**

6 August: FH and DW counted 440 nests, including 53 attended by Western Grebes (88.3%) and seven attended by Clark's Grebes (11.7%), in water primrose and tules at the dead-end of a channel in the middle of Anderson Marsh. We estimated that we detected about 80% of the nests, providing an estimate of 528 nests. We counted a total of 695 eggs in 347 nests with an average of 2.00 eggs per nest (range = 1-7), but we actually saw more because we could see at least one egg in a number of distant nests whose actual number we could not determine. No chicks were seen.

15 August: FH and DW noted that many nests were empty, proportionately more than on

6 August, and several in one area had multiple eggshell fragments, suggesting possible predation. FH and DW flagged 49 nests with eggs (mean = 2.49 per nest). Two of the eggs in a nest of five eggs were smaller, suggesting brood parasitism by a smaller species of bird, most likely a Pied-billed Grebe. Nearest neighbor distance between nests (including some empty nests) averaged 2.9 m (range = 1.7-5.2 m, n = 61 nests). Water depths of the nests (including some empty nests) averaged 0.44 m (range = 0.29-0.62 m, n = 62 nests). Using a laser range finder we conducted a transect 330 m long and 20 m wide (total area = 0.66 ha) through the middle of the colony, and calculated a density of 339.4 nests per ha. Based on our estimates of the number of nests and density, we estimated that the entire colony covered an area of 1.56 ha. No chicks were seen.

22 August: FH and MH relocated 38 flagged nests which had eggs 7 days earlier and found that only ten (26.3%) still had eggs, with an average of 2.9 eggs per nest (range = 1-6). Of the ten with eggs, the number of eggs decreased for four and remained the same for six, indicating that nesting activity was declining. Water levels were definitely lower but were not measured. BB and KB observed only 20-30 adults in the colony when they arrived early in the morning, but FH and MH observed only five adults. No chicks were observed in the vicinity, although FH observed one large chick swimming with a pair of Western Grebes among about 150 adult grebes near Redbud Park, about 3 km from the colony.

29 August: FH, BH and MH relocated 36 flagged nests which had eggs 14 days earlier but none had eggs. All relocated flags were removed. Only one adult Western Grebe was seen at the colony and we could not detect any evidence of active nesting. Water levels were very low and several nests were no longer in water. Several chicks were seen in the Clearlake arm of the lake > 2 km from the colony.

Our data suggest that nesting had already peaked by the time of our discovery of the colony on 6 August or shortly afterward, based on the steady reduction of active nests and relatively low water levels during subsequent weeks. We are puzzled by why so few chicks were seen in the area.

### **Former Colonies**

Unsuccessful searches were conducted at the following two sites which had been previously used for nesting by *Aechmophorus* grebes.

### **Long Tule Point**

16 July: FH and project team failed to find any active nests.

10 August: FH and DW failed to find any active nests.

31 August: FH, BH, and DB failed to find any active nests.

26 September: FH, DW, and EW failed to find any nests.

### **Clearlake Oaks**

10 August: FH and DW failed to find any active nests.

27 August: FH and MM failed to find any active nests. However, we observed a single chick on the back of two Western Grebes among about 100 adult grebes. The chicks most likely hatched out of the colony from Anderson Marsh (nearest known colony) or possibly from a colony near the north end of Clear Lake.

26 September: FH, DW, and EW failed to find any nests.

Table 1. Summary of pertinent breeding data for *Aechmophorus* grebes on Clear Lake during 2010. See text for sample sizes.

Colony	Type of colony	Distance (m) from emergent vegetation	Peak activity	Number of nests	Western Grebe (%)	Clark's Grebe (%)	Mixed pairs (%)	Nearest neighbor distance (m)	Density (nests / ha)	Depth (m)
Rodman Slough northern subcolony southern subcolony	shore	0 0 0	13 Aug	400 327 73	88.5	11.5	0	3.2 (1-13)	– 432.5 –	0.78 (0.47-1.06)
North End of Clear Lake main subcolony nearshore subcolony eastern subcolony farshore subcolony	open	18-950 275-600 18-260 60-450 750-950	15 Aug 05 Sep 05 Sep 05 Sep	346 275 8 6 57	92.9 93.8 100 80 93.5	5.6 6.2 0 20 2.2	1.5 0.9 0 0 4.3	– – 96.5 (60-200) – –	– 51.9 – – –	1.19-3.1 2.2-2.7 1.19 (0.97-1.47) – up to 3.1
Nice western subcolony eastern subcolony far south	open	70-115 93-115 80-96 70	26 Sep	23 15 7 1	91.3 100 71.4 100	8.7 0 28.6 0	0 0 0 0	– – – –	– 83.3 – –	– > 2.7 > 2.7 2.6
Manning Creek	open	100	5 Sep	1	100	0	0	–	–	2.1
Rumsey Slough	open	60-185	16 Aug	13	100	0	0	33.9 (3-130)	–	1.84 (1.20-2.30)
Big Valley Rancheria	shore	0	20 Aug	6	100	0	0	23.5 (7-100)	–	0.57 (0.47-0.73)
Adobe Creek	shore	0	16 Aug	2	100	0	0	12	–	1.20 (1.18-1.22)
Corinthian Bay	open	35?	26 Aug	3	–	–	–	–	–	–
Anderson Marsh	shore	0	6 Aug	528	88.3	11.7	0	2.9 (1.7-5.2)	339.4	0.44 (0.29-0.62)

## BROOD SURVEYS

### METHODS

We conducted two brood surveys: on 19 September 2010 by FH and DW, and on 26 September 2010 by FH, DW, and EW. Although breeding did not end on Clear Lake until shortly after 3 October, most chicks had hatched by these dates. The first survey consisted of 16 point counts, mostly by telescope from land. We counted all adult and juvenile grebes within a distance that juveniles and adults could be confidently distinguished. The distance varied from site to site depending on water and light conditions. The second brood survey was conducted by motor boat and consisted of 11 transects along the entire shoreline of the lake (transect length mean = 9.1 km, range = 3.8-17.8 km). The transect width was also defined by the limit at which juveniles could be reliably distinguished from adults, which varied depending on water and light conditions.

### RESULTS AND DISCUSSION

The first survey recorded a total of 1,139 adult grebes (77.9% Western Grebes and 22.1% Clark's Grebes) and 73 juveniles (96.7% Western Grebes and 3.3% Clark's Grebes) for an overall ratio of 0.064 juveniles per adult (0.080 juveniles per adult for Western Grebe and 0.010 juveniles per adult for Clark's Grebe). The juveniles were concentrated near Rodman Slough at the north end of the lake (Table 2). A simple linear regression of the proportions of immature grebes and the distances to Rodman Slough revealed a significant decrease as counts moved away from Rodman Slough ( $F = 30.88$ ,  $P < 0.0001$ ).

The second survey recorded 2,694 adult grebes (82.8% Western Grebes and 17.2% Clark's Grebes) and 121 juveniles (97.3% Western Grebes and 2.7% Clark's Grebes) for an overall ratio of 0.045 juveniles per adult (0.053 juveniles per adult for Western Grebe and 0.007 juveniles per adult for Clark's Grebe). Again the ratio was highest at the north end of the lake (Table 3).

The two surveys combined resulted in a mean of 0.055 juveniles per adult grebe (mean Western juveniles per adult Western Grebe = 0.067 and mean Clark's juveniles per adult Clark's Grebe = 0.009).

Our data may underestimate the productivity of juveniles on Clear Lake for two reasons. First, some of the older juveniles were very similar in size and plumage to adults, suggesting that we may have counted some juveniles as adults. We realized that several presumed "adults" were actually juveniles only after they were observed begging from nearby adults. Second, a conspicuous increase of adult grebes (especially Clark's Grebes) occurred on Clear Lake by the time of the surveys, suggesting that the concentrations of juveniles were diluted by an influx of post-breeding adults from other breeding areas.

Table 2. First brood survey conducted from land at sites around the perimeter of Clear Lake, 19 September 2010.

Location	Ad Western	Ad Clark's	Ad Total	Juv Western	Juv Clark's	Juv Total	Ratios		
							Juv Western: Ad Western	Juv Clark's: Ad Clark's	Total Juv: Total Ad
<b>Clearlake Arm</b>									
Redbud Park	11	14	35	0	0	0	0.000	0.000	0.000
Austin Park	7	1	8	0	0	0	0.000	0.000	0.000
Holiday Is. Mobile Home Park	1	1	4	0	0	0	0.000	0.000	0.000
Pirate's Cove	88	6	167	5	0	5	0.032	0.000	0.030
Crestview	1	0	2	0	0	0	0.000	0.000	0.000
<i>Sub Total</i>	<i>108</i>	<i>22</i>	<i>216</i>	<i>5</i>	<i>0</i>	<i>5</i>	<i>0.028</i>	<i>0.000</i>	<i>0.023</i>
<b>Clearlake Oaks Arm</b>									
Clearlake Oaks	21	3	173	0	0	0	0.000	0.000	0.000
Glenhaven	38	8	69	2	0	2	0.035	0.000	0.029
<i>Sub Total</i>	<i>59</i>	<i>11</i>	<i>242</i>	<i>2</i>	<i>0</i>	<i>2</i>	<i>0.010</i>	<i>0.000</i>	<i>0.008</i>
<b>Main Lake</b>									
Eastside Pullout	14	45	77	2	0	2	0.109	0.000	0.026
Davis Rest Area	37	26	93	6	0	6	0.110	0.000	0.065
Lucerne Harbor	60	5	93	6	0	6	0.070	0.000	0.065
Nice	112	21	162	17	1	22	0.152	0.048	0.136
Rodman Slough	37	8	47	10	1	16	0.376	0.174	0.340
North End of Clear Lake	26	1	27	8	0	10	0.385	0.000	0.370
Manning Creek	61	3	67	0	0	0	0.000	0.000	0.000
Lakeside Co. Park	39	14	59	3	0	4	0.092	0.000	0.068
Soda Bay	23	7	56	0	0	0	0.000	0.000	0.000
<i>Sub Total</i>	<i>409</i>	<i>130</i>	<i>681</i>	<i>52</i>	<i>2</i>	<i>66</i>	<i>0.123</i>	<i>0.015</i>	<i>0.097</i>
<b>Totals</b>	<b>576</b>	<b>163</b>	<b>1139</b>	<b>59</b>	<b>2</b>	<b>73</b>	<b>0.080</b>	<b>0.010</b>	<b>0.064</b>

Table 3. Second brood survey conducted from a motor boat around the perimeter of Clear Lake on 26 September 2010.

Transects								Ratios		
Start	End	Ad Western	Ad Clark's	Ad Total	Juv Western	Juv Clark's	Juv Total	Juv Western: Ad Western	Juv Clark's: Ad Clark's	Total Juv: Total Ad
Clearlake Arm										
The Narrows	Indian Island	77	45	275	0	1	1	0.000	0.010	0.004
Indian Island	Redbud Park	0	2	3	0	0	0	0.000	0.000	0.000
Redbud Park	The Narrows	142	50	280	0	2	2	0.000	0.027	0.007
<i>Sub Total</i>		<i>219</i>	<i>97</i>	<i>558</i>	<i>0</i>	<i>3</i>	<i>3</i>	<i>0.000</i>	<i>0.017</i>	<i>0.005</i>
Clearlake Oaks Arm										
The Narrows	Clearlake Oaks	169	40	269	2	0	2	0.009	0.000	0.007
Clearlake Oaks	The Narrows	250	35	372	0	0	3	0.009	0.000	0.008
<i>Sub Total</i>		<i>419</i>	<i>75</i>	<i>641</i>	<i>2</i>	<i>0</i>	<i>5</i>	<i>0.009</i>	<i>0.000</i>	<i>0.008</i>
Main Lake										
Lakeport	Long Tule Pt.	201	30	397	17	0	17	0.049	0.000	0.043
Long Tule Pt.	Clear Lake SP	69	21	103	5	0	6	0.076	0.000	0.058
Clear Lake SP	The Narrows	50	10	104	8	0	8	0.092	0.000	0.077
The Narrows	Lucerne Harbor	96	38	191	9	0	10	0.073	0.000	0.052
Lucerne Harbor	Rodman Slough	354	6	479	46	0	48	0.102	0.000	0.100
Rodman Slough	Lakeport	143	27	221	20	0	24	0.129	0.000	0.109
<i>Sub Total</i>		<i>913</i>	<i>132</i>	<i>1495</i>	<i>105</i>	<i>0</i>	<i>113</i>	<i>0.087</i>	<i>0.000</i>	<i>0.076</i>
<b>Totals</b>		<b>1551</b>	<b>304</b>	<b>2694</b>	<b>107</b>	<b>3</b>	<b>121</b>	<b>0.053</b>	<b>0.007</b>	<b>0.045</b>

## DISTURBANCE INDEX

### METHODS

Disturbance index counts were conducted from 6 August to 3 October 2010. A disturbance was defined as an action causing the grebes to noticeably alter their behavior, while a potential disturbance was anything we thought might cause a disturbance. During timed periods at each site, all disturbances and potential disturbances were counted. Because groups of individuals create more of a disturbance than single individuals, each disturbing object (e.g., boat) or animal was counted as a disturbance whether it was in a group or not. The counts covered five colonies (including the largest three): Rodman Slough, North End of Clear Lake, Rumsey Slough, Big Valley Rancheria, and Anderson Marsh (Table 1). Disturbances and potential disturbances were divided into the following categories based on their cause: motorboats (including jet skis), kayaks, low-flying aircraft, gunshots, people on shore, mammals (river otters), and birds (large possible predators: gulls, herons, egrets, and pelicans; Table 1). These categories were then subdivided further to better represent the extent of the disturbances (e.g., predation and presence in colony for mammals; Table 1). While all observed disturbances were recorded from the beginning, we did not start counting potential avian disturbances until 20 August 2010.

### RESULTS AND DISCUSSION

The least human-disturbed colony was Anderson Marsh. No disturbances were recorded during 3 hr of disturbance counts (Table 4). In contrast, the colony at the north end of Clear Lake was the most disturbed with nine human-caused disturbances (Table 4). In early August, the colony was well protected from boat traffic by the thick layer of algae that it was built on. However, as the colony expanded and the algae began to dissipate, it became highly exposed to boat traffic. On 3 September, ten red buoys were deployed around the main colony, but they may not have been very effective because several boats were observed ignoring the buoys and entering the colony at high speed on 3 and 5 September. Eight of the nine human disturbances were caused by fast-traveling motorboats and jet skis passing through the colony. One boat passed within 1 m of two nests, causing the single egg in one to roll partially out of the nest, while the other with four eggs was unaffected.

Rumsey Slough, another open water colony, was the only other colony to record boat traffic through it (Table 1). Most boat traffic outside the colonies did not have much of an effect. Wind storms also caused significant waves and completed grebe nests rode the waves very well. However, grebes appeared to start laying eggs before their nests were complete. We saw a number of partially completed nests already containing at least one egg which was partially in the water. Boat wakes may have their greatest effect at this critical stage.

A few non-human disturbances were also observed. No birds were ever observed preying upon grebe eggs or young (Table 1). However, grebes temporarily abandoned one nest in Rodman Slough when a Great Blue Heron (*Ardea herodias*) approached too closely (Table 1). Grebes also forced a Great Blue Heron in Rodman Slough and a California Gull (*Larus californicus*) in the colony at the north end of Clear Lake to fly (Table 1). River Otters (*Lontra canadensis*), however, were more problematic (Table 1). Two otters entered the edge of the



colony at the north end of Clear Lake causing the grebes to flee even though they never approached any nests. Two otters were seen that same day in Rodman Slough. Their presence resulted in the rapid departure of Pied-billed Grebes, Western Grebes, and Clark's Grebes as well as larger Great Blue Herons and Black-crowned Night-Herons (*Nycticorax nycticorax*). The otters were observed moving through the colony and apparently predating nests for 10 min although they were unfortunately concealed by vegetation.

While boats have the potential to seriously impact breeding success, they are unlikely to have much of an effect unless they are able to run over and swamp nests. However, adult grebes in the paths of the boats were forced to expend energy diving to avoid the boats. This season, all three large colonies were either located in marshes or on floating mats of algae in areas where boat traffic was minimal. The colony at the north end of Clear Lake was very well protected by algae when the grebes started nesting. But later in the season after some nesting had been completed, wind storms caused much of the pondweed and algae to dissipate, leaving the colony much more exposed to boat traffic. Boat wakes outside the colonies from passing boats are often no larger than the wind-generated waves that grebe nests are designed to overcome. Additionally, mats of pondweed and algae tend to buffer waves significantly. Disturbance due to the presence of humans not in direct contact with nests probably did not cause much nest abandonment. During nest searches, many grebes were extremely reluctant to leave a nest and some had to be gently pushed off a nest with a paddle so that eggs could be counted. Mammalian predation (especially otters) may have been an important factor in reducing nesting success this season, with known predation at Rodman Slough and suspected predation at Anderson Marsh where very few chicks were observed.

Table 4. Results of disturbance index counts at *Aechmophorus* grebe colonies on Clear Lake. Results are given as observed disturbances / potential disturbances.

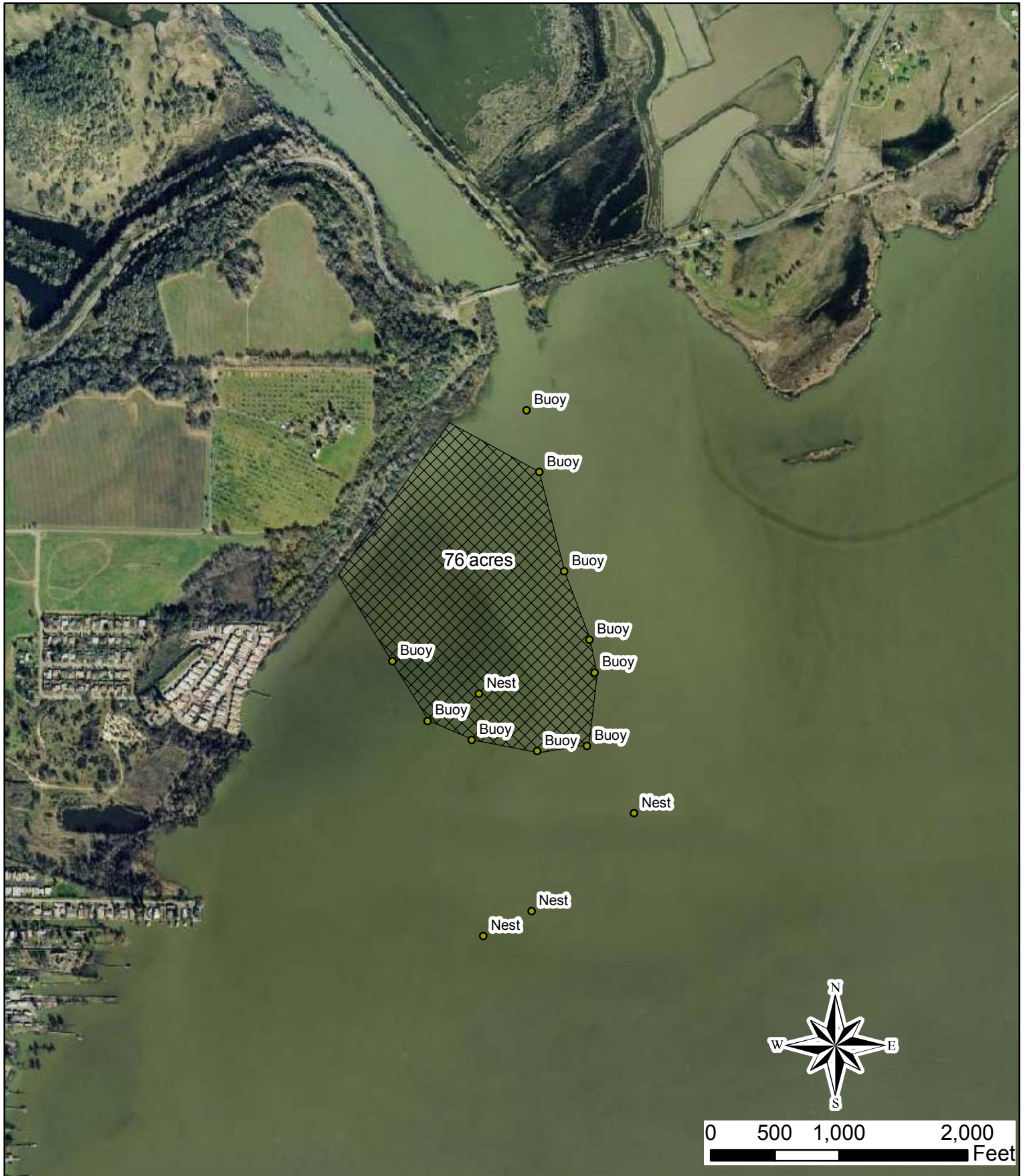
Location	Num. of Counts	Total Hrs	Motorboats and Jetskis									Kayaks and Canoes		Aircraft: Flyovers	People on Shore	Gunshots: Outside Colony	Mammals			Birds				Human Disturbances	Total Disturbances	Dates
			in colony, fast	in colony, med	in colony, slow	< 50 m from colony, fast	< 50 m from colony, med	< 50 m from colony, slow	> 50 m from colony, fast	> 50 m from colony, med	> 50 m from colony, slow	in colony	< 50 m from colony				Predation	In Colony	Predation	In Colony	flyovers	< 50 m from colony				
Rodman Slough	8	13.6					0/6		0/2	0/5		2/14		0/1	0/1	2/2			2/6		0/3	2/29	6/40	Aug. 6, 13, 20, 22, 29, 31		
North End of Clear Lake	10	17.0	8/8		1/1	0/2	0/3	0/2	0/4		0/3		0/2				1/1		1/5	0/3		9/25	11/34	Aug. 6, 15, 22, 29, 31; Sept. 3, 5, 26; Oct. 3		
Rumsey Slough	3	2.5		1/1		1/1		0/1		0/1			0/1							0/3		2/5	2/8	Aug. 13, 20, 31		
Big Valley Rancheria	1	1.0						0/1											0/2		0/1	0/1	0/4	Aug. 20		
Anderson Marsh	3	3.0																			0/39	0/0	0/39	Aug. 6, 15, 22		
Totals	25	37.1	8/8	1/1	1/1	1/3	0/3	0/10	0/4	0/3	0/8	0/0	2/16	0/1	0/1	0/1	2/2	1/1	0/0	3/13	0/6	0/43	13/60	19/125		

# CURRENT PROTECTED FISH AREAS RODMAN SLOUGH AREA





# GREBE NESTING AREA RODMAN SLOUGH AREA SEPTEMBER 3, 2010





Solar

# PROTECT BABY GREBES!

### Babies on board



This newspaper clipping features a photograph of a grebe swimming in a pond. The headline reads "Babies on board". The text below the photo discusses the protection of grebe nests and young birds.



### ATTENTION SCOUTERS AND FISHERMEN

The first grebe that hatches stays in the nest until September 4th or 5th. It is the only time that the parent grebe leaves the nest.

Please:

- Avoid nesting sites.
- Stay 200 feet away from children.
- Minimize boat traffic, motor, and engine noise.
- Avoid boat wakes.
- Avoid the pond in heavy rain.
- Report nest sites and baby grebes.
- If you are fishing, use soft plastic lures.
- Do not use lead sinkers.
- Do not use live bait.
- Do not use jugs.
- Do not use minnow buckets.
- Do not use cast nets.
- Do not use dipnets.
- Do not use fish traps.
- Do not use fish wheels.
- Do not use fish traps.
- Do not use fish traps.



A photograph of a grebe swimming in a pond. The grebe has a long neck and a dark cap. It is surrounded by water and some greenery.



### Don't rock the nest



This newspaper clipping features a photograph of a grebe swimming in a pond. The headline reads "Don't rock the nest". The text below the photo discusses the protection of grebe nests and young birds.

### Grebe Facts

Grebes are waterfowl that live in ponds and lakes. They are known for their diving and swimming abilities. They have long necks and dark caps. They are also known for their nesting habits.



A photograph of a grebe swimming in a pond. The grebe has a long neck and a dark cap. It is surrounded by water and some greenery.





# Don't rock the nest



**Mandy Feder**  
**News editor**

**LAKE COUNTY**  
— They pop up in front of boats and swimmers, sometimes they dance, as a mating ritual, called a rush display. Western and Clark's grebes, diving birds of the family Podicipedidae, have a pointed bill and lobed, fleshy membranes along each toe and are common on Clear Lake.

Lake County Director of Water Resources, Scott De Leon piloted a pontoon boat on Friday with a group seeking to protect the birds. Director of Bird Conservation for Audubon California Gary Langham, Director of Communications for Audubon California Garrison Frost, Professor of biology Floyd Hayes from Pacific Union College in Angwin, Lake County Deputy Director of Water Resources Pam Francis, Redbud Audubon President Marilyn Waits and biologist/birdwatcher Brad Barnwell observed the grebes on Clear Lake.

The estimated num-

**See GREBES, Page A3**



Photos by Floyd Hayes

**TOP: A grebe nest made from tules and decaying vegetation.**

**BOTTOM: Grebes perform a rush display, which is part of a mating ritual.**

**Wildlife protection entities want to insure the reproductive viability of grebes on Clear Lake, which may be made possible by a major grant Audubon California received. In order to protect the nests, boaters should observe a 5 mph speed limit approximately 200 feet from the shoreline.**



# Grebes

From Page A1

ber of Western and Clark's grebes at Clear Lake is about 13 percent of the total of the state's population. The average number of nests located on Clear Lake are 900, ranging from 25 to 2,600, depending on the year, and the ratio is about 70 Western to 30 Clark's, according to Langham.

Wildlife protection entities want to insure the reproductive viability of the grebes on Clear Lake, which may be made possible by a major grant Audubon California received to protect nesting Western and Clark's Grebes in the amount of \$541,000 to fund conservation, monitoring and outreach at four Northern California lakes. The funding is a multi-layered project and will come from the Luckenbach Trustee Council, which oversees the use of settlements arising from a series of oil spills that harmed grebes in the open ocean, according to Frost.

Frost stated, "A variety of strategies to reduce the impact of human interference on breeding grebes at Eagle Lake, Lake Almanor, Clear Lake, and Thermalito Afterbay on Lake Oroville, which together support 76 percent of the total number of nesting grebes in California. The project will involve identify-

ing the key threats at each site to the grebes, outreach and education to local communities, working with agency officials to optimize conditions for the birds, and extensive monitoring."

The plan is to educate the public about threats facing the birds. Hayes, along with grad students, will monitor and conduct research on Clear Lake to determine what the needs are regarding protection of the grebes.

Francis said it's important for boaters to be aware that wakes may cause the nests to roll or flip, causing the eggs to sink to the bottom of the lake. It is recommended that speed be reduced to 5 mph approximately 200 feet from the shoreline. Vegetation slows the wakes and protects the nests somewhat. A wake approximately 1 foot or higher can tip the nests.

She said three major areas were identified as needing attention during the boat tour that include the south shoreline including, but not limited to, the region along Tule Point to Quercus Point, Rodman Slough and the Oaks arm.

Francis said people from this area are passionate about the lake. The goal is to adequately educate everyone, including tourists, to be

respectful and mindful of the wildlife.

She said, "Many people don't understand the impact of a boat's wake on nesting birds. If people knew to slow down, they would do it. It's just a matter of getting the word out. Most people would do the right thing if they knew what to do."

A traditional grebe nest is made from tules and decaying vegetation. Hayes said the birds are notorious for opportunistic nesting.

Francis said, "Once they're here and breeding, we want to make sure nests are undisturbed."

The kick off meeting on Friday served as one for brainstorming about the actions that will take place over the course of the next four years or more to nurture the habitat of the grebes.

Oil Spill Mitigation Funds make it possible to protect the birds. The Oil Spill Liability Trust Fund pays for oil spill cleanup and the restoration of impacted natural resources when there is no responsible party. The fund is sustained by fees from the oil industry and managed by the Coast Guard's National Pollution Funds Center.

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WEEKEND EDITION



Photo by Marni Johnson

Grebes are common on Clear Lake. Boaters are urged to slow down around nesting areas.

# Babies on board

## BOATERS ADVISED TO BE ALERT FOR NESTING GREBES

**Terry Knight**  
*R-B Outdoors Writer*

LAKEPORT — Surprise is the usual reaction from people who have never seen a baby grebe, sometimes two, being ferried around on its mother's back.

For the past two years, the nesting grebes have been scarce on Clear Lake, perhaps because of lower quantities of the small fish that serve as food for the grebes or disturbances of nests due to boating or wind action. But this year the baby grebes are back.

Audubon California has been awarded grant funding for a four-year Grebe Conservation Project for which Gary Langham, Director of Bird Conservation, obtained.

Clear Lake is one of the lakes being monitored for nesting grebes, under the coordination of Marilyn Waits, President of the local Redbud Chapter.



Above photo contributed by Tom Smythe

**For the past two years nesting grebes have been scarce on Clear Lake, perhaps because of lower quantities of the small fish that serve as food for the grebes or disturbances of nests due to boating or wind action. This year the baby grebes are back.**



The monitoring leader is Floyd Hayes, Ornithologist, Professor of Biology, Pacific Union College with the assistance of his students and family members.

His report notes that many grebe nests have been built on floating weed mats in open areas, instead of tucked back in the tule stands where they are more protected and buffered from wind and wakes produced by boats. This makes the nests particularly vulnerable to wave action created by boats and high wind.

To remind boaters to slow down near the nesting areas, 5 mph lighted buoys have been placed in protected wildlife areas, such as the entrance to Rodman Sough.

Staff from the Department of Water Resources and Hayes are placing buoys where the nests are the most vulnerable to eggs rolling off because of higher-than-normal boating activity over the Labor Day Weekend.

The buoys will be removed when nesting season is completed.

"I think most people will slow their boat down if they know the wake is causing the eggs to get dislodged from the nest" said Greg Hanson, who lives in Corinthian Bay, an area where grebes are nesting on the weed mats. "People don't understand that the slow speeds are to help the baby grebes and the mothers trying to hatch them"

Boaters are also being encouraged to slow down when they meet groups of grebes out on the open lake. Many of these grebes will

have their chicks riding on their backs and instead of diving they will try and swim away.

The grebes with their young are susceptible to being hit by a power boat.

The quagga mussel volunteer rangers will be monitoring the public ramps over the long Labor Day weekend.

The rangers will be on duty from 7 a.m. to 7 p.m. at all the major ramps around the lake. They will be checking all boats and other watercraft to make sure they have the current

Photo below by Terry Knight



***"I think most people will slow their boat down if they know the wake is causing the eggs to get dislodged from the nest... People don't understand that the slow speeds are to help the baby grebes and the mothers trying to hatch them."***

**Greg Hanson**

inspection band or quagga mussel sticker attached to their boats.

Those who don't have a band or sticker will be directed to the nearest quagga mussel screening station to obtain the stickers or bands.

According to Carolyn Ruttan of Water Resources, more volunteer rangers are needed.

For more information on the program or to volunteer call 533-3641 or e-mail to [locquaggarangers@gmail.com](mailto:locquaggarangers@gmail.com).