

***Aechmophorus* Grebe Nest Surveys, Brood Surveys, and Public Outreach Lake Almanor and Eagle Lake**

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Summary

Plumas Audubon Society met with California Audubon on August 5 and 6, 2010 to initiate grebe monitoring and public outreach for Lake Almanor and Eagle Lake. The first nesting grebe colony of the season with approximately 150 nests was discovered on Lake Almanor on August 5. Later that day, a public forum led by Dr. Gary Langham was held at the town hall in Chester and 30 people attended. The forum generated excellent public feedback and ideas, especially for public outreach. A press release in the Chester Progressive on August 4 helped publicize the event and inform the public about Audubon's grebe project. The forum also generated a list of 19 volunteers interested in helping with the project. A project update was sent to the list on September 9. To date, people have offered their time, photographs, piloting services, and use of motor boats.

An initial site visit to Eagle Lake was conducted on August 6. Grebes were observed courting and nest building at both Stones Ranch and Spaulding, but there was limited nesting habitat (i.e. tules in the water) at both sites. A survey of the Stones Ranch nesting colony was conducted by kayak on September 10, which revealed that the grebes had finished nesting at the site and there had been approximately 200 nests at the location. Observations of nesting were made at Lake Almanor throughout August and September and indicated that at least 550 nesting attempts were made by *Aechmophorus* grebes.

Brood surveys were conducted on Lake Almanor on September 22 and October 12 and on Eagle Lake on October 11. The total population of adult *Aechmophorus* grebes on Lake Almanor was estimated at 2,900 with approximately 5% Clark's Grebes and 95% Western Grebes and a total of 67 young produced on the lake. On Eagle Lake, the total population was estimated at 1,700 adults with similar ratios of Clark's to Western and a total of 134 young produced on the lake.

Public Outreach

A public forum was held in Chester on August 5, 2010 to inform participants about Audubon's new grebe conservation project, to obtain feedback and generate ideas for public outreach and grebe conservation, and to generate a list of potential volunteers to help with various aspects of the project. The meeting was advertised in the calendar of events in the Feather River Publishing newspapers that circulate throughout Plumas and Lassen Counties for two weeks prior to the meeting. On August 4, a press release was printed in the Chester Progressive (Attachment A).

The public forum was held at the Chester Memorial Hall at 6 p.m. and was facilitated by David Arsenault of the Plumas Audubon Society. Dr. Gary Langham led the meeting and began with an overview of the project, which continued into an open forum and discussion of the issues affecting grebes on Lake Almanor and ideas for public outreach and education. Ideas generated from the public forum included:

- Newspaper articles to educate and inform people nesting grebes on Almanor:
 - Beginning of breeding season story; and
 - Periodic notes throughout the nesting season;
- Grebe Festival:
 - Lake Almanor only; or
 - Rotating festival among the different important grebe lakes;
- Brochure at boat rental/bait shops, campsites, vacation rentals, hotels, etc;
- Include information on grebes in other important media:
 - Country Club website;
 - Real estate offices;
- Buoys with signs asking boaters to slow down and/or stay out of nesting areas;
- Incorporate grebe outreach with the Thermal Curtain/Save Lake Almanor effort;
- Mount cameras at grebe nesting colonies:
 - Document nest failure due to water level change;
 - Monitor nests and involve public with live-stream web cam on nests;
 - For Causeway colony, camera could be mounted on telephone poles;
 - Ask PG&E to help fund cameras;
- Booth or float at 4th of July parade to raise awareness about grebes;
- Enlist local elementary school kids to participate in grebe drawing contest – art could also be used for signage at boat ramps, etc.

Other points:

- Hard to find information about grebes on the web – Plumas Audubon/Audubon California should develop web pages with info on the project as well as grebe natural history, status, threats, etc;
- Weekends obviously are when the highest human traffic occurs at the lake. Outreach and disturbance monitoring should take place during summer weekends;
- Investigate possible interaction of nest success, prey species, and water temp.

A press release in the Chester Progressive on August 4 (Attachment A) helped publicize the event and inform the public about Audubon's grebe project. The forum also generated a list of 19 volunteers interested in helping with the project. A project update was sent to the list on September 9. To date, people have offered their time, photographs, piloting services, and use of motor boats.

A public presentation by David Arsenault has been scheduled for the Lassen Land and Trails Trust Whistlestop Tour in Susanville on March 10, 2011. The presentation will give an overview of Audubon's grebe conservation project to the interested public, seek input and ideas for project activities on Eagle Lake, and generate a list of potential volunteers to help with the project.

Nest Monitoring

All surveys, including nest surveys, disturbance surveys and brood surveys were based on the protocols outlined in Gericke et al. (2006).

Representatives of the Plumas Audubon Society and California Audubon surveyed grebe nesting colonies on Lake Almanor on August 5, 2010. The first nesting grebe colony of the season with approximately 150 nests was discovered between the mouth of the North Fork of the Feather River and Goose Bay (Figure 1). On August 8, Ryan Burnett surveyed the colony by boat and estimated 175 nests. By August 29, almost all nests in this early colony were on dry land and it is unknown how many of the nests fledged young. However, 85% of the young observed during the September 22 brood survey were $\frac{3}{4}$ to full size and likely fledged from this original colony. Raccoon tracks around the colony indicated that they may be a mammalian predator of stranded grebe nests.

Casual observations of nesting were made at Lake Almanor on August 8, 23, 25, 27, 29 and September 12 and 26 and detailed observations of nesting were made on August 31 and September 6 and 15 (Table 1). The first nests near the mouth of the North Fork of the Feather River were observed on August 23. The nesting from the river mouth south to the original colony peaked during the last week of August (Figure 1). Nests in the deeper waters between the Causeway and the river mouth started later and peaked in the first week of September (Figure 1). Brood surveys conducted on October 12 indicated that at least some young were fledged from these later nests. By September 26, only ten active nests were observed between the Causeway and the river mouth. Surveys indicated that 550 nesting attempts were made by *Aechmophorus* grebes on Almanor.

An initial site visit to Eagle Lake was conducted on August 6. Grebes were observed courting and nest building at both Stones Ranch and Spaulding, but there was limited nesting habitat (i.e. tules in the water) at both sites. A survey of the Stones Ranch nesting colony was conducted by kayak on September 10, which revealed that the grebes had finished nesting at the site and there had been approximately 200 nests at the location. Successful nesting likely also occurred at Spaulding, but that colony was not surveyed.

A summary of the number of active nests in each colony is provided below in Table 1.

Lake Almanor Grebe Colonies 2010

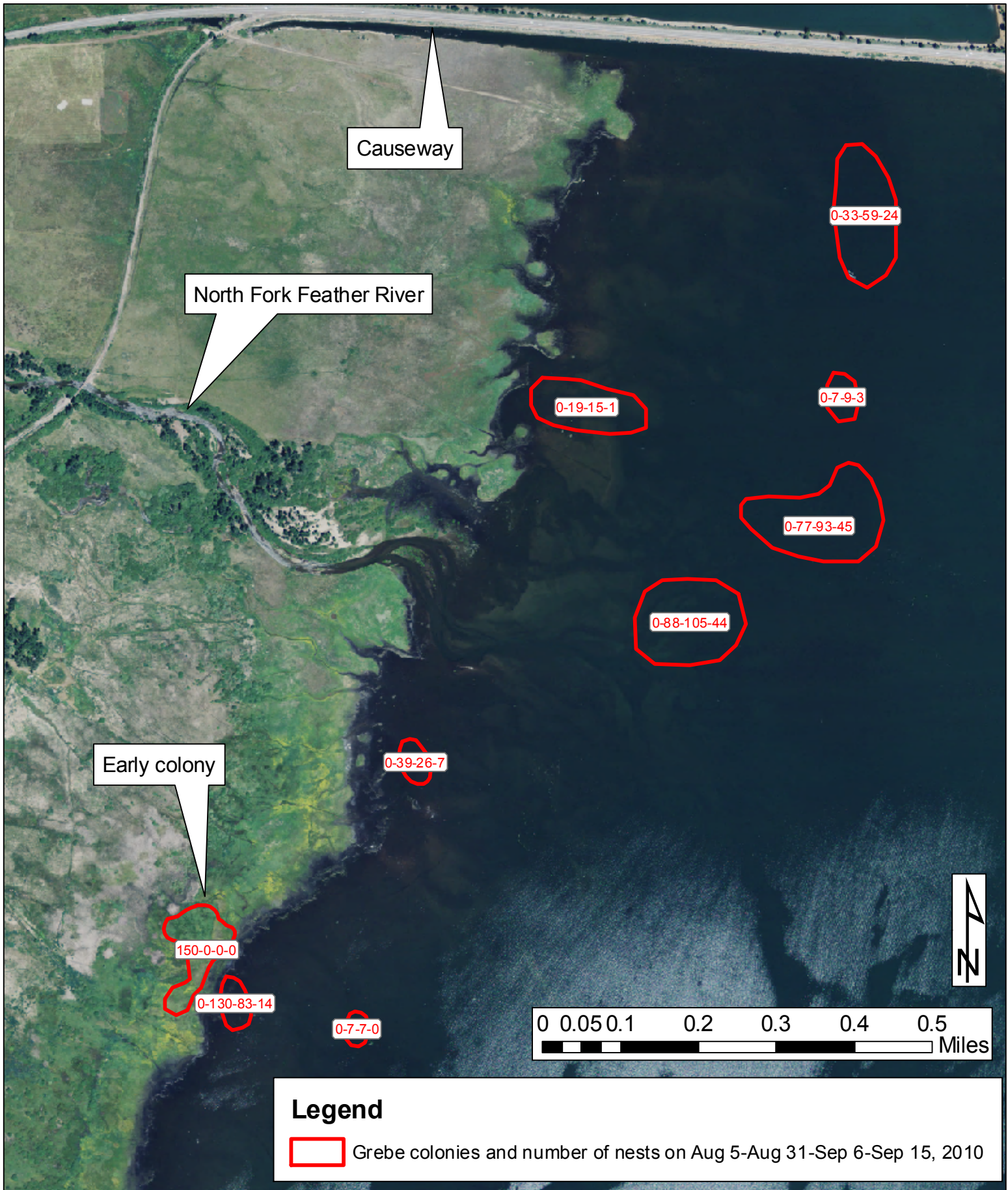


Table 1. The number of active nests in Lake Almanor grebe colonies.

Colony	Aug 5	Aug 8	Aug 31	Sept 6	Sept 15
Causeway- A	0	0	33	59	24
Causeway- B	0	0	7	9	3
Causeway- C	0	0	77	93	45
Causeway- D	0	0	88	105	44
Causeway- E	0	0	19	15	1
Meadow/Mouth-A	0	0	39	26	7
Meadow- B	0	0	7	7	0
Meadow- C	0	0	130	83	14
Meadow- D	150	175	0	0	0
<i>Total</i>	<i>150</i>	<i>175</i>	<i>400</i>	<i>397</i>	<i>138</i>

Disturbance Surveys

Disturbance surveys were conducted on Lake Almanor during observations of nesting on August 31 and September 6 and 15. California and Ring-billed Gulls were observed taking and eating grebe eggs from active nests when adults left the nest briefly unattended. During some depredation events, the adult grebes displayed no response and in other cases the grebes ineffectively chased the gulls from the nest. Fishermen were observed fishing from motor boats at the mouth of the North Fork of the Feather River, but no disturbance to the grebes was observed. No other disturbance from motor boats, kayakers, walkers, dogs, etc was observed during disturbance surveys on Lake Almanor. No disturbance surveys were conducted on Eagle Lake.

Brood Surveys

Brood surveys were conducted on Lake Almanor on September 22 and October 12 and on Eagle Lake on October 11, 2010. Brood surveys were conducted by boat with two observers, one data recorder, and one boat driver for each survey. The lakes were systematically covered and surveys were conducted in representative areas around the lake where grebes were encountered. On Lake Almanor, the ten transects were distributed in approximately the same locations between the two survey dates. Eight transects were surveyed on Eagle Lake. No surveys were conducted on the north end of Eagle Lake because no grebes were observed in that area from shore in the morning prior to the survey. Surveys consisted of traveling 1,000 meters in a straight line and recording grebes that were detected within 100 meters of the boat. The two observers recorded birds on opposite sides of the boat. The brood survey data sheet is provided in Attachment B.

During the first brood survey on Lake Almanor, 1,702 Western Grebes, 114 Clark's Grebes, and 27 young were counted along 10 transects with an estimated total adult population of 3,000 grebes on the lake (Table 2). The second Almanor brood survey had lower numbers along 10 transects because the birds were more spaced out. The survey

totaled 1,094 Western Grebes, 30 Clark’s Grebes, and 27 young with an estimated total adult population of 2,800 grebes on the lake (Table 2). There was likely the same number of adult grebes on Lake Almanor during both surveys because it is believed that adults migrate away from the lake at the same time. Thus, the difference in the population estimate is likely due to sampling error because birds were much more clumped during the first survey and much more spaced out on the second survey. Therefore, a conservative estimate for the Lake Almanor adult grebe population would be 2,900. There was also a difference in the percentage of young detected during each survey. However, during the first survey there were still active nests, which may have successfully fledged young and thus increased the percentage of young on the lake by the second survey. Also, during the first survey most broods were much younger, which decreased the chance of detecting young on an adult’s back. By the second survey, all nesting was completed for the season and the young were much older and more easily detected. However, some young may have been missed on the second survey because they were too similar in appearance to adults. Based on the total population estimate and percentage of young observed during the October 22 survey, it is estimated that approximately 67 young were produced on Lake Almanor (i.e. about 5% of pairs produced one young).

On Eagle Lake, 644 Western Grebes, 42 Clark’s Grebes, and 54 young were counted along 8 transects with a total estimated adult population of 1,700 grebes on the lake (Table 2). The percentage of young on Eagle Lake was much higher than on Lake Almanor and we estimated that approximately 134 young were produced.

Table 2. Brood survey results for Lake Almanor and Eagle Lake.

<i>Species</i>	<i>Adult</i>	<i>%</i>	<i>Young</i>	<i>%</i>	<i>Population estimate</i>
L. Almanor Sept 22					
Clarks	114	6.3%	0		3,000 adults
Western	1,702	93.4%	25		45 young
Unk	6	0.3%	2		
<i>Total</i>	<i>1,822</i>		<i>27</i>	<i>1.5%</i>	
L. Almanor Oct 12					
Clarks	30	2.7%	1		2,800 adults
Western	1,094	97.1%	26		67 young
Unk	2	0.2%	0		
<i>Total</i>	<i>1,126</i>		<i>27</i>	<i>2.4%</i>	
Eagle Lake Oct 11					
Clarks	42	6.1%	1		1,700 adults
Western	644	93.9%	53		134 young
Unk	0	0%	0		
<i>Total</i>	<i>686</i>		<i>54</i>	<i>7.9%</i>	

Lake Almanor Water Levels

Water levels on Lake Almanor were high this year resulting in late nesting of grebes on the lake. Lake levels dropped approximately 1 foot every 10 days in August, which slowed to approximately 1 foot every 15 days in September (California Department of Water Resources Data Exchange Center).

Volunteer and Partner Contributions

Many individuals associated with the Point Reyes Bird Observatory (PRBO), California Department of Fish and Game (CDFG), Plumas Audubon Society (PAS), and Audubon California (AC) contributed to project efforts in 2010.

Ryan Burnett (PRBO), Julie Newman (CDFG), Bob Beckwith (PAS), Harry Reeves (PAS), and David Arsenault (PAS) met with Gary Langham (AC) and Alex Hartman (AC) on August 5 to survey nesting colonies and participate in the Chester public forum. Ryan Burnett (PRBO), Tim Guida (PRBO), Colin Dillingham (PAS), and Scott and Amber Edwards (PAS) provided updates of grebe nesting activities throughout the breeding season. Julie Newman, Heidi Allen, and Brian Ehler with CDFG and Larry Newman helped with brood surveys on Lake Almanor and Eagle Lake. The CDFG contributed the use of a boat for the two Lake Almanor brood surveys and Lew Oring contributed use of his boat for the Eagle Lake brood survey.

Plumas Audubon Board members, including David Arsenault, Michelle Fulton, Anthony Hall, Darrel Jury, Harry Reeves, Darla DeRuiter, Jerry Williams, Terry Williams, Bob Beckwith, Sally Yost, Julie Newman, and Mark Serungard provided enthusiastic support for the project and valuable feedback and ideas.

Literature Cited

Gericke, S.M., D.W. Anderson, and P. Kelly. 2006. Western and Clark's Grebe Conservation and Management at Clear Lake, California. Presented to the American Trader Trustee Council and the national Fish and Wildlife Foundation. 31 January, 31pp.

Attachment A
Chester Progressive Press Release
August 4, 2010

Plumas Audubon to host public meeting in Chester

David Arsenault
Special to Feather Publishing

The public is encouraged to attend a meeting sponsored by the Plumas Audubon Society at the Chester Memorial Hall, at the corner of Gay and Stone beginning at 6 p.m., Thursday Aug. 5.

The invited speaker is Dr. Gary Langham, director of Bird Conservation for California Audubon, will give an overview of Audubon's participation in grebe conservation followed by a discussion of issues relating to grebe conservation at Lake Almanor and Eagle Lake.

The Plumas Audubon Society is working with California Audubon, the Almanor Basin Watershed Advisory Committee, the Point Reyes Bird Observatory, and other groups to continue conservation efforts for grebes nesting on Lake Almanor and Eagle Lake.

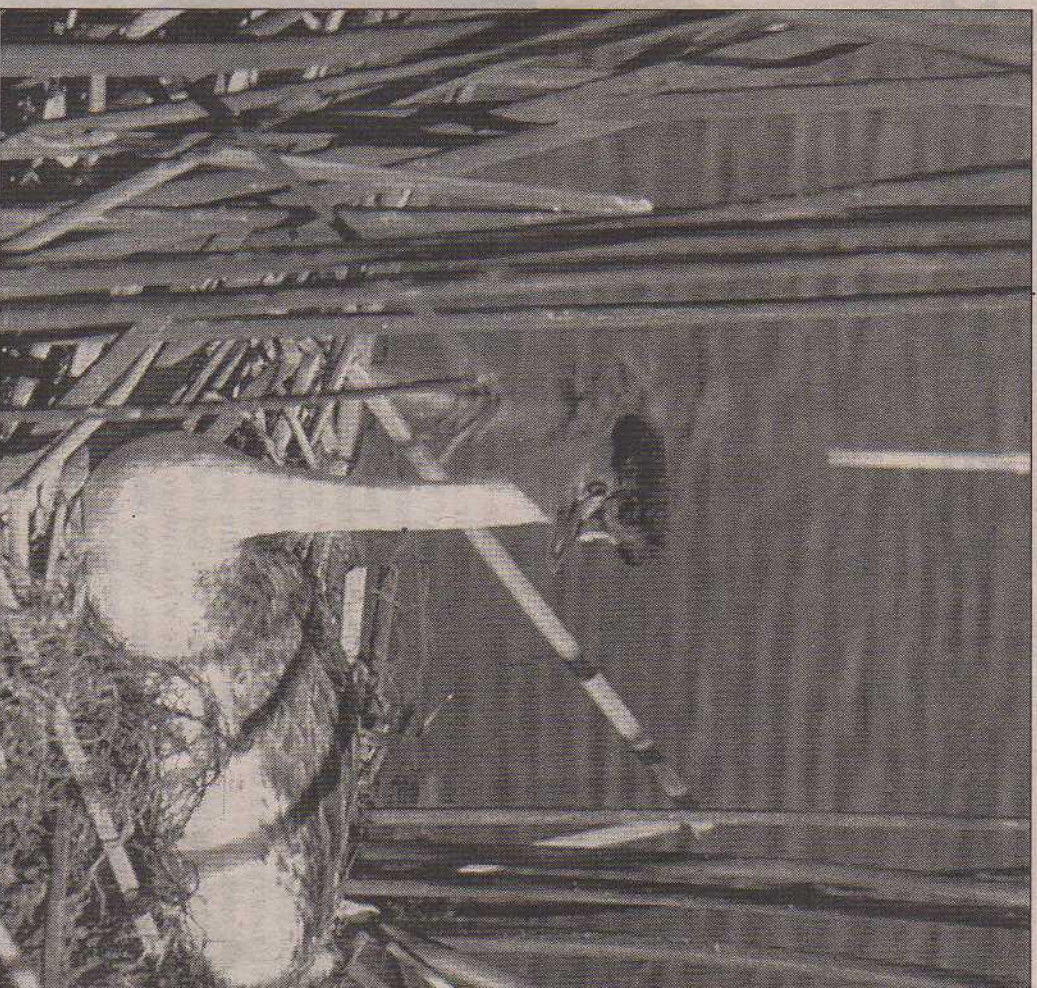
Western and Clark's Grebes are migratory water birds, popular among bird enthusiasts and an integral part of California's natural legacy.

Lake Almanor and Eagle Lake support more than 25 percent of the Western and Clark's Grebes that breed in

the western U.S., so they are important areas for grebe conservation.

The grebe conservation project includes research on grebe biology and survival, reducing key threats to grebes at each lake, educating the public on grebe conservation, working with agencies and organizations to improve nesting conditions, and monitoring and evaluating the effect of conservation efforts on breeding grebes.

For more information, contact David Arsenault at 283-0455 or at: david@plumasaudubon.org.



Conservation issues relating to the Clark's and the Western grebes will be the topic Aug. 5 public meeting in the Chester Memorial Hall. Photo submitted

Attachment B
Brood Survey Data Sheet

