

Memorandum

Date: 8/30/2018

To: Sarah Mussulman
Sierra Fisheries Supervisor
Department of Fish and Wildlife
North Central Region

From: Mitch Lockhart
Environmental Scientist
Department of Fish and Wildlife
North Central Region

Subject: Visual Encounter Survey at Lower Angora Lake, El Dorado County

Lower Angora Lake, El Dorado County, is a popular day use destination in the Lake Tahoe basin near South Lake Tahoe. The lake is walk-in only, accessible via a short ½ mile trail. A private resort, Angora Lakes Resort, owns and operates private cabins along the lakeshore that are available to rent (Figure 1).

On June 6, 2018, Mitch Lockhart, CDFW Environmental Scientist, and one Scientific Aide conducted a visual encounter survey of Dardanelles Lake. The purpose of the survey was to determine if special status herpetofauna species are present at Lower Angora Lake. The data are used to determine if planting Lower Angora Lake with fingerling Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*) would result in impacts to special status species; specifically Sierra Nevada yellow-legged frog (*Rana sierrae*).

The survey began at 13:39 and continued until 15:17 with a total survey duration of 196 minutes. The surveyors slowly circumambulated the lake shoreline looking for diurnal amphibians and reptiles (Fellers and Freel 1995). The air temperature was 19.3° Celsius at 13:30 under partly cloudy skies. Water conditions were clear with little to no surface disturbance. Water temperature was 16.7° Celsius at 13:32. No amphibians or reptiles were observed during the survey. Hundreds of Lahontan redbreast shiners (*Richardsonius egregious*) were observed near shore during the survey.

On August 10, 2018 one CDFW Scientific Aide conducted a visual encounter survey at an unnamed pond (LakeID 14209) immediately downstream of Lower Angora Lake. The survey began at 11:47 and ended at 12:51 for a total survey duration of 64 minutes. Twenty-six speckled dace (*Rhinichthys osculus*) and eight Lahontan redbreast shiners were observed in the inlet and over 40 speckled dace and 11 Lahontan redbreast shiners were observed in the outlet of the pond. No amphibians or reptiles were seen during the survey.

Due to the absence of special status species and the large density of minnow fish species, Lower Angora Lake is suitable to plant fingerling Lahontan cutthroat trout as a put-and-grow fishery for the use and enjoyment of day-use recreational anglers and clients of the Angora Lake Resort. The expectation is that individual Lahontan cutthroat trout that gain enough size will utilize the available minnow forage and develop into desirable sports fish.

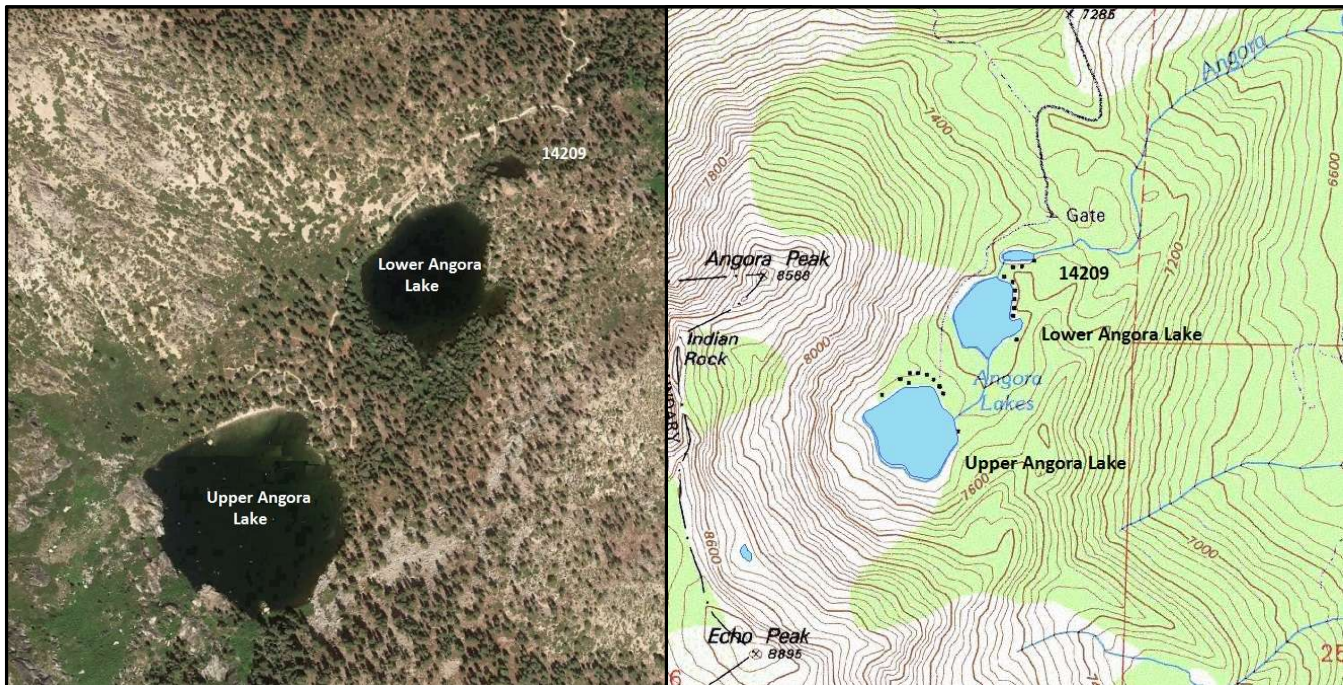


Figure 1: Overview satellite image and topographic map of the Angora Lakes basin in El Dorado County near South Lake Tahoe. Included in the overview are Upper Angora Lake, Lower Angora Lake, and an unnamed pond (LakeID 14209). The satellite image was retrieved from Google Earth on 8-30-18.

AMPHIBIAN AND REPTILE SURVEY DATA SHEET - 2017

Site ID: 14214	Date: 6/6/18	SKY: Clear <input type="checkbox"/> Partly Cloudy <input checked="" type="checkbox"/> Mostly Overcast <input type="checkbox"/> Rain <input type="checkbox"/> Snow <input type="checkbox"/> Smoke <input type="checkbox"/>	WIND: Calm Light Moderate Strong
Topo Name: (1:24,000)	County: El Dorado	Elevation: m ft	If not surveyed, provide reason: Private Property <input type="checkbox"/> Frozen <input type="checkbox"/> Not Found <input type="checkbox"/> No Access <input type="checkbox"/>
Surveyors: M. Lockhart; T. KASH		Water Type: Lake Unmapped pond Marsh/ meadow Spring seep Stream (Skip to "STREAMS" below)	
Lake Name: (from map) Lower Angora	East UTM:	North UTM:	UTM Zone:
Color: <input checked="" type="checkbox"/> Clear <input type="checkbox"/> Stained	Water (.5 m from shore, Temp 10cm deep): 16.7 <input checked="" type="checkbox"/> C <input type="checkbox"/> F	Air (1 m above water): 19.3 <input checked="" type="checkbox"/> C <input type="checkbox"/> F	Site condition notes:
Turbidity: <input checked="" type="checkbox"/> Clear <input type="checkbox"/> Cloudy			
Survey START time: 13:39	Survey END time: 15:17	Total survey duration (min): 196 min	HERPS SEEN? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO FISH SEEN? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO

*FOR LAKES/PONDS/MEADOWS: ALSO SURVEY FIRST 200 m OF ALL INLETS AND OUTLETS. RECORD DATA SEPARATELY IN THE "STREAMS" SECTION BELOW.

Species	# adults	# subadults	# metamorphs	# larvae	# egg m.	#swabs	Survey Method
RASI	Ø	Ø	Ø	Ø	Ø		<input checked="" type="checkbox"/> Visual Trapped <input type="checkbox"/> Aural Hand Collected <input type="checkbox"/> Amp Net Incidental
Calling? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N							
							<input type="checkbox"/> Visual Trapped <input type="checkbox"/> Aural Hand Collected <input type="checkbox"/> Amp Net Incidental
Calling? <input type="checkbox"/> Y <input type="checkbox"/> N							
							<input type="checkbox"/> Visual Trapped <input type="checkbox"/> Aural Hand Collected <input type="checkbox"/> Amp Net Incidental
Calling? <input type="checkbox"/> Y <input type="checkbox"/> N							
							<input type="checkbox"/> Visual Trapped <input type="checkbox"/> Aural Hand Collected <input type="checkbox"/> Amp Net Incidental
Calling? <input type="checkbox"/> Y <input type="checkbox"/> N							

STREAM

Inlet <input checked="" type="checkbox"/> Outlet (circle one) # 1	Stream Type: Perennial Ephemeral	Stream Currently Dry? <input type="checkbox"/> Y <input checked="" type="checkbox"/> N	Intermittent? <input type="checkbox"/> Y <input checked="" type="checkbox"/> N
Start E UTM:	End E UTM:	Color: <input checked="" type="checkbox"/> Clear <input type="checkbox"/> Stained <input type="checkbox"/> NA	Turbidity: <input checked="" type="checkbox"/> Clear <input type="checkbox"/> Cloudy <input type="checkbox"/> NA
Start Time:	End Time:	Duration (min):	Water Temp: Air Temp: Herps Present? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Inlet <input type="checkbox"/> Outlet (circle one) #	Stream Type: Perennial Ephemeral	Stream Currently Dry? <input type="checkbox"/> Y <input type="checkbox"/> N	Intermittent? <input type="checkbox"/> Y <input type="checkbox"/> N
Start E UTM:	End E UTM:	Color: Clear Stained NA	Turbidity: Clear Cloudy NA
Start Time:	End Time:	Duration (min):	Water Temp: Air Temp: Herps Present? YES NO
Inlet <input type="checkbox"/> Outlet (circle one) #	Stream Type: Perennial Ephemeral	Stream Currently Dry? <input type="checkbox"/> Y <input type="checkbox"/> N	Intermittent? <input type="checkbox"/> Y <input type="checkbox"/> N
Start E UTM:	End E UTM:	Color: Clear Stained NA	Turbidity: Clear Cloudy NA
Start Time:	End Time:	Duration (min):	Water Temp: Air Temp: Herps Present? YES NO
Inlet <input type="checkbox"/> Outlet (circle one) #	Stream Type: Perennial Ephemeral	Stream Currently Dry? <input type="checkbox"/> Y <input type="checkbox"/> N	Intermittent? <input type="checkbox"/> Y <input type="checkbox"/> N
Start E UTM:	End E UTM:	Color: Clear Stained NA	Turbidity: Clear Cloudy NA
Start Time:	End Time:	Duration (min):	Water Temp: Air Temp: Herps Present? YES NO

Species	In/Outlet #	# adults	# subadults	# metamorphs	larvae	# egg m.	#swabs	Survey Method
RASI	(circle one) # 1 IN <input checked="" type="checkbox"/> OUT	Ø	Ø	Ø	Ø	Ø		<input checked="" type="checkbox"/> Visual Trapped <input type="checkbox"/> Aural Hand Collected <input type="checkbox"/> Amp Net Incidental
Calling? <input type="checkbox"/> Y <input type="checkbox"/> N								
	(circle one) # IN OUT							<input type="checkbox"/> Visual Trapped <input type="checkbox"/> Aural Hand Collected <input type="checkbox"/> Amp Net Incidental
Calling? <input type="checkbox"/> Y <input type="checkbox"/> N								
	(circle one) # IN OUT							<input type="checkbox"/> Visual Trapped <input type="checkbox"/> Aural Hand Collected <input type="checkbox"/> Amp Net Incidental
Calling? <input type="checkbox"/> Y <input type="checkbox"/> N								
	(circle one) # IN OUT							<input type="checkbox"/> Visual Trapped <input type="checkbox"/> Aural Hand Collected <input type="checkbox"/> Amp Net Incidental
Calling? <input type="checkbox"/> Y <input type="checkbox"/> N								

Amphibians: S. Long-toed Salamander (AMMA); Yosemite Toad (ANCA, frmlly BUCA); Sierran Treefrog (HYSI, frmlly PSRE or HYRE); Sierra Nevada Yellow-legged Frog (RASI)
 Amph. less common in HML: CA Toad (ANBO, frmlly BUBO); Bullfrog (RACT); Cascades Frog (RACA); CA Red-legged Frog (RADR); Sierra Newt (TASI, frmlly TATO)
 Reptiles: Sierra Gartersnake (THCO); Mountain Gartersnake (THEL); Valley Gartersnake (THSI); Western Pond Turtle (EMMA, frmlly CLMA)

PLEASE Return to: Isaac Chellman, California Department of Fish and Wildlife, (916) 358-4038; 1701 Nimbus Rd., Rancho Cordova, CA 95670

Field review	Copied	Entered	Proofed	Herp Data Sheet, pg. 1 of 2			
PHOTOS	Photo Number	Camera	Time	Date (yyyy-mm-dd)	UTM E	UTM N	Comments

AMPHIBIAN AND REPTILE SURVEY DATA SHEET - 2017

Site ID: 14209	Date: 8/10/2018	SKY: Clear Partly Cloudy Mostly Over-Cloudy Rain Snow <input checked="" type="radio"/> Smoke	WIND: <input checked="" type="radio"/> Calm Light Moderate Strong
Topo Name: (1:24,000)	County: El Dorado	Elevation: m ft	If not surveyed, provide reason: Private Property Frozen Not Found No Access
Surveyors: T. KASH		Water Type: <input checked="" type="radio"/> Lake Unmapped pond Marsh/meadow Spring seep Stream (Skip to "STREAMS" below)	
Lake Name: (from map) Lower Angora	East UTM:	North UTM:	UTM Zone:
Color: <input checked="" type="radio"/> Clear <input type="radio"/> Stained	Water (.5 m from shore, Temp 10cm deep): 26.1 @ 11:45 or F	Air (1 m above water): 28.3 @ 11:40 or F	Site condition notes:
Turbidity: <input checked="" type="radio"/> Clear <input type="radio"/> Cloudy	Survey START time: 11:47	Survey END time: 12:51	Total survey duration (min): 64
	HERPS SEEN? <input checked="" type="radio"/> YES <input type="radio"/> NO	FISH SEEN? <input checked="" type="radio"/> YES <input type="radio"/> NO	

***FOR LAKES/PONDS/MEADOWS: ALSO SURVEY FIRST 200 m OF ALL INLETS AND OUTLETS. RECORD DATA SEPARATELY IN THE "STREAMS" SECTION BELOW.**

Species	# adults	# subadults	# metamorphs	# larvae	# egg m.	#swabs	Survey Method
Calling? Y N							Visual Trapped Aural Hand Collected Amp Net Incidental
Calling? Y N							Visual Trapped Aural Hand Collected Amp Net Incidental
Calling? Y N							Visual Trapped Aural Hand Collected Amp Net Incidental
Calling? Y N							Visual Trapped Aural Hand Collected Amp Net Incidental

STREAM

<input checked="" type="radio"/> Inlet <input type="radio"/> Outlet (circle one) # 1	Stream Type: <input checked="" type="radio"/> Perennial <input type="radio"/> Ephemeral	Stream Currently Dry? Y <input checked="" type="radio"/> N	Intermittent? Y <input checked="" type="radio"/> N
Start E UTM: N UTM:	End E UTM: N UTM:	Color: <input checked="" type="radio"/> Clear <input type="radio"/> Stained NA	Turbidity: <input checked="" type="radio"/> Clear <input type="radio"/> Cloudy NA
Start Time: 11:47	End Time: 11:56	Duration (min): 9	Water Temp: Air Temp: Herps Present? YES <input checked="" type="radio"/> NO
<input checked="" type="radio"/> Inlet <input type="radio"/> Outlet (circle one) # 1	Stream Type: <input checked="" type="radio"/> Perennial <input type="radio"/> Ephemeral	Stream Currently Dry? Y <input checked="" type="radio"/> N	Intermittent? Y <input checked="" type="radio"/> N
Start E UTM: N UTM:	End E UTM: N UTM:	Color: <input checked="" type="radio"/> Clear <input type="radio"/> Stained NA	Turbidity: <input checked="" type="radio"/> Clear <input type="radio"/> Cloudy NA
Start Time: 12:23	End Time: 12:35	Duration (min): 12	Water Temp: Air Temp: Herps Present? YES <input checked="" type="radio"/> NO
<input type="radio"/> Inlet <input type="radio"/> Outlet (circle one) #	Stream Type: Perennial Ephemeral	Stream Currently Dry? Y N	Intermittent? Y N
Start E UTM: N UTM:	End E UTM: N UTM:	Color: Clear Stained NA	Turbidity: Clear Cloudy NA
Start Time:	End Time:	Duration (min):	Water Temp: Air Temp: Herps Present? YES NO
<input type="radio"/> Inlet <input type="radio"/> Outlet (circle one) #	Stream Type: Perennial Ephemeral	Stream Currently Dry? Y N	Intermittent? Y N
Start E UTM: N UTM:	End E UTM: N UTM:	Color: Clear Stained NA	Turbidity: Clear Cloudy NA
Start Time:	End Time:	Duration (min):	Water Temp: Air Temp: Herps Present? YES NO

Species	In/Outlet #	# adults	# subadults	# metamorphs	larvae	# egg m.	#swabs	Survey Method
Speckled Dace	<input checked="" type="radio"/> IN # 1	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 26						Visual Trapped Aural Hand Collected Amp Net Incidental
Calling? Y <input checked="" type="radio"/> N	<input type="radio"/> OUT							
Redside Minnow	<input checked="" type="radio"/> IN # 1	<input checked="" type="checkbox"/> 8						Visual Trapped Aural Hand Collected Amp Net Incidental
Calling? Y <input checked="" type="radio"/> N	<input type="radio"/> OUT							
Speckled Dace	<input checked="" type="radio"/> IN # 1	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 40+						Visual Trapped Aural Hand Collected Amp Net Incidental
Calling? Y <input checked="" type="radio"/> N	<input type="radio"/> OUT							
Redside Minnow	<input checked="" type="radio"/> IN # 1	<input checked="" type="checkbox"/> 11						Visual Trapped Aural Hand Collected Amp Net Incidental
Calling? Y <input checked="" type="radio"/> N	<input type="radio"/> OUT							

Amphibians: S. Long-toed Salamander (AMMA); Yosemite Toad (ANCA, frmly BUCA); Sierran Treefrog (HYSI, frmly PSRE or HYRE); Sierra Nevada Yellow-legged Frog (RASI)
 Amph. less common in HML: CA Toad (ANBO, frmly BUBO); Bullfrog (RACT); Cascades Frog (RACA); CA Red-legged Frog (RADR); Sierra Newt (TASI, frmly TATO)
 Reptiles: Sierra Gartersnake (THCO); Mountain Gartersnake (THEL); Valley Gartersnake (THSI); Western Pond Turtle (EMMA, frmly CLMA)

PLEASE Return to: Isaac Chellman, California Department of Fish and Wildlife, (916) 358-4038; 1701 Nimbus Rd., Rancho Cordova, CA 95670

Field review	Copied	Entered	Proofed	Herp Data Sheet, pg. 1 of 2
PHOTOS	Photo Number	Camera	Time	Date (yyyy-mm-dd)
	UTM E	UTM N	Comments	