State of California Department of Fish and Wildlife

Memorandum

Date: November 19, 2020

- To: Sarah Mussulman Senior Environmental Scientist; Supervisor Department of Fish and Wildlife North Central Region 1701 Nimbus Road, Suite A Rancho Cordova, CA 95670
- Cc: CDFW North Central Region Fish Files
- From: Mitch Lockhart; Environmental Scientist Luc Mitchell; Scientific Aide Clyde Hettrick; Scientific Aide Department of Fish and Wildlife 1701 Nimbus Road, Suite A Rancho Cordova, CA 95670

Subject: Pre-Stocking Evaluation at Loch Leven Lakes, Placer County

Lower Loch Leven Lake (Lake ID: 13500), Upper Loch Leven Lake (Lake ID: 13534), and High Loch Leven Lake (Lake ID: 13524) are found in Placer County, south of Cisco Grove on Interstate 80, at an average elevation of 6,807 feet above sea level (**Figure 1**). The lakes are accessed by trail via the Loch Leven Trailhead. The area is owned



Figure 1. Overview map of Loch Leven Lakes, Placer Co. (red circle), in relation to Lake Tahoe and Truckee, California (CDFW BIOS Viewer, retrieved. 8.25.20).

and managed by Tahoe National Forest (TNF) and is a popular dayhiking and backpacking destination. The California Department of Fish and Wildlife (CDFW) stocked the Loch Leven Lakes from the early 1960s with Rainbow Trout (*Oncorhynchus mykiss*; RT) and Brook Trout (*Salvelinus fontinalis*; BK). However, none of the lakes have been stocked by CDFW since 2000.

The three Loch Leven Lakes are connected by ephemeral tributaries with no major barriers to fish passage during high water seasons (**Figure 2**). This system of tributaries all flow into the North Fork American River. RT may seasonally use this tributary system for migration.

To assess the status of the sport fisheries at Loch Leven Lakes and determine if continued fish plants



Figure 2. Overview map of Loch Leven Lakes, Placer County (CDFW BIOS Viewer, retrieved 9.02.20).

are warranted, three CDFW Scientific Aides surveyed the Loch Leven Lakes from July 14, 2020 to July 16, 2020. A monofilament gill net was set on Lower Loch Leven Lake at 7:23 pm on July 14, 2020 and was pulled the following morning at 7:17 am for a survey effort of 12 hours. The gill net captured three RT (**Table 1**). A monofilament gill net was set at Upper Loch Leven Lake at 9:27 pm on July 14, 2020 and was pulled the following morning at 6:09 am for a survey effort of 8.5 hours. The gill net captured 11 RT (**Table 1**). A monofilament gill net was set on High Loch Leven Lake at 8:04 pm on July 15, 2020 and was pulled the following morning at 7:12 am for a survey effort of 11 hours. No fish were caught.

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Year	Species	Lower	Upper	High
2003	RT	6	1	0
2003	BK	1	0	0
2016	-	0	0	0
2020	RT	3	11	0

Table 1. Gillnet catch in each Loch Leven lake from three CDFW fish surveys

The Scientific Aides conducted a Visual Encounter Survey (VES) of all three Loch Leven Lakes on July 14, 2020, searching for diurnal herpetofauna. The VES of Lower Loch Leven Lake began at 2:10 pm under clear skies, calm wind, and an air temperature of 23 degrees Celsius. The survey continued until 2:37 pm for a total survey effort of 24 minutes. One sub-adult Sierra Gartersnake (*Thamnophis couchii*; THCO) was observed. The VES of Upper Loch Leven Lake began at 1:56 pm under clear skies, light wind, and an air temperature of 23 degrees Celsius. The survey continued until 2:46 for a total survey effort of 35 minutes. No herpetofauna were observed during the survey, however one adult Mountain Gartersnake (*Thamnophis elegans elegans*; THEL) was encountered incidentally on July 16, 2020 (**Figure 3**). The VES of High Loch Leven Lake began at 3:23 pm under clear skies, light wind, and an air temperature of 24 degrees Celsius. The survey continued until 3:52 pm for a total survey effort of 22 minutes. No herpetofauna or fish were observed.



Figure 3. Mountain Gartersnake found at Upper Loch Leven Lake, Placer County, on July 16, 2020.

As stated earlier, none of the Loch Leven Lakes have been stocked since the year 2000. No herpetofauna species of special concern, such as the Sierra Nevada Yellow-Legged Frog (*Rana sierrae*), were detected during the VES, and RT persist in Lower Loch Leven Lake and Upper Loch Leven Lake.

Lower Loch Leven Lake was last stocked in 2000 with 2,000 fingerling RT (Table 2).

Three adult sized RT were captured during the gill net survey, and one was released alive (**Figure 4 & Table 3**). These fish are not holdovers since the most recent stocking event was 20 years ago. Clearly some degree of natural reproduction occurs within the system, but it is unclear where spawning and juvenile recruitment might occur. Nevertheless, natural reproduction seems insufficient to support a sports fishery without regular fish plants.

Year	Species	Number of Fish Planted	Size
1989	RT	3,000	Fingerling
1990	RT	1,000	Fingerling
1991	RT	1,800	Fingerling
1993	RT	3,000	Fingerling
1994	RT	2,000	Fingerling
1995	RT	2,000	Fingerling
1996	RT	2,100	Fingerling
1997	RT	2,000	Fingerling
1998	RT	2,000	Fingerling
1999	RT	2,000	Fingerling
2000	RT	2,000	Fingerling

Table 2. CDFW Stocking History for Lower Loch Leven Lake, Placer County, from1989 to 2000.



stocked in the year 2000 with 2,000 fingerling BK (Table 4). Eleven adult RT were captured during the gill net survey and two were released alive (Table 5 & Figure 5). One of the two fish released alive released eggs during handling but the ten other RT in the gill net were all males. Similar to Lower Loch Leven, the fish sample at Upper Loch Leven cannot be explained by CDFW stocking

Upper Loch Leven Lake was last

Figure 4. Photograph of Rainbow Trout captured during a gill net survey of Lower Loch Leven Lake, Placer Co., on July 14, 2020.

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Species	Length (mm)	Weight (g)	Sex (F/M)
RT	495	-	-
RT	362	415	Μ
RT	330	255	Μ

Table 3. Length, weight, and sex of fish captured during a gill net survey at Lower Loch Leven Lake, Placer Co., on July 14, 2020.

Table 4. CDFW Stocking History for Upper Loch Leven Lake, Placer County, from1989-2000.

Year	Species	Number of Fish Planted	Size
1989	RT	1,000	Fingerling
1991	RT	1,800	Fingerling
1993	RT	2,000	Fingerling
1994	RT	2,000	Fingerling
1995	RT	2,000	Fingerling
1996	RT	2,100	Fingerling
1997	RT	2,000	Fingerling
1998	BK	2,000	Fingerling
2000	BK	2,000	Fingerling

Table 5. Length, weight, and sex of fish captured during a gill net survey at Upper Loch Leven Lake, Placer Co., on July 14, 2020.

Species	Length (mm)	Weight (g)	Sex (F/M)
RT	365	590	М
RT	360	405	F
RT	377	450	М
RT	365	420	М
RT	336	375	М
RT	357	445	М
RT	358	390	М
RT	360	370	М
RT	367	420	М
RT	370	360	М
RT	329	390	М

history and suggests that RT are immigrating into the lake during high flow when the ephemeral tributaries are connected to the North Fork American River. Regardless, the natural reproduction or immigration is not sufficient to support a sports fishery without regular fish plants.

High Loch Leven Lake was last stocked in 2000 with 500 fingerling BK (**Table 4**). The lake has been sampled by CDFW in 2003, 2016, and 2020, and no fish have been captured in any of the surveys (**Table 1**). Surveys suggest the BK planted at High Loch Leven were not self-sustaining. While it is unclear if BK were able to naturally



Figure 5. Photograph of Rainbow Trout captured during a gill net survey of Upper Loch Leven Lake, Placer Co., on July 14, 2020.

reproduce at High Loch Leven, it is likely few to none of the BK planted in 2000 persisted to 2003. The lake is shallow with a maximum depth of 3.1 meters and prone to winter kills. As a result, High Loch Leven should not be planted in the future.

Findings from 2020 surveys of the Loch Leven Lakes suggest they are not currently an RT sports fishery. Fingerling plants of RT should resume at Lower and Upper Loch Leven Lakes with allotments of 2,000 fingerlings annually. Additional monitoring should be conducted approximately three years after planting to document survivorship and growth, if any.

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Figure 8. Data Sheet with gill net data from a survey conducted on July 14, 2020, at Upper Loch Leven Lake, Placer County.

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Fish#	Species	Tot. Lgth (mm)	Weight (g)	Sex	Early	Ripe	Late	Otoliths?	<u></u>	Comments	
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and the second second second	Return to: Isaac	Chellman California	Department of Fish	and Will	life (916	358.4038 1	1 701 Mimbure	Rd Bancho	Cordava CA 9	5870	

Figure 10. Data Sheet with gill net data from a survey conducted on July 15, 2020, at High Loch Leven Lake, Placer County.

	3524	Date:	7/14/	20	SKY:	Clear Partly Cloudy	Mostly Over- F Cloudy cest	Rain Snow Sm	oke WIND: Ca	alm 🕼	Moderate Strong
ľopo Nan	me: /1, /	black low	County:			Elevation:	н	f not surveyed,	Private Property	Frozen	Not No Found Access
1:24,000) Surveyor		2 1		auer	0.446	m ft		ake Unmapp		Spring	Stream (Skip to
.ake Nam	C	MH_	East		1	2	Type:	pond	meadow	seep	"STREAMS" on pg. 2)
from map	a High	and the second second	UTM:		677		UTM: 434	21479			zone: (US
Color (G Furbidity;	Clear C		5 m from shore 10cm deep):	22	@ 152	F Temp	water): 24	@ 1515 F		ennial	Currently Dry? Yes
Survey START tir	me: 15	23 Survey END tim	155		l survey tion (min):	22 HERPS		ish ye Seen? K	2004	emoral	\odot
FOR LAP	KES/PONDS	SIMEADOWS: ALSO	O SURVEY FIR	ST 200 m C	FINLETS	AND OUTLETS. RE	CORD DATA SEP	ARATELY IN TH	E "STREAMS"	-	
HERP SPI	ECIES	# adults	<u> </u>	# suba	dults	# metamorphs	# larvae	# egg #	n. #swabs	Surve	ey Method Trapped
2.180	N 11	-								Aural	Hand Collected
Calling?	TN			02	/					Amp Net Visual	Incidental Trapped
Calling?	Y N			/						Aural Amp Net	Hand Collected Incidental
Admings	<u>.</u>			1		-				Visual	Trapped
Calling?	YN	-		/						Aural Amp Net	Hand Collected Incidental
			1		/					Visual	Trapped
Calling?	YN	1		/						Aural Amp Net	Hand Collected Incidental
			_		2					Visual Aural	Trapped Hand Collected
Calling?		1								Amp Net	Incidental
ISH SPE		and the second se	the second se			d), CT (culthroat trout), y BUCA); Sierran Tro	and the descent of the descent in the second	and the state of the local data and the state of the stat	and a second	and the second second second	
teptites.	PHOTOS	n in HML: CA Toad ersnake (THCO); M Photo Number	Camera 1	Time Date	(ywys-mener-dd)		UTM N	Com	ments		
3	PHOTOS Overview Herps Other	Photo Number	Camera 1	Time Date			UTM N 435 16	Com			
	PHOTOS Overview Herps	Photo Number	Camera 1	Time Date	(ywys-mener-dd)		UTM N	Com			
	PHOTOS Overview Herps Other	Photo Number	Camera 1		nt of Fien er		UTM N 43516		Cordova, CA 9	5670 Sheet, pg.	1072