Supplement

Supplemental Tables

Table S1. Recalculation of population size estimates in Paxton Lake in 2005 using the Lincoln-Petersen method with likelihood-based 95% confidence limits. Data are from the mark-recapture data of M. Nomura and D. Schluter (unpublished). n_1 is the number of fish caught and marked May 27-30, 2005. n_2 is the number of fished captured in the second trapping session, June 7-8. The value *r* is the number of previously marked fish caught in the second session (recaptures). Mature males are recognized by nuptial coloration during the breeding season. "Other" benthic individuals refer to adult females and non-reproductive 1-year old individuals. Limnetics have an annual life history, and "other" probably represents mainly females, which do not enter traps as readily as adult. "Combined" recalculates population sizes using the sums of numbers of individuals n_1, n_2 and *r* (not using the sums of $\hat{N}$).

Species	**Group**	n_1	n_2	*r*	$\hat{N}$	**Lower**	**Upper**
Benthic	Mature males	340	214	21	**3,464**	2,415	5,329
Benthic	Other	1,226	835	34	**30,109**	22,183	42,544
Benthic	Combined	1,566	1,049	55	**29,867**	23,482	38,961
Limnetic	Mature males	1,009	453	9	**50,786**	28,501	104,886
Limnetic	Other	199	81	1	**16,118**	3,770	279,969
Limnetic	Combined	1,208	534	10	**64,507**	37,157	127,852

Table S2. Estimates of population sizes using the Lincoln-Petersen method, with approximate 95% likelihood-based confidence intervals.

Lake	Species	n_1	n_2	r	$\widehat{N}$	95% confidence interval lower	upper
Priest	Benthic	4,458	6,015	227	**118,127**	104,633	134,179
Priest	Limnetic	2,211	1,826	37	**109,115**	80,903	152,549
Paxton	Benthic	882	1,285	51	**22,222**	17,344	29,266
Paxton	Limnetic	4,401	2,369	29	**359,516**	256,086	527,998

Table S3. Results of the "test recapture" carried out in Paxton Lake.

Estimation method	Species	n_1	$\hat{p}$	$\hat{N}$	95% confidence interval lower	95% confidence interval upper
Regression	Benthic	882	0.0681	**12,948**	10,750	16,276
Regression	Limnetic	4,401	0.0371	**118,588**	98,346	149,321
Lincoln-Petersen	Benthic	882	0.0678	**13,004**	11,151	15,355
Lincoln-Petersen	Limnetic	4,401	0.0371	**118,600**	98,439	144,898

Table S4. Variables the data file "PaxtonPriestMarkRecaptureData2016.v1.2.csv".

Variables	**Meaning of variables**
date	Date in yyyy-mm-dd format (Excel might convert to another format upon opening).
lake	Lake name.
activity	Activity: Mark, Recapture, or Test recapture ("recapture.test").
trap.no	Number on the float attached to the trap (not sequential).
trap.mesh	Mesh size of traps: C=coarse (1/4 inch), F=fine (1/8 inch).
depth.m	Trap depth, in metres.
latitude	Latitude of trap location, in decimals.
longitude	Longitude of trap location, in decimels.
time.in	Time of day trap was set.
time.out	Time of day trap was removed.
tot.time	Total time, in hours (with decimals), trap was open.
n.benthic	Cumulative daily number of unmarked benthics caught in trap.
n.benthic.marked	Cumulative daily number of previously marked benthics caught in trap.
n.limnetic	Cumulative daily number of unmarked limnetics caught in trap.
n.limnetic.marked	Cumulative daily number of previously marked limnetics in trap.
n.hybrid	Cumulative daily number of unmarked "hybrids"* caught in trap.
n.hybrid.marked	Cumulative daily number of previously marked "hybrids" caught in trap
notes	Notes. "benthic marked as limnetic" means that fish was called a limnetic when marked, but determined to be a benthic on recapture. "limnetic marked as benthic" has the opposite meaning.

*Do not take "hybrids" seriously, as they were classified hurriedly in the hand, which is not a reliable method.

Supplemental Figures

Figure S1a. Maps showing trap locations.

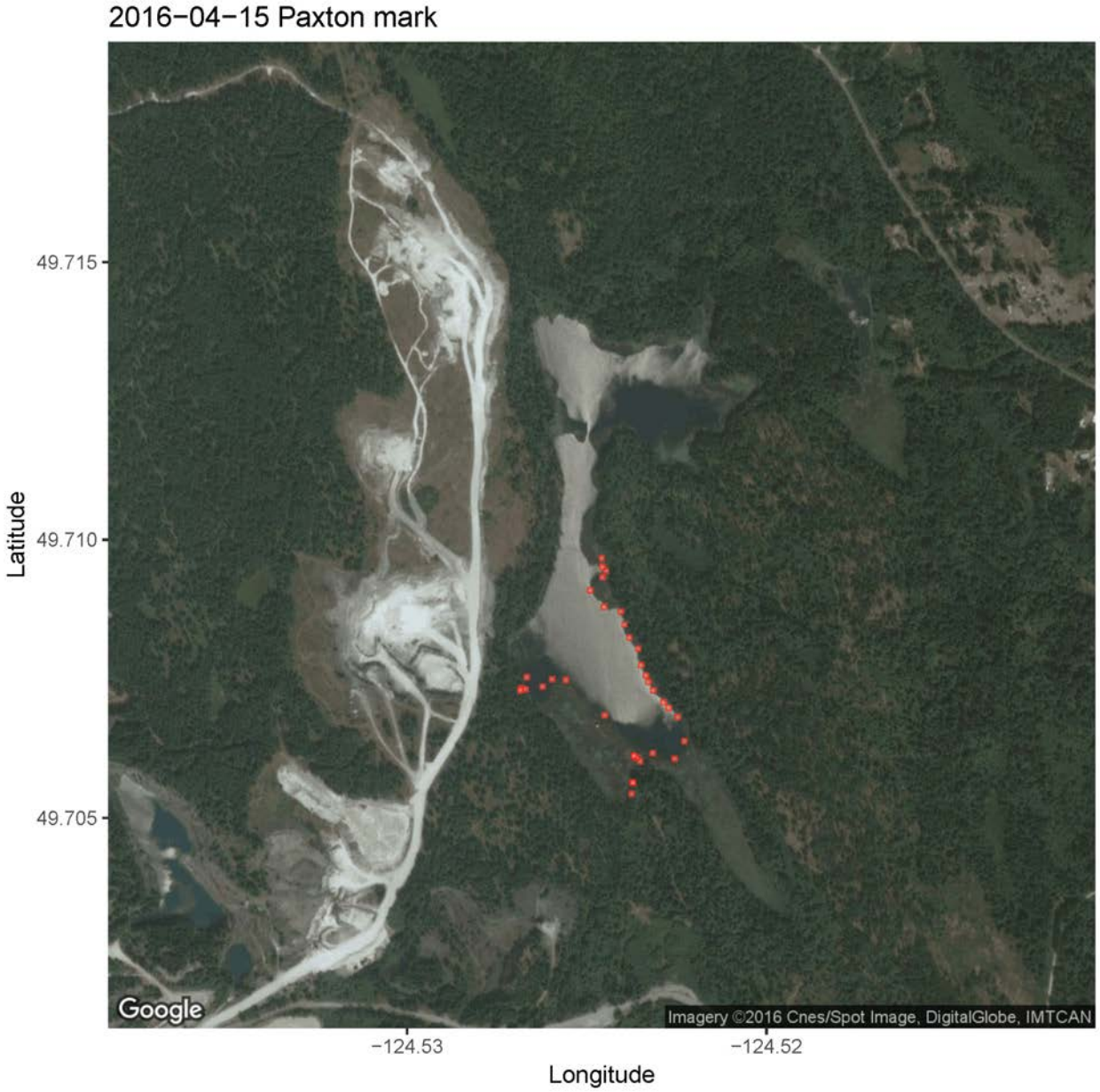

Figure S1b. Maps showing trap locations.

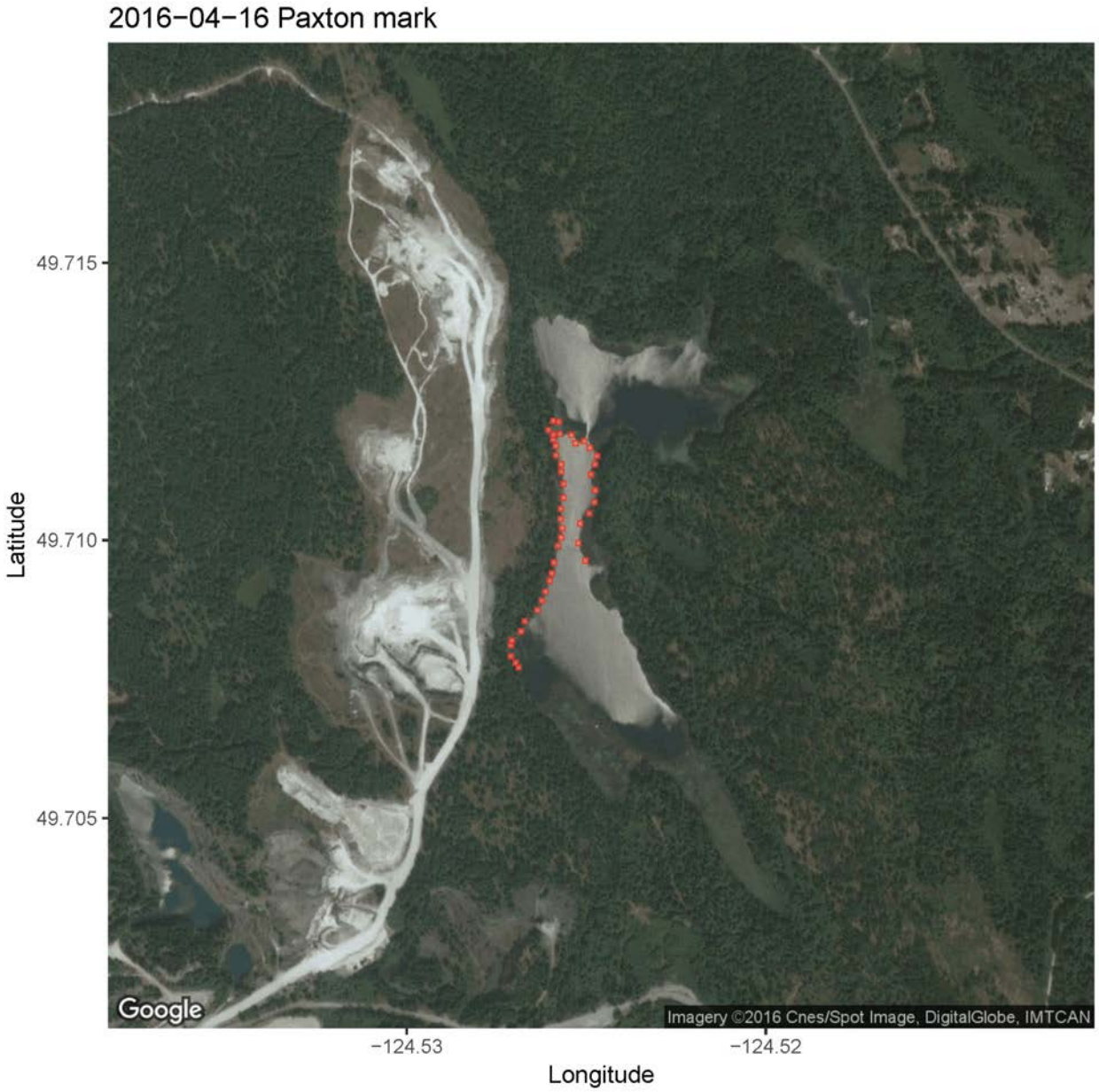

Figure S1c. Maps showing trap locations.

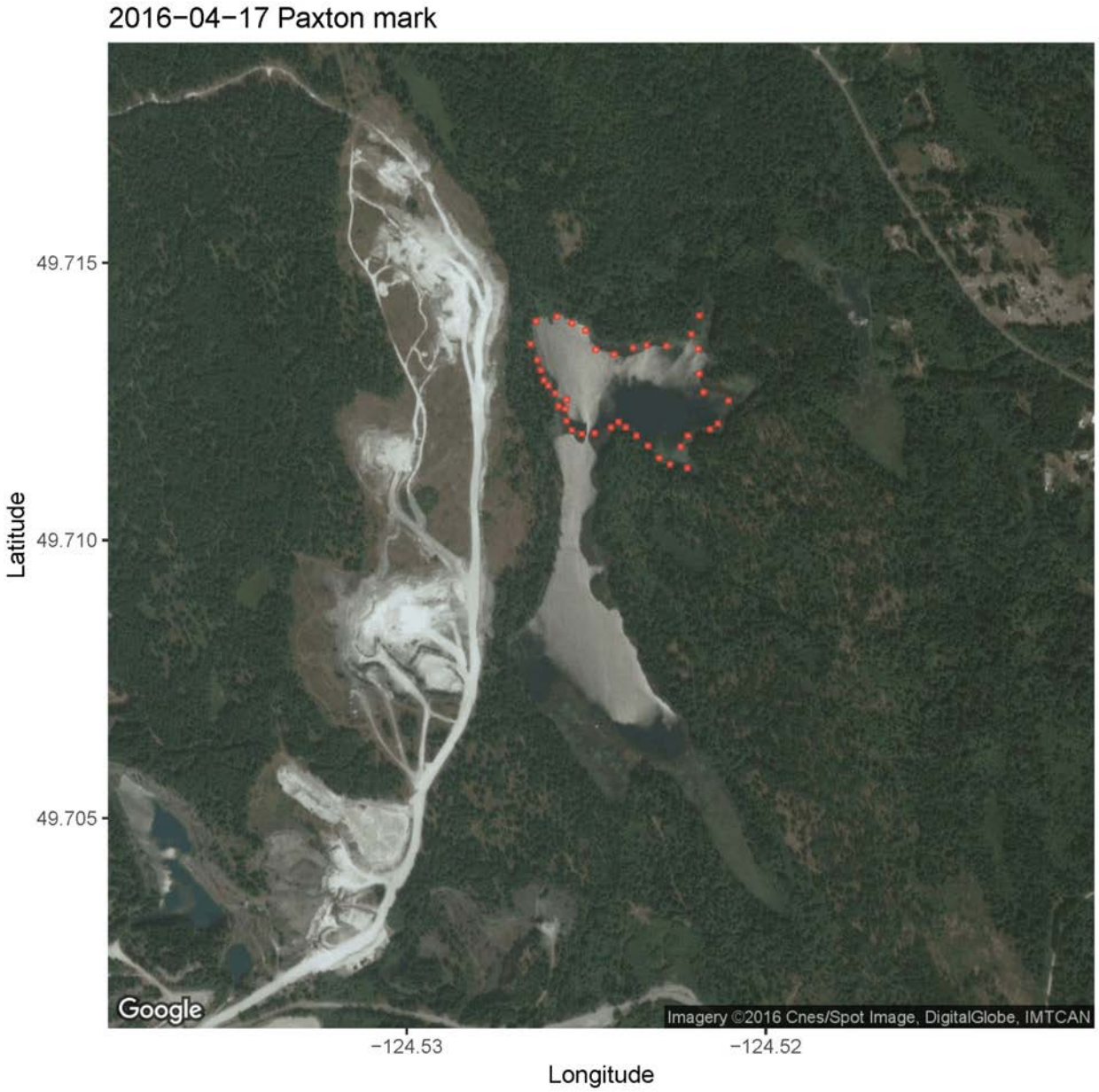

Figure S1d. Maps showing trap locations.

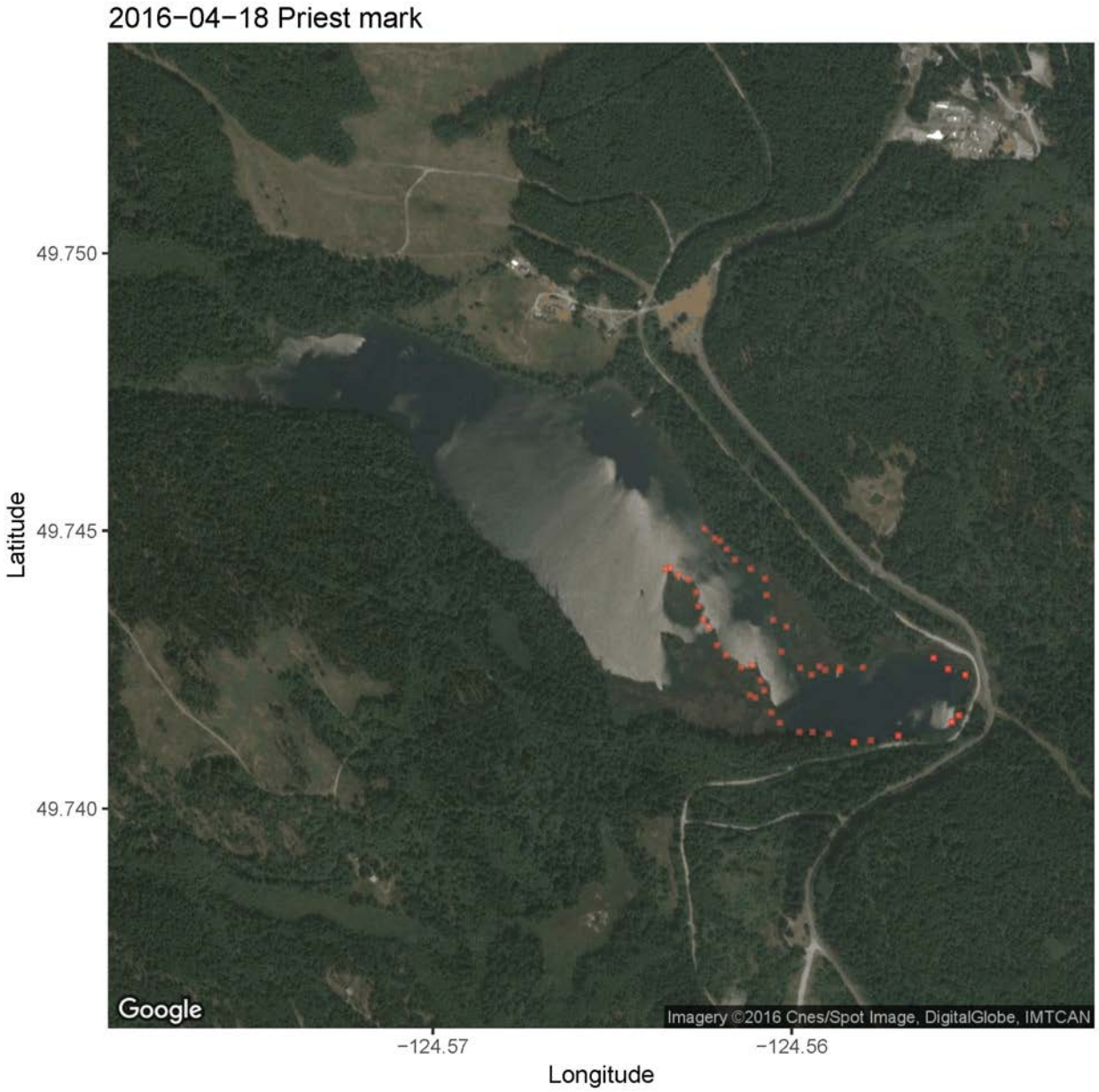

Figure S1e. Maps showing trap locations.

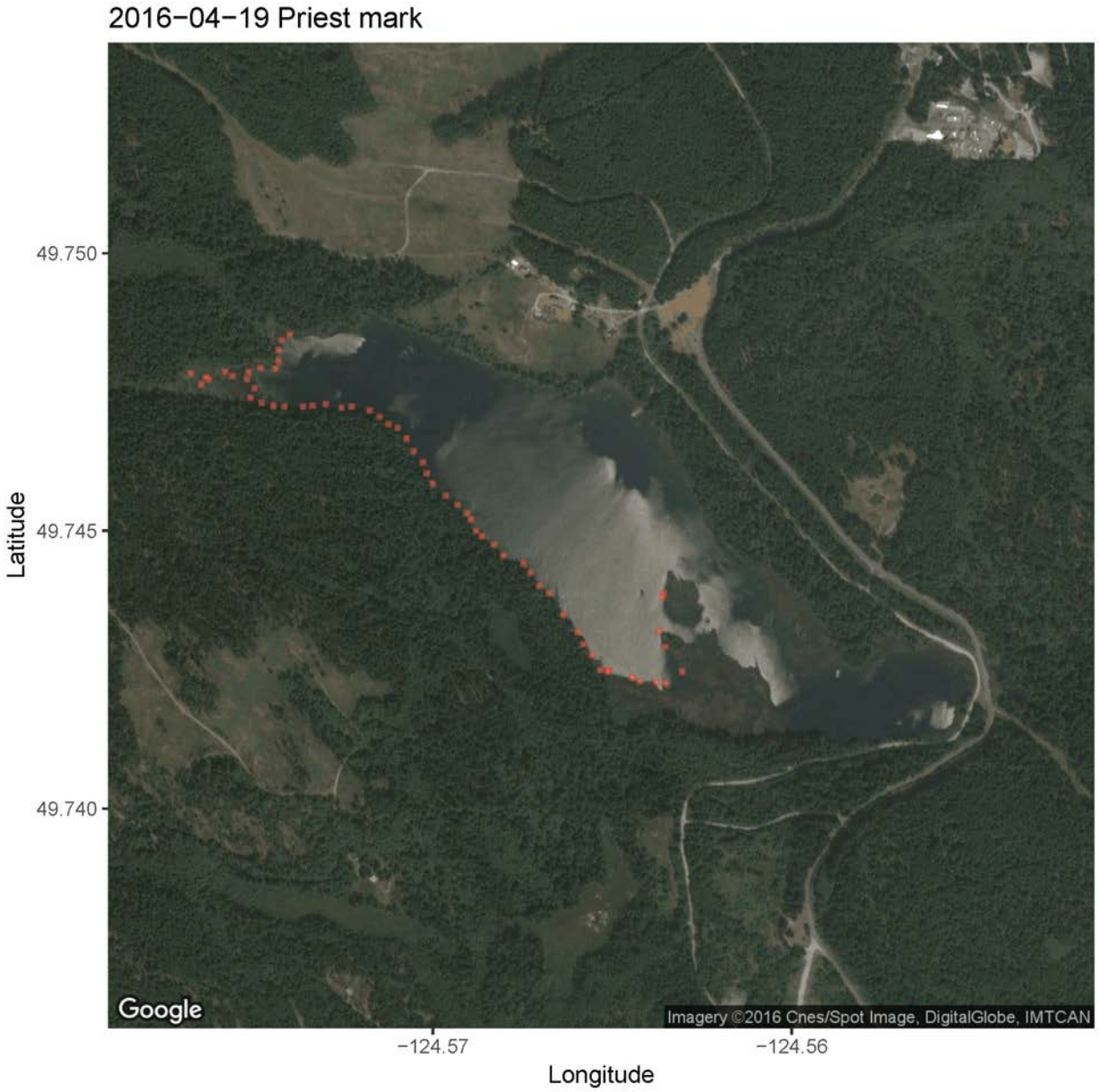

Figure S1f. Maps showing trap locations.

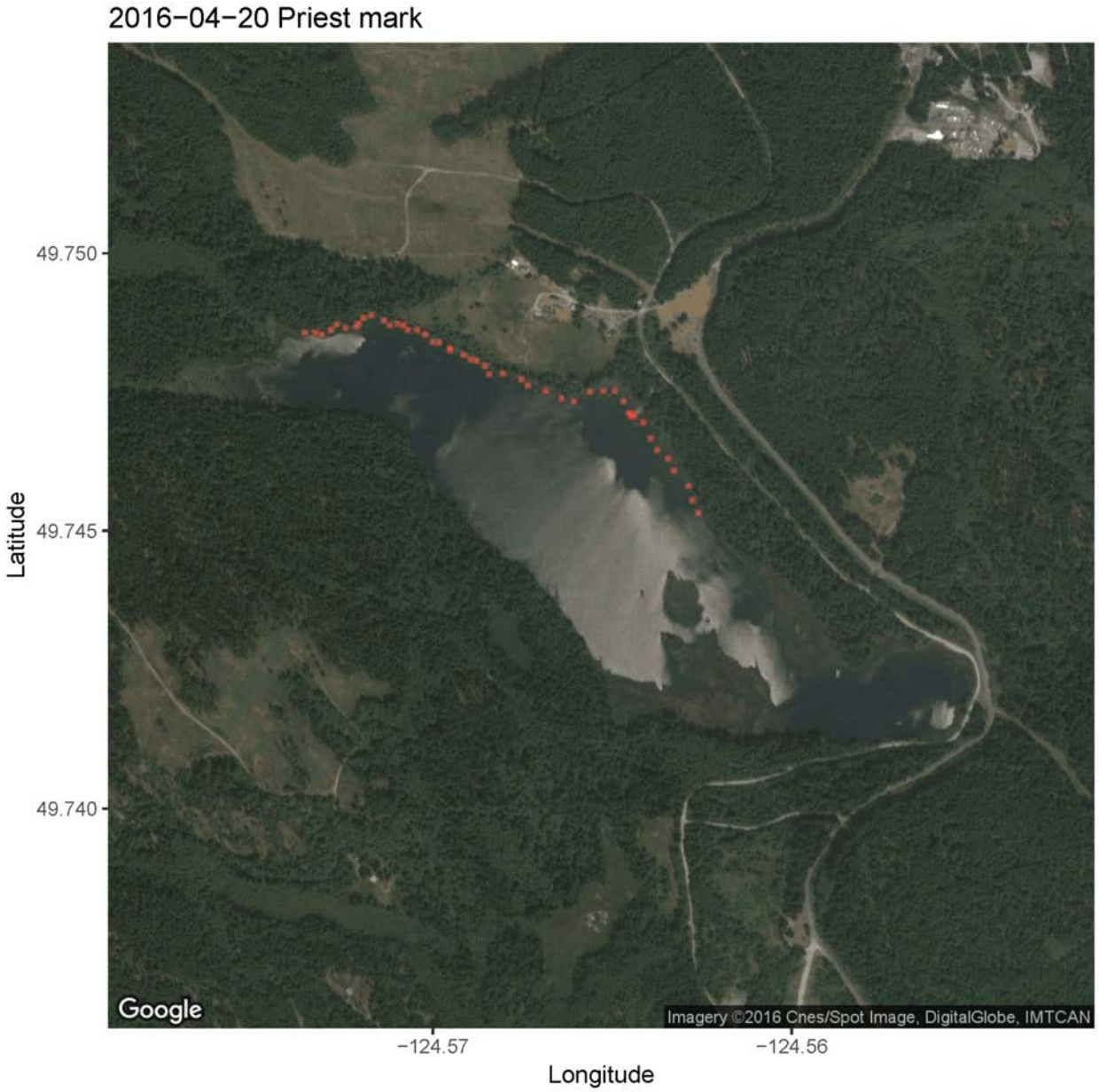

Figure S1g. Maps showing trap locations.

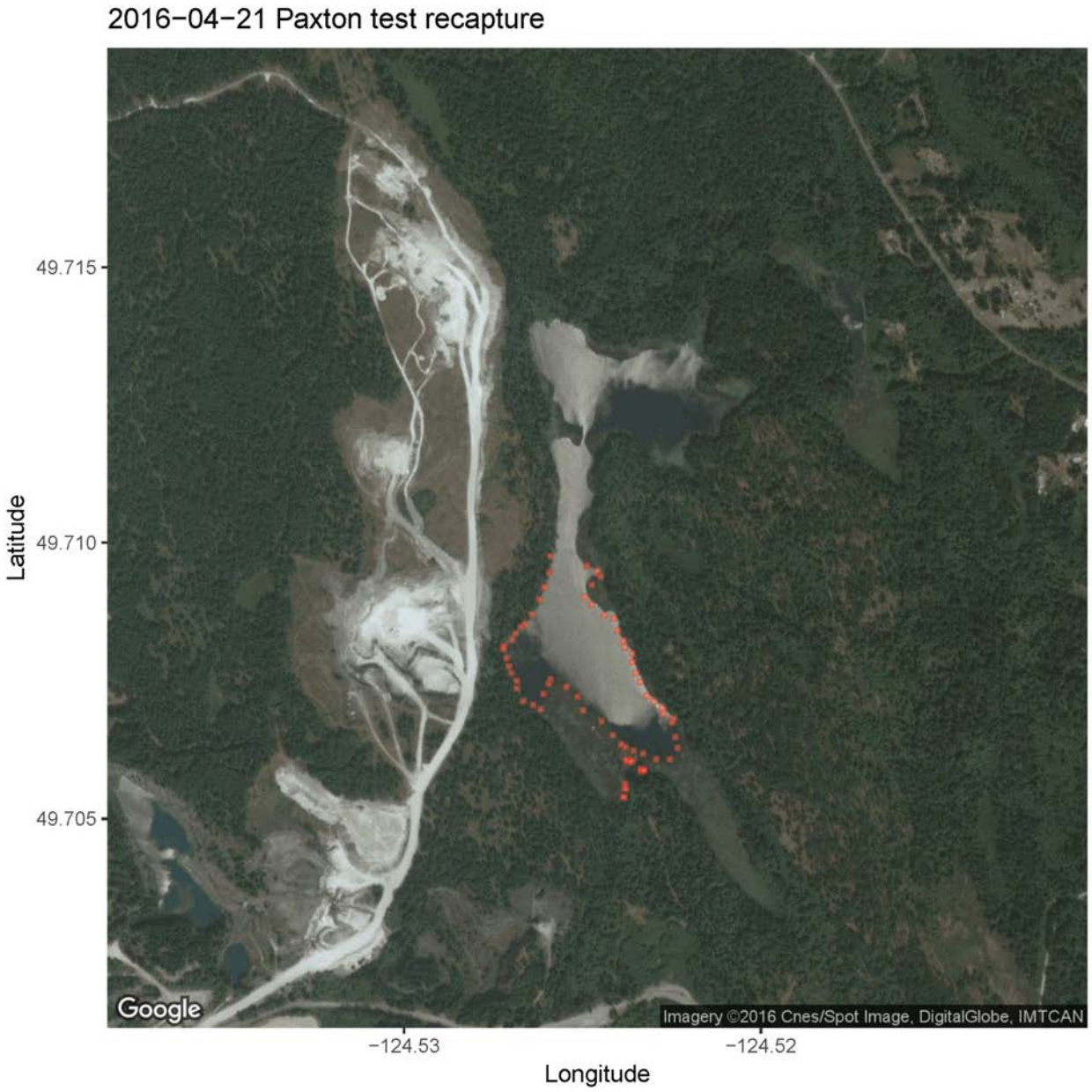

Figure S1h. Maps showing trap locations.

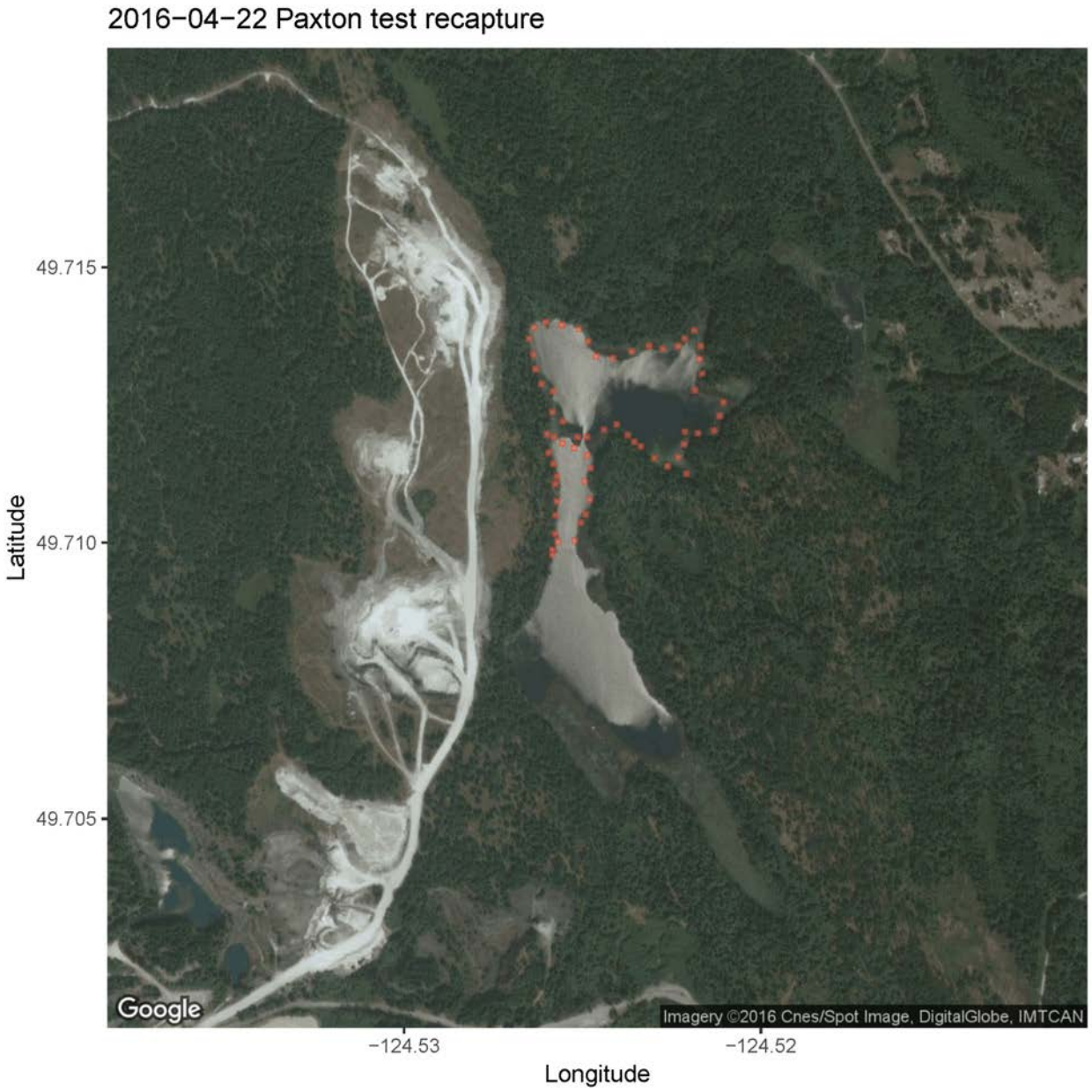

Figure S1i. Maps showing trap locations.

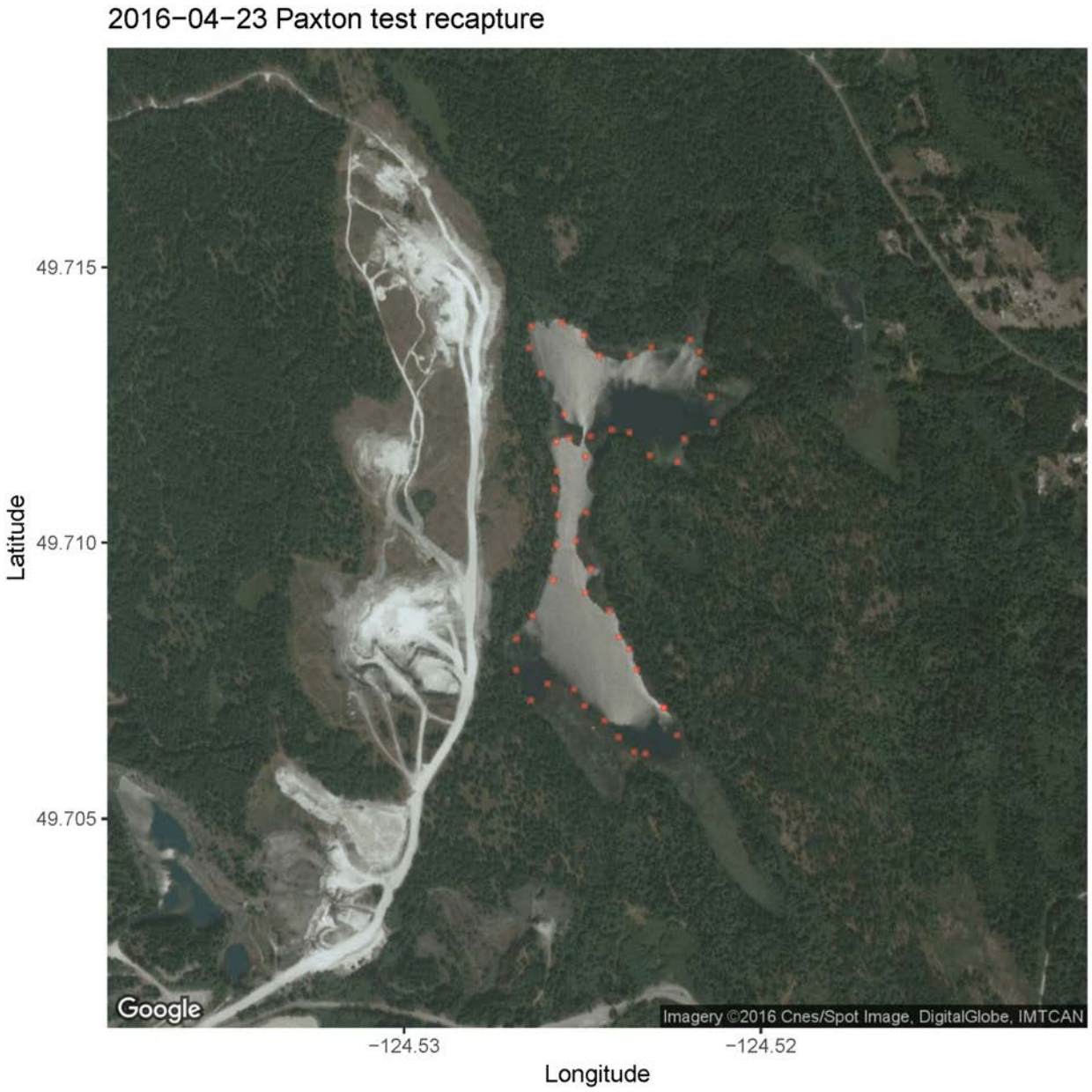

Figure S1j. Maps showing trap locations.

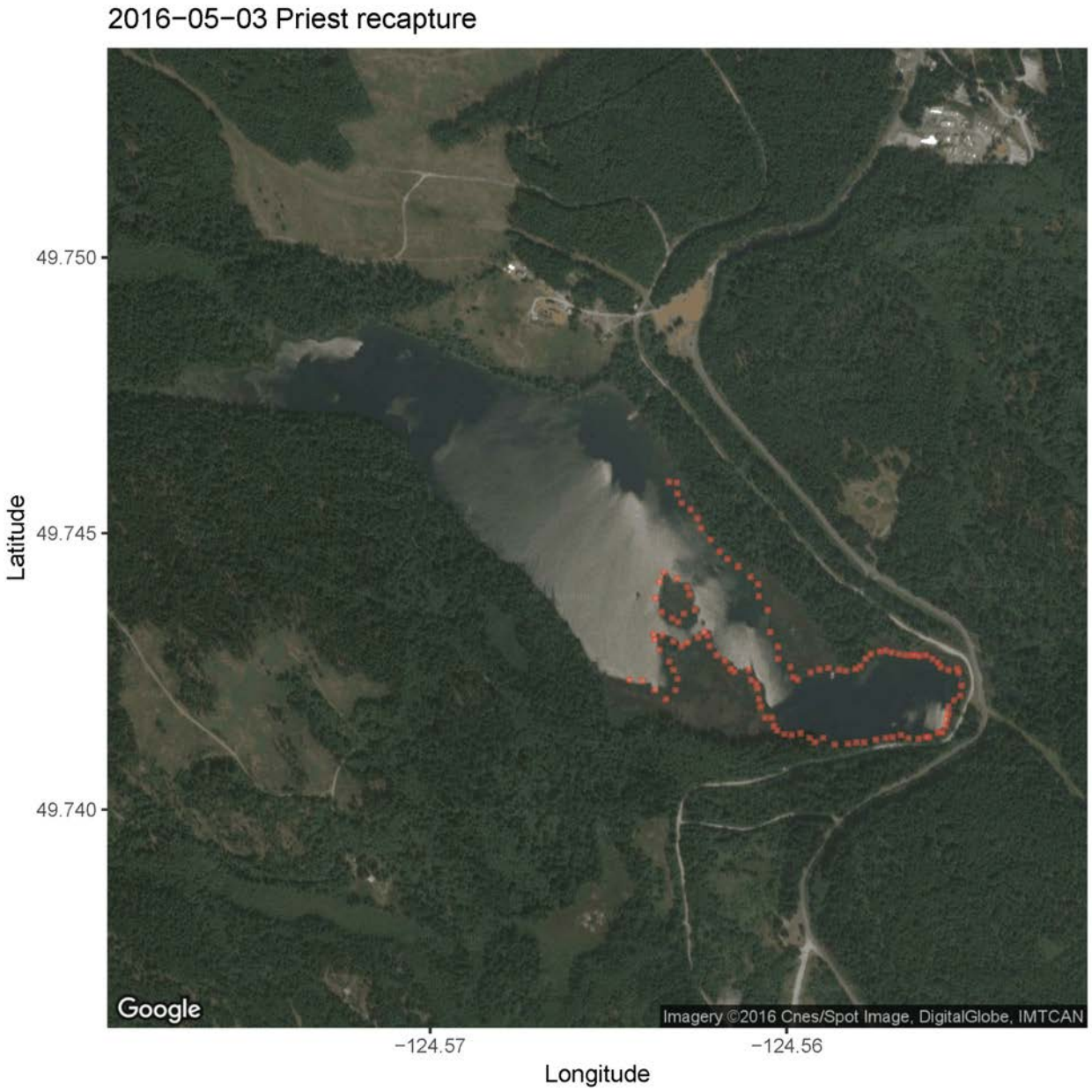

Figure S1k. Maps showing trap locations.

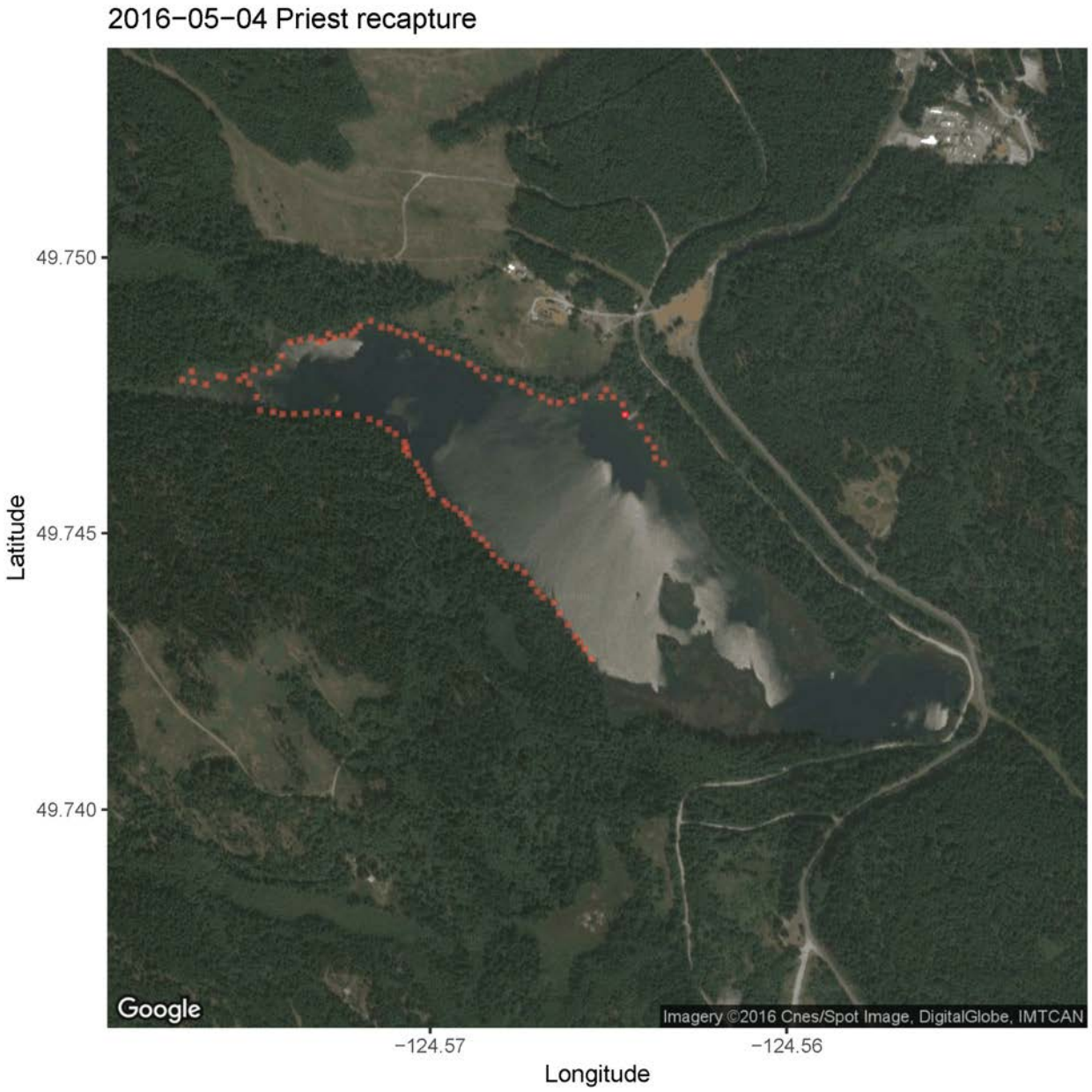

Figure S1l. Maps showing trap locations.

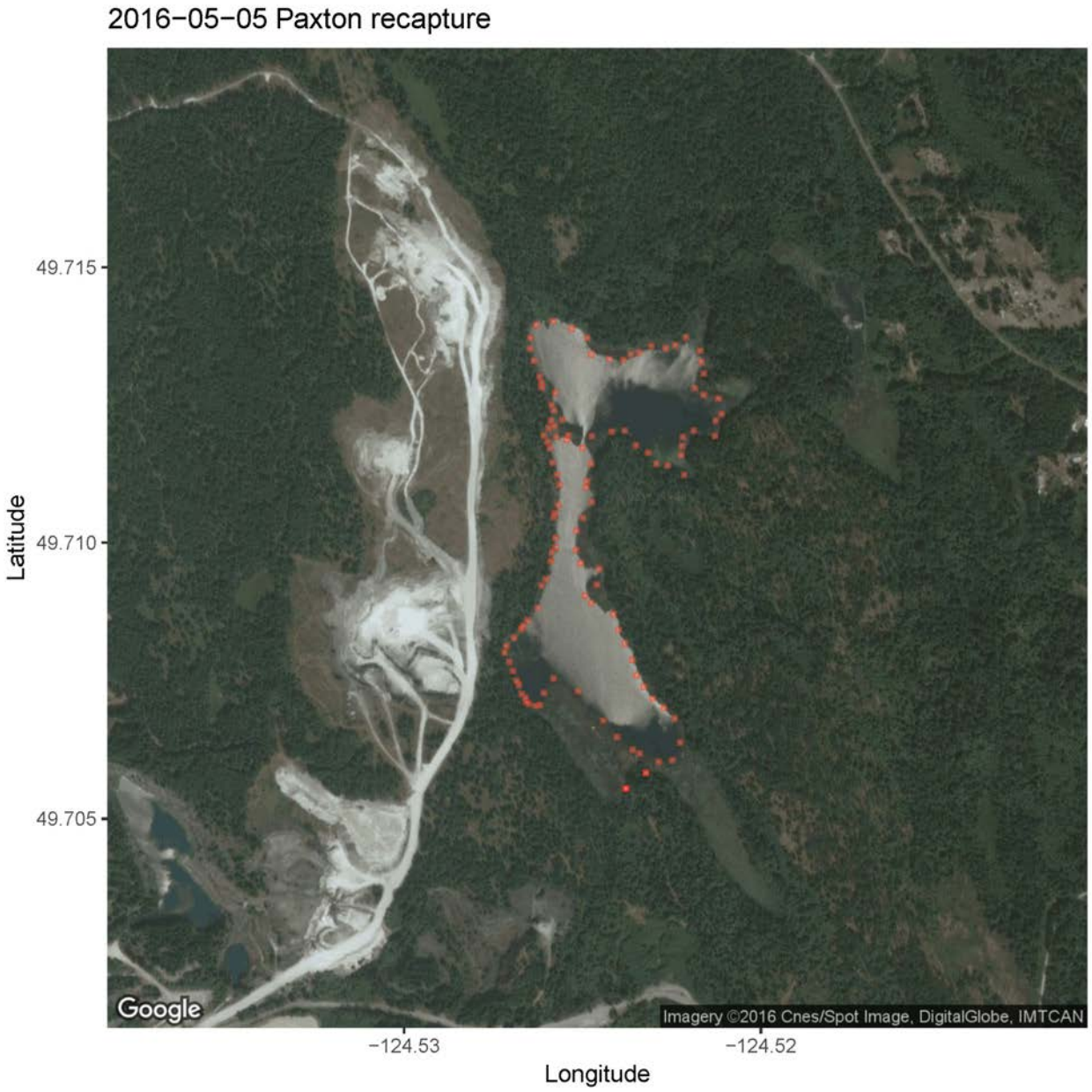

Figure S2a. Catch per unit effort – Paxton benthics during the mark session. Circle diameter is proportional to the square root of the number of individual benthics or limnetics caught per hour during the mark, “test recapture” (Paxton Lake only) and recapture sessions.

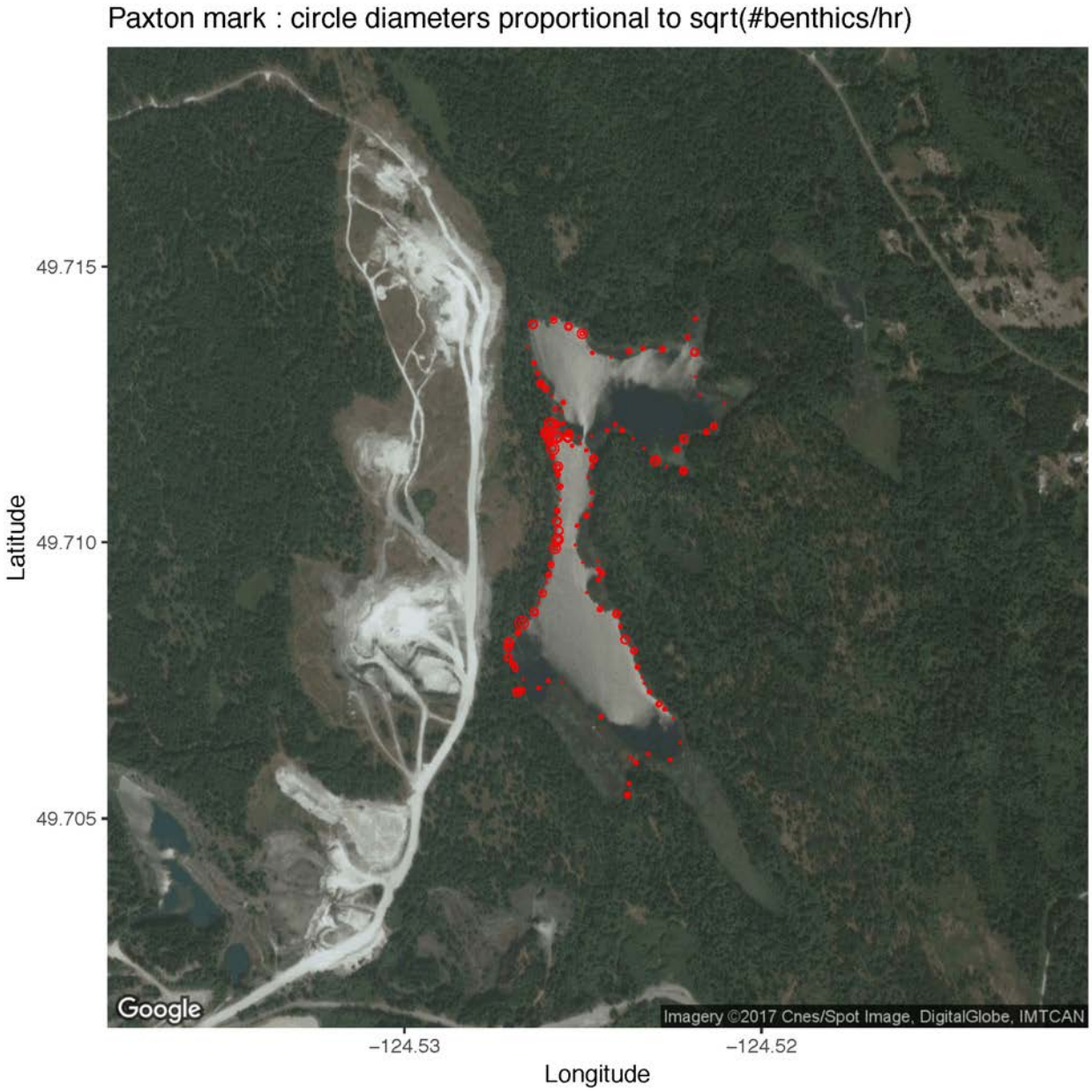

Figure S2b. Catch per unit effort – Paxton limnetics during the mark session.

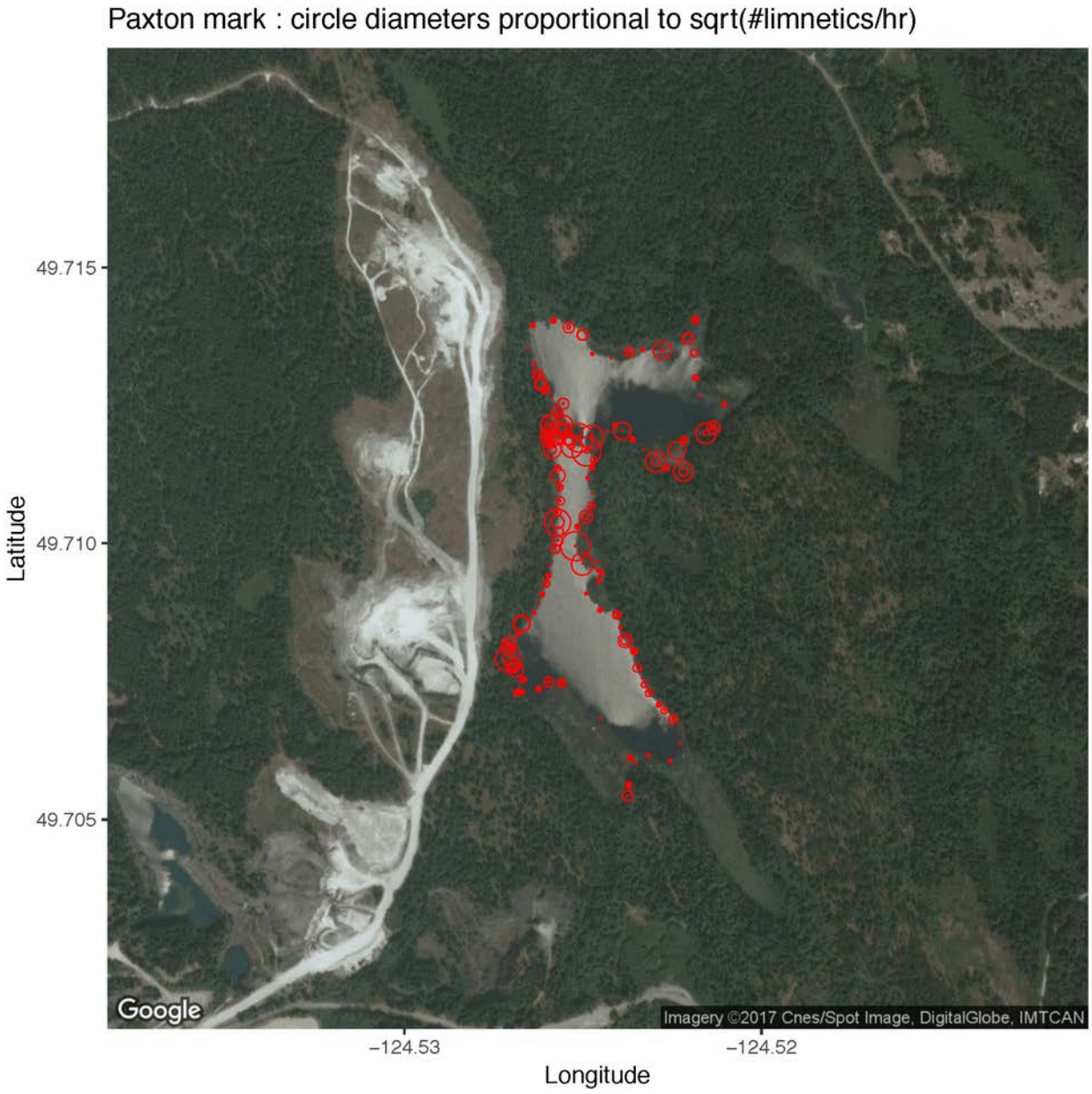

Figure S2c. Catch per unit effort – Paxton benthics during the “test recapture” session.

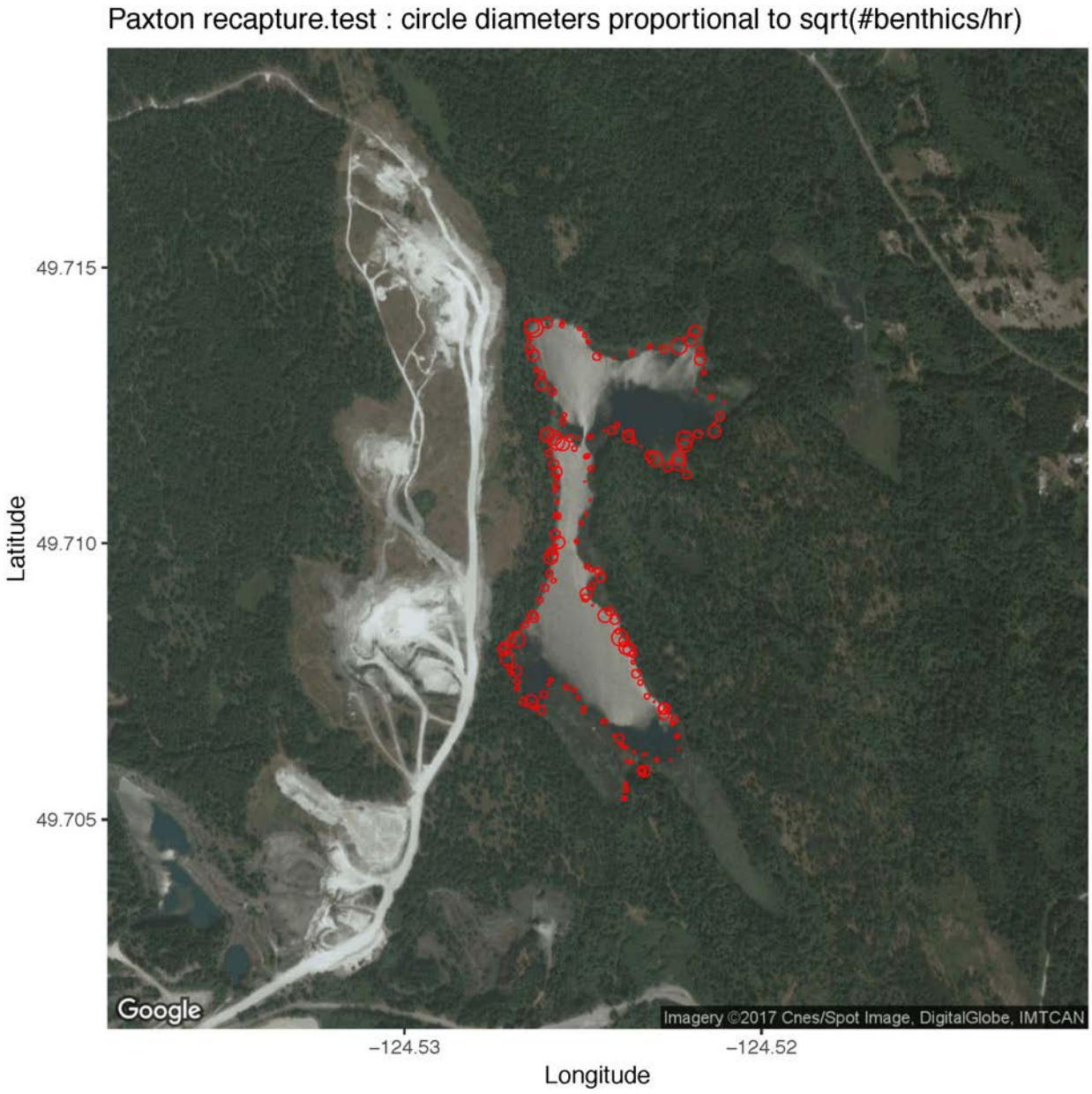

Figure S2d. Catch per unit effort – Paxton limnetics during the “test recapture” session.

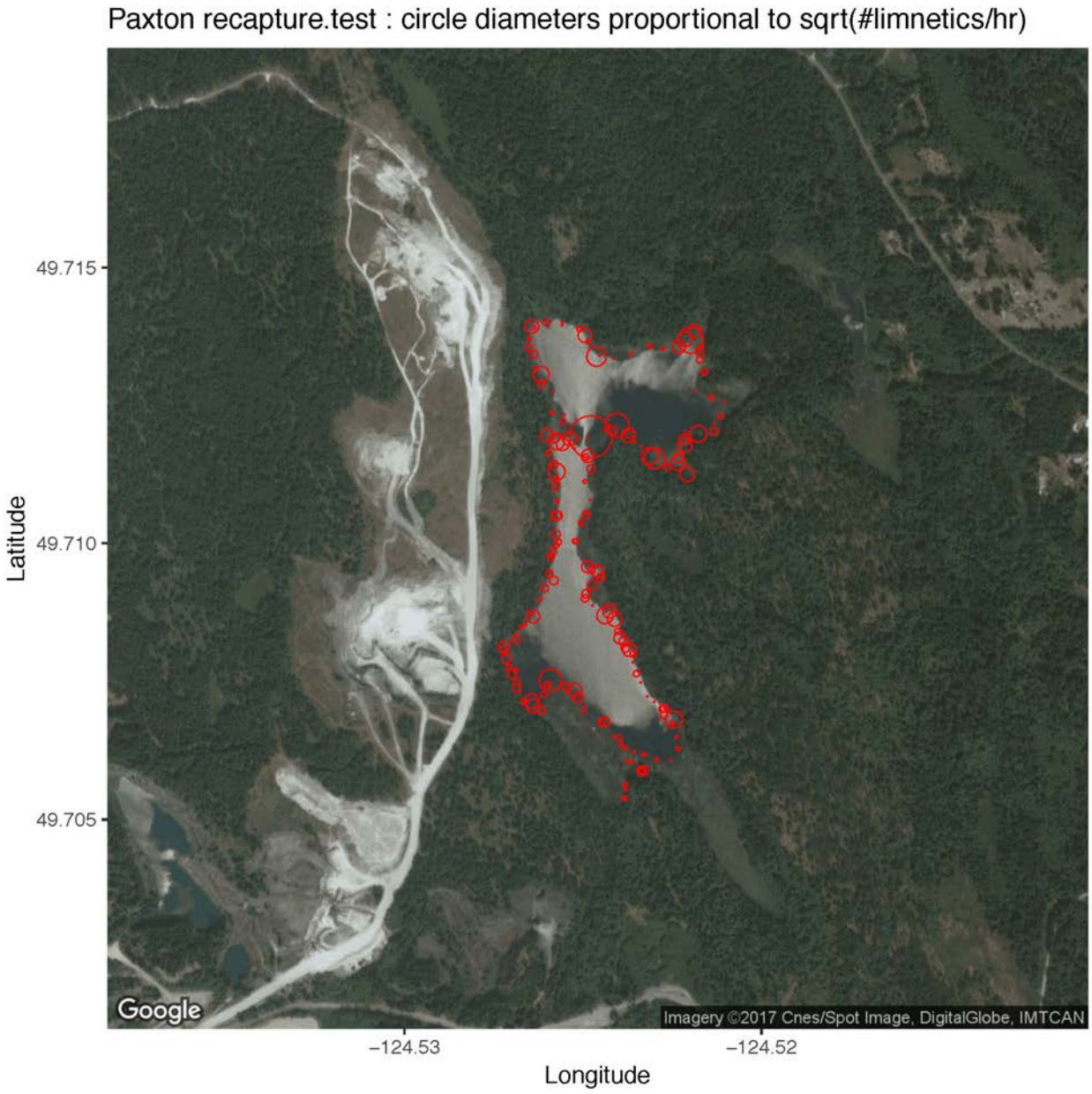

Figure S2e. Catch per unit effort – Paxton benthics during the recapture session.

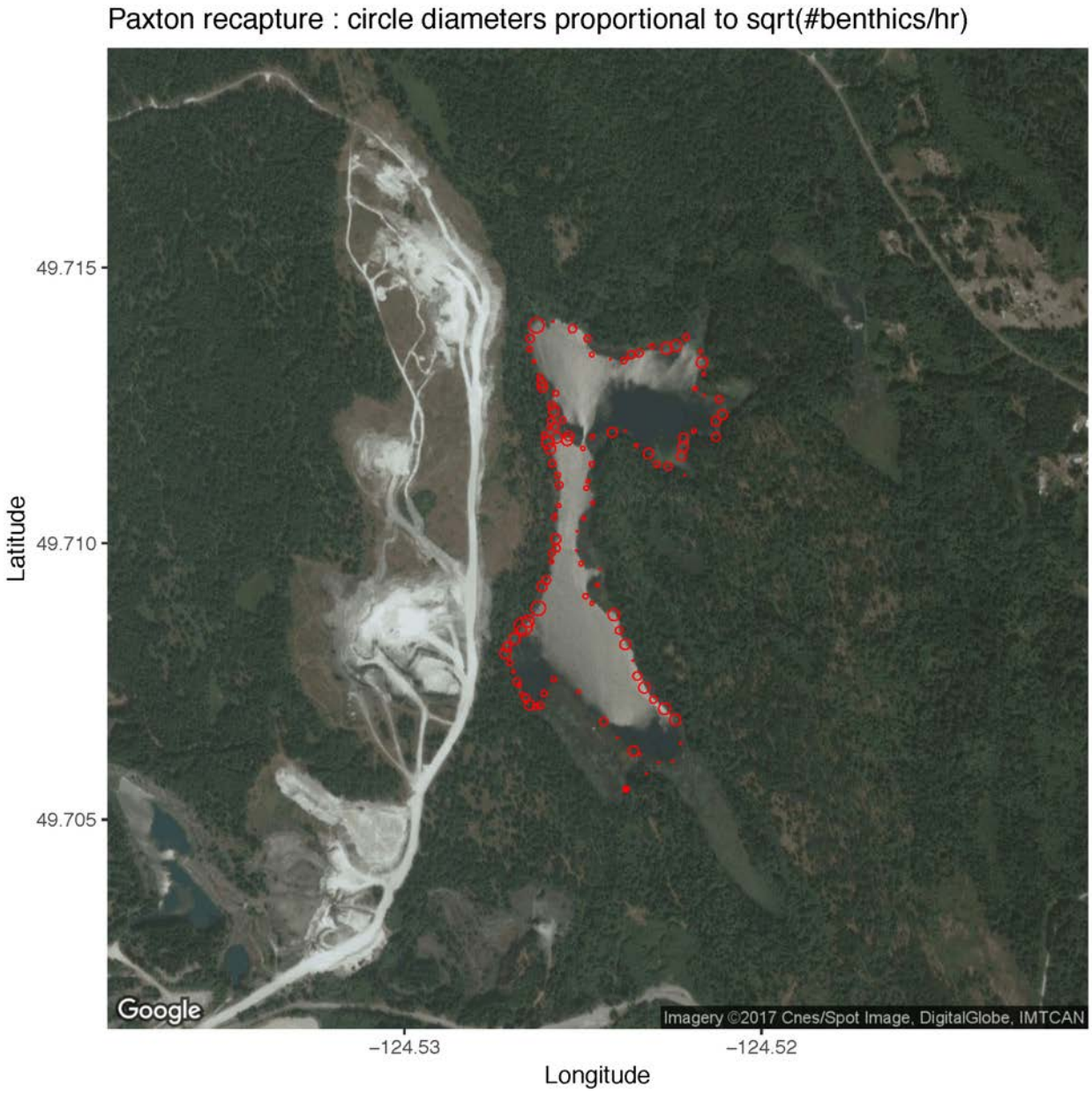

Figure S2f. Catch per unit effort – Paxton limnetics during the recapture session.

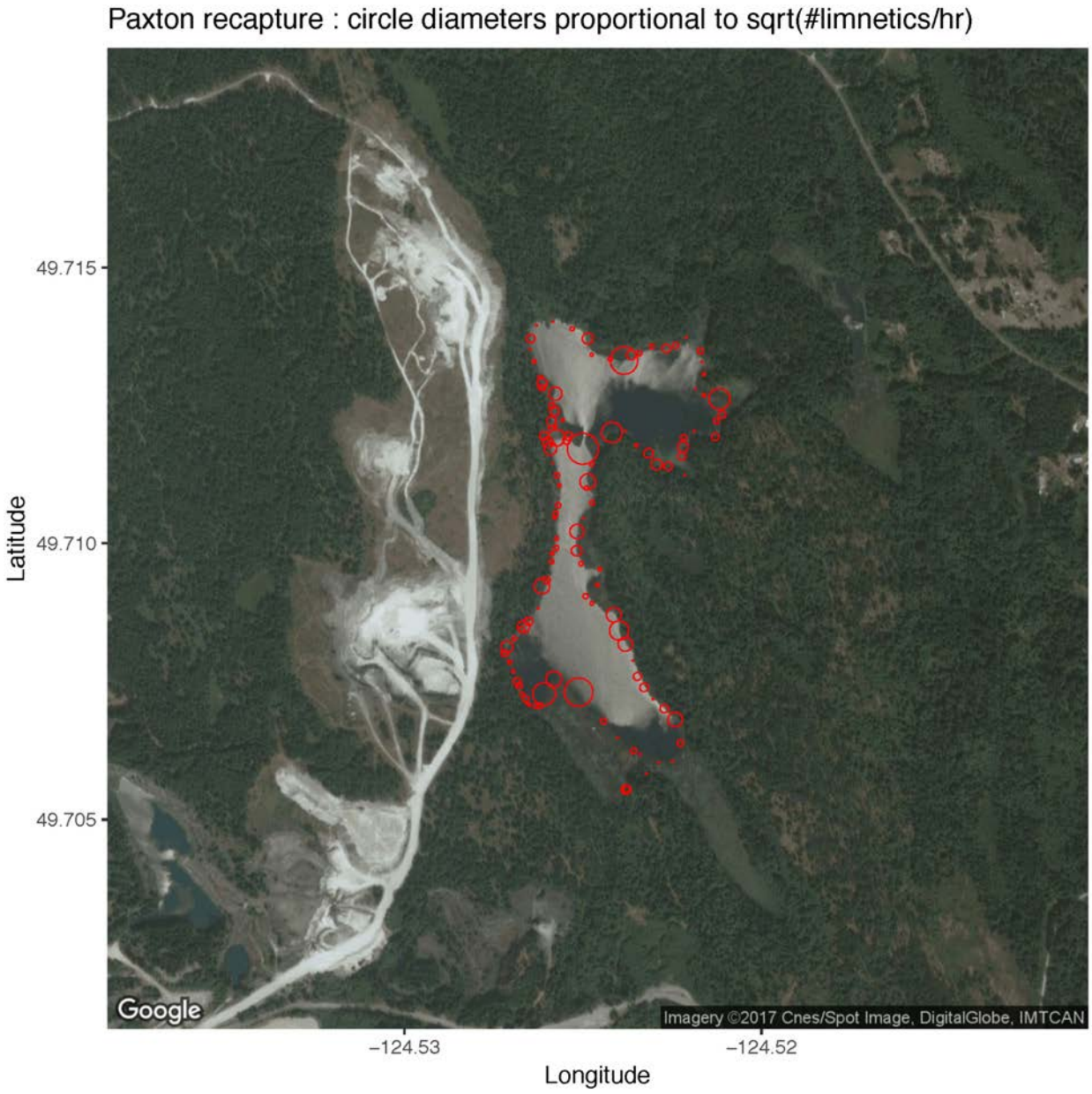

Figure S2g. Catch per unit effort – Priest benthics during the mark session.

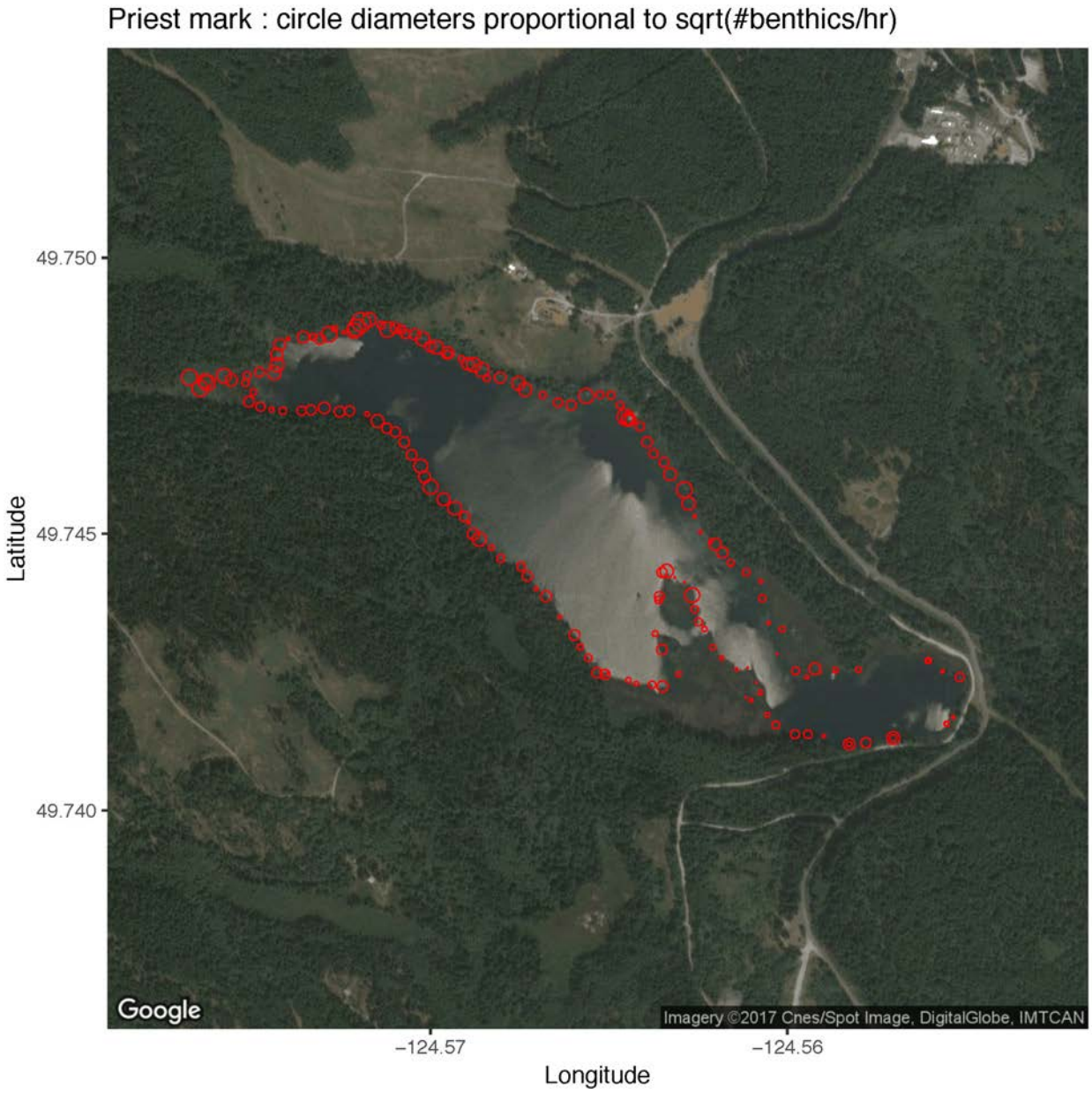

Figure S2h. Catch per unit effort – Priest limnetics during the mark session.

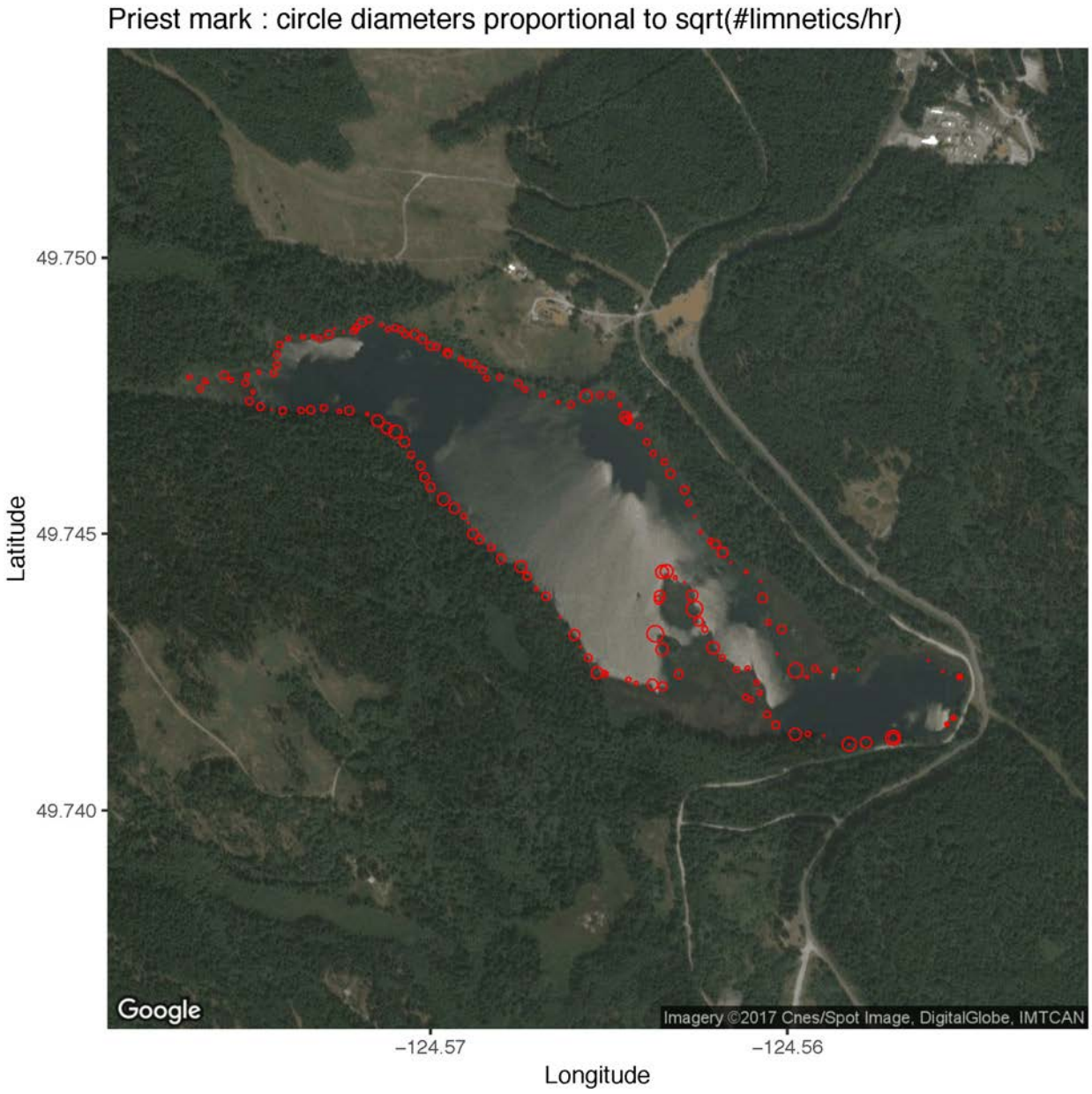

Figure S2i. Catch per unit effort – Priest benthics during the recapture session.

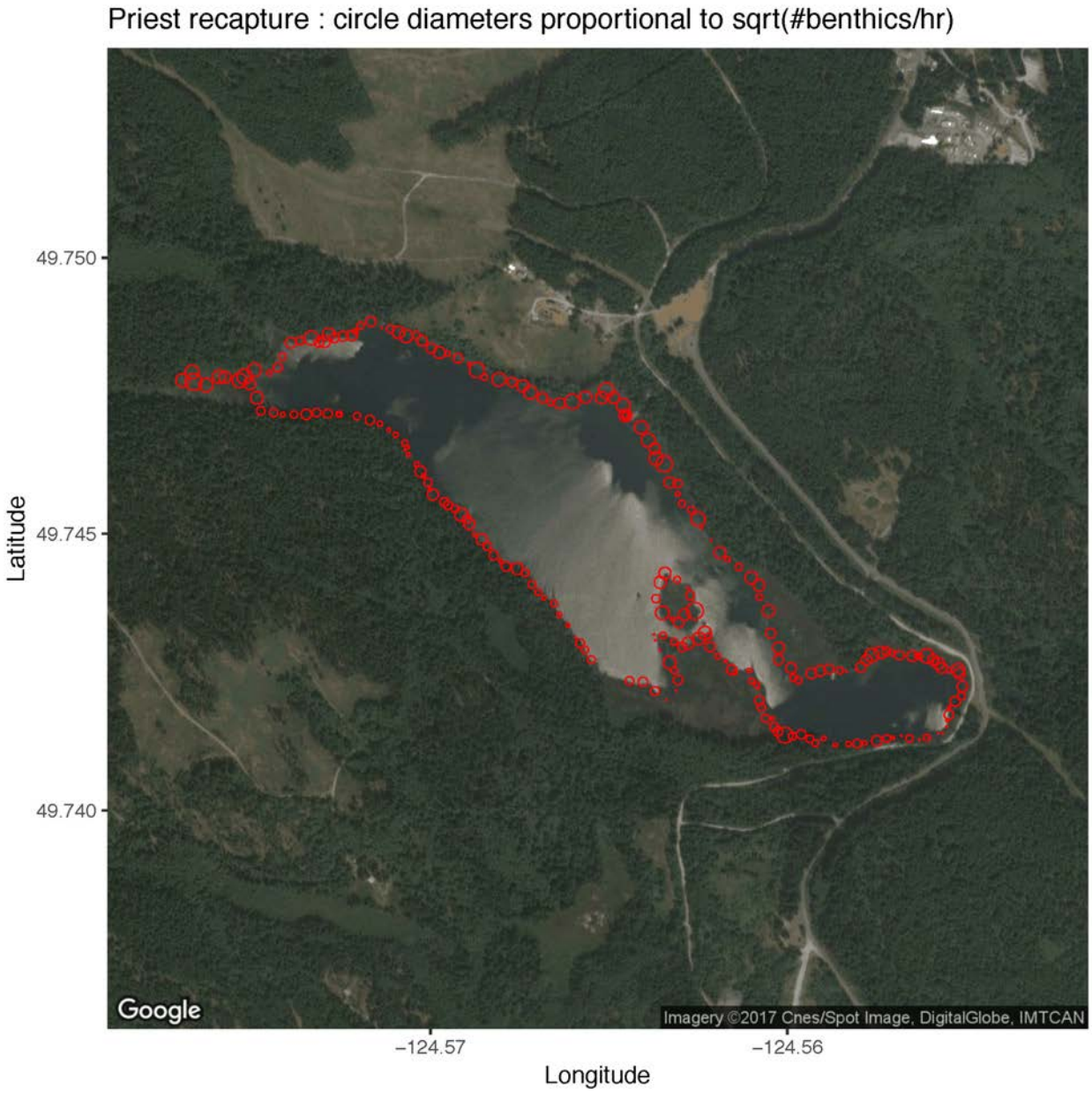

Figure S2j. Catch per unit effort – Priest limnetics during the recapture session.