

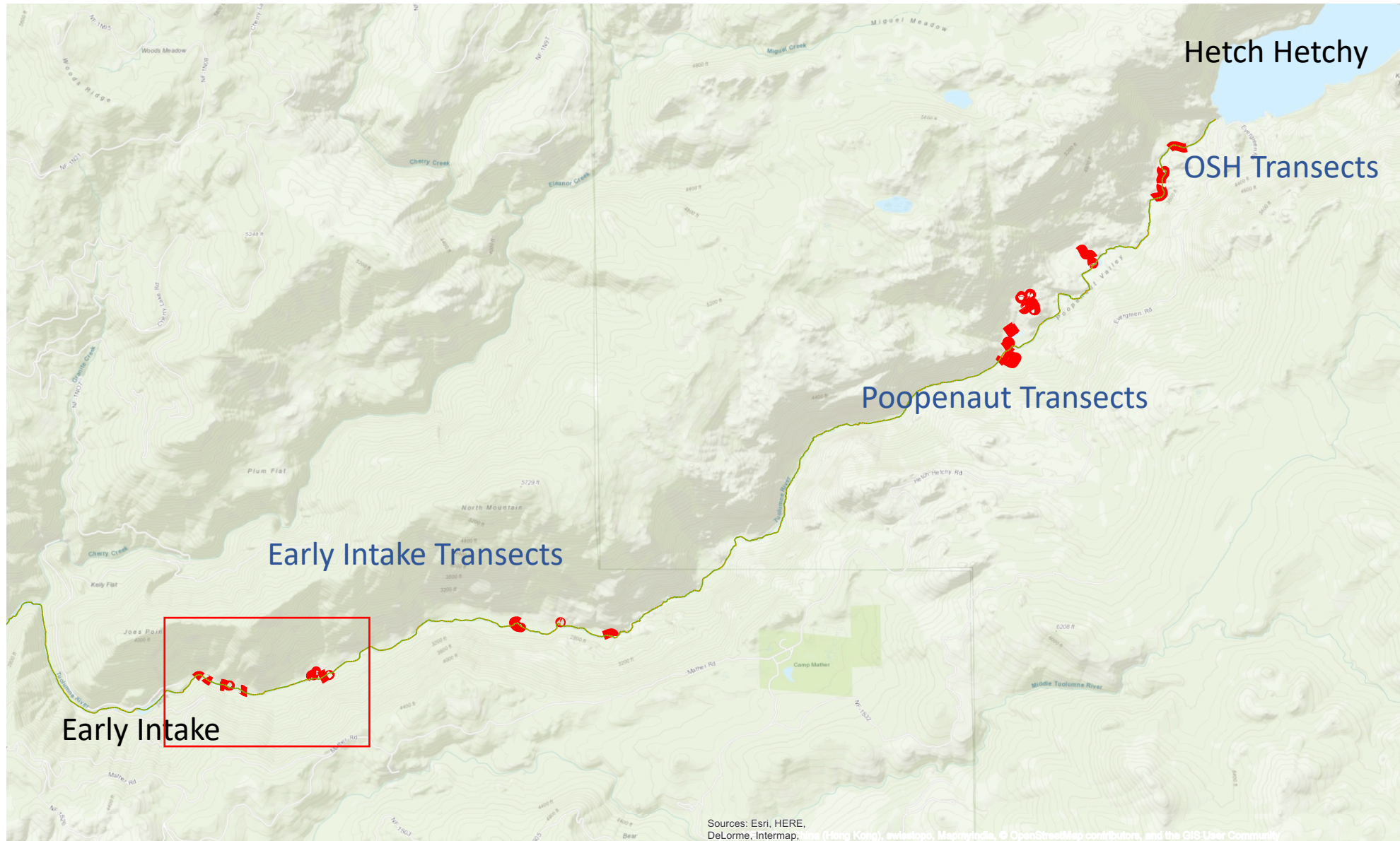
UTREP Summary of *Rana boylei* observations and conditions above Early Intake, 2008-2018



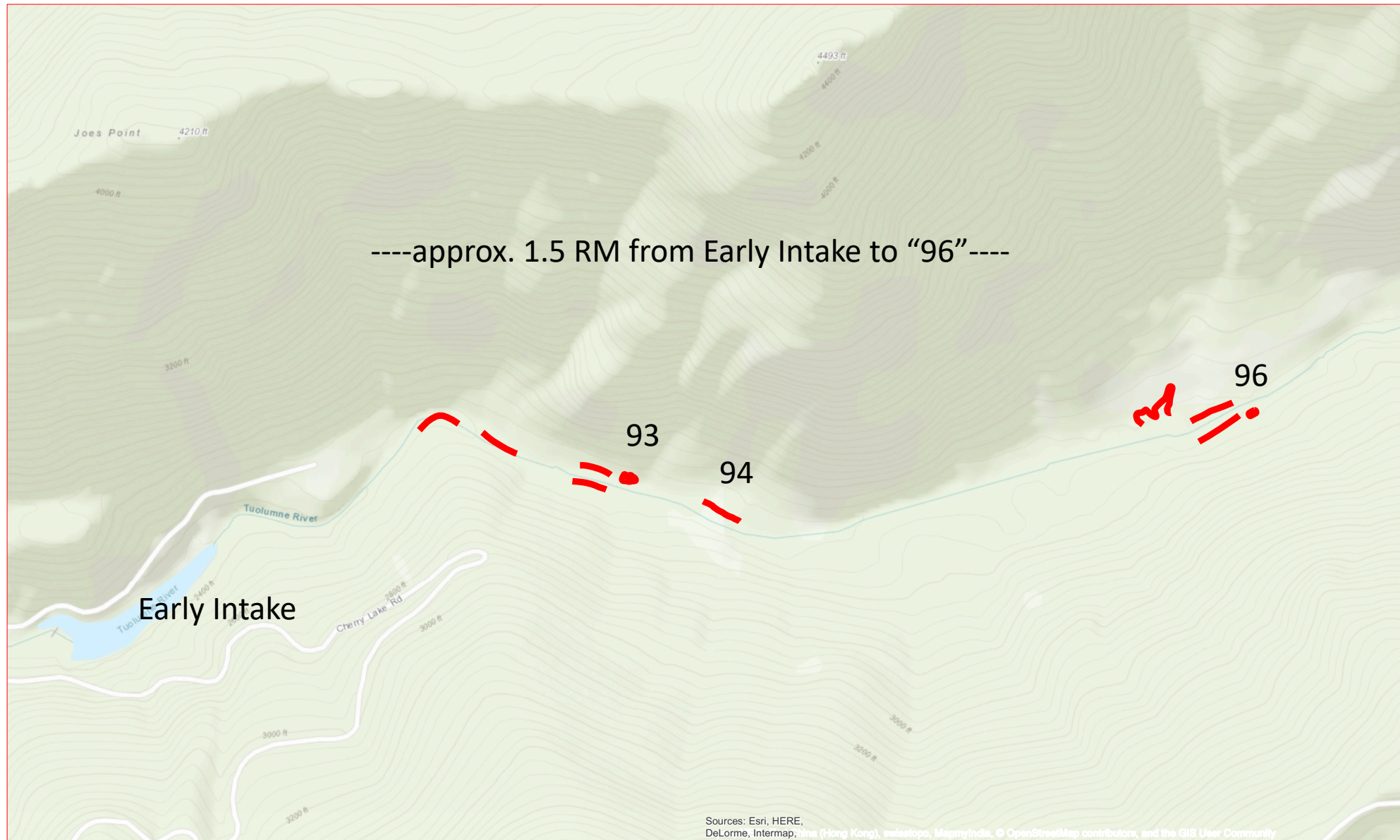
UTREP Amphibian Surveys:

- Collaborative effort to identify diversity and abundance of amphibians and reptiles from OSH downstream to Early Intake
- Focal species: *Rana boylei* (RABO, Foothill Yellow-Legged Frog or FYLF) , Sierra Newt, Bullfrog, Western Pond Turtle and Sierra Garter Snake
 - Typically Visual Encounter Surveys along established transects

Overview of All Defined Transects

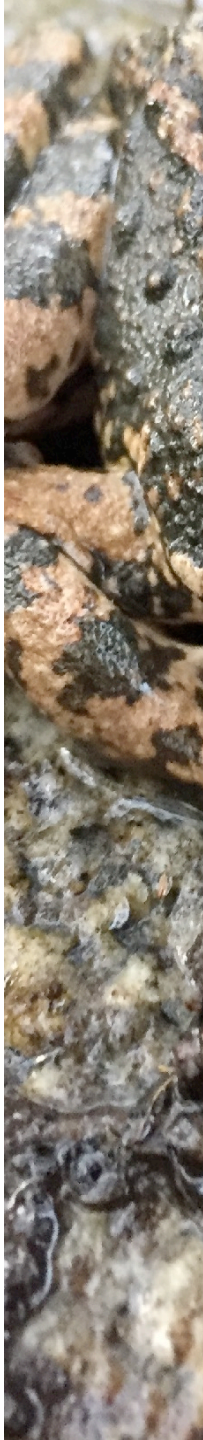


Early Intake UTREP Transects 92-96 (map pages)

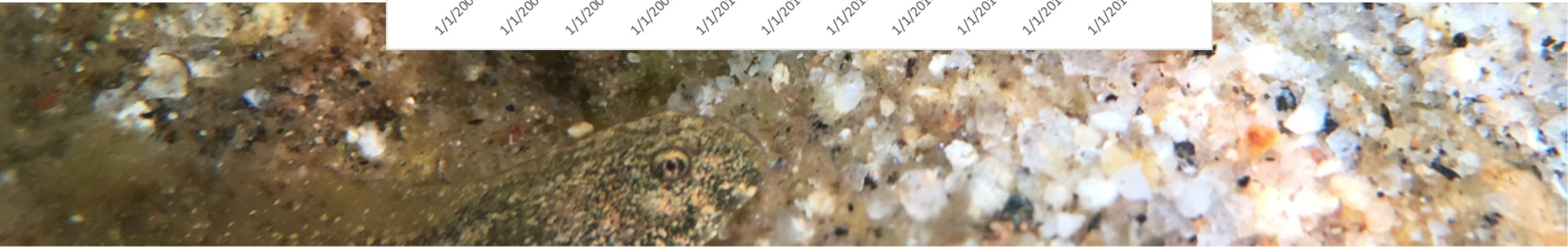
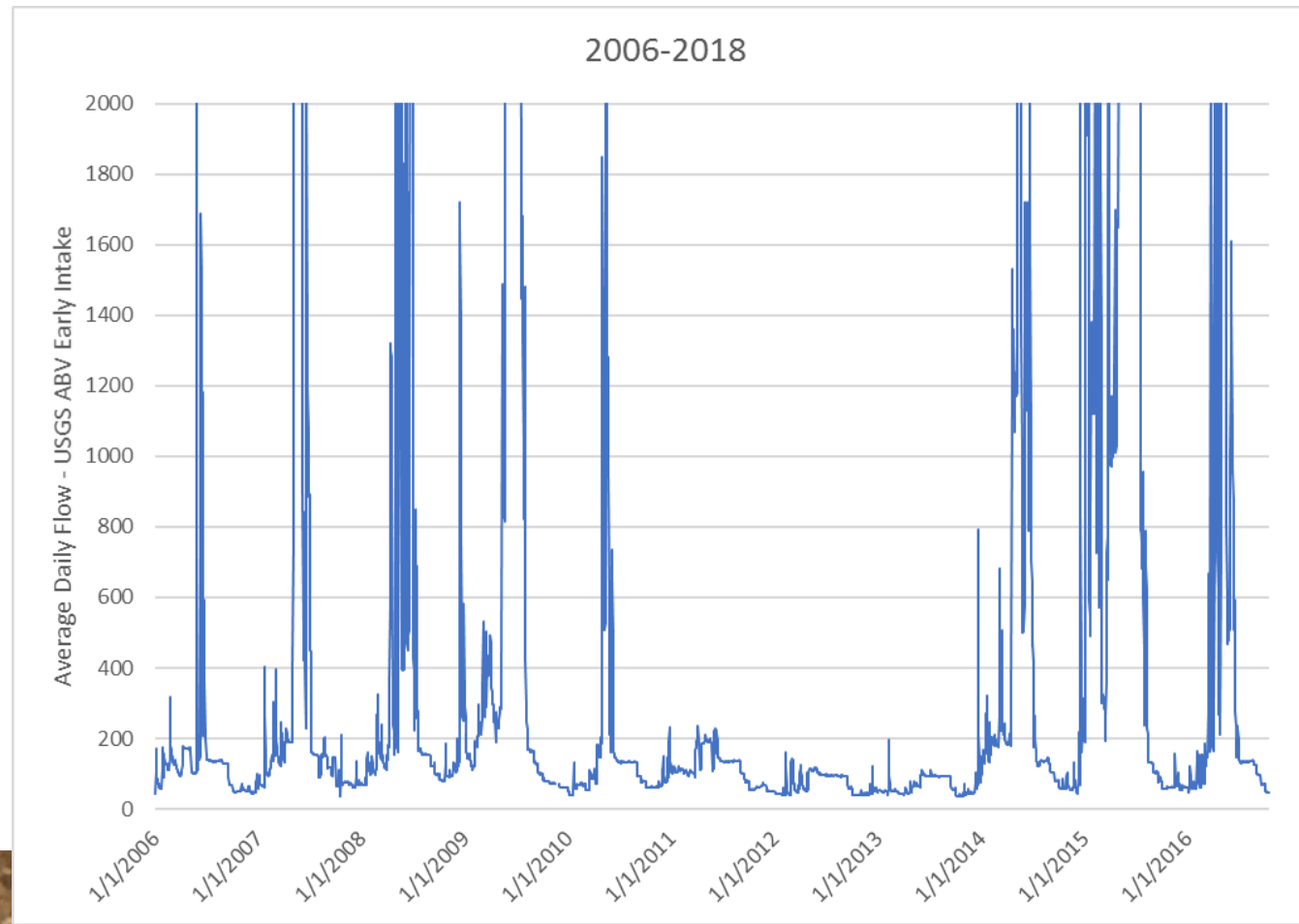


RABO Observations Near Early Intake (\approx 300 individual transects)

YEAR	# of Surveys	RABO observed
2008	1	Subadult
2009	3	0
2010	3	Larvae
2011	2	0
2012	3	Larvae
2013	3	Adult
2014	4	0
2015	6	0
2016	4	*Subadult
2017	3	Adult
2018	5	*Adult, Eggs --> Subadults
		*observation at intermittent tributary

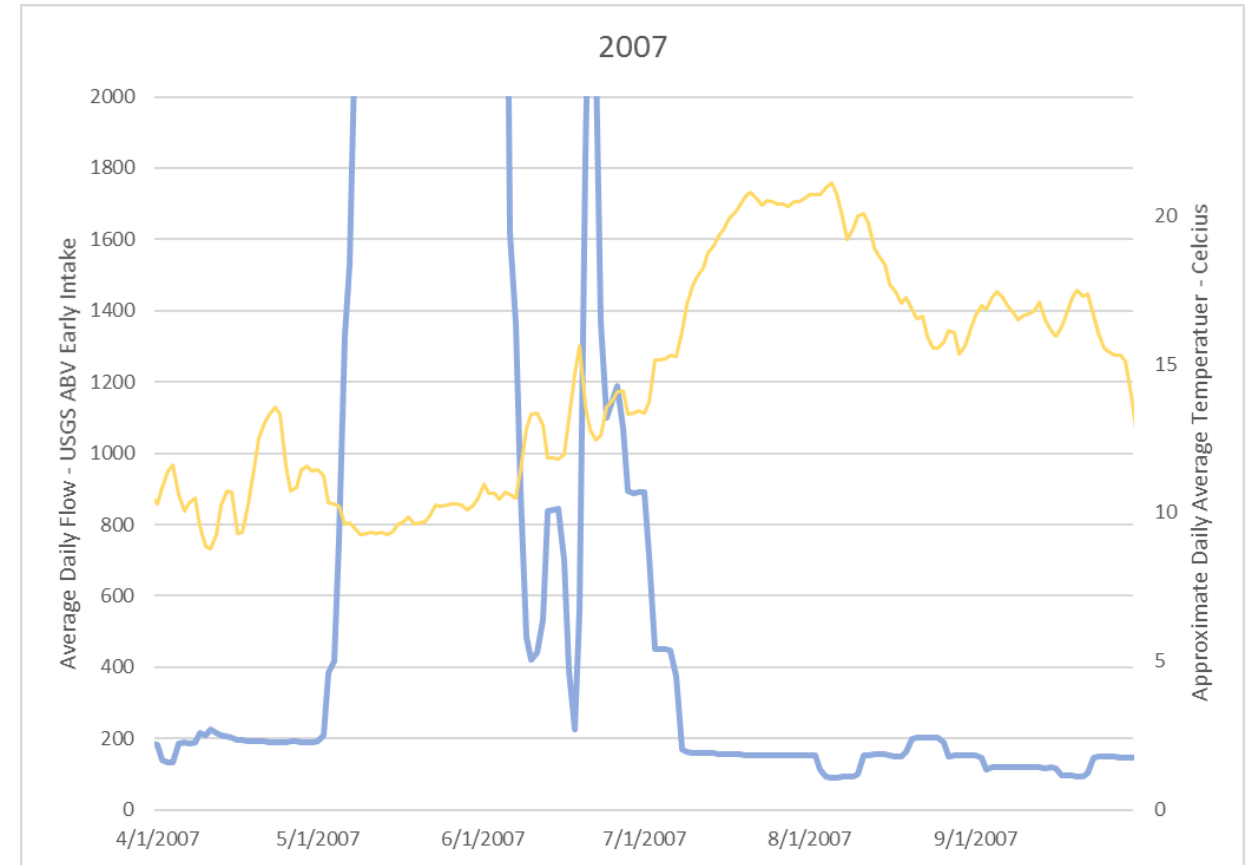


Spring pulses in most years with 3-yr drought



Pre-survey Conditions, 2006 and 2007

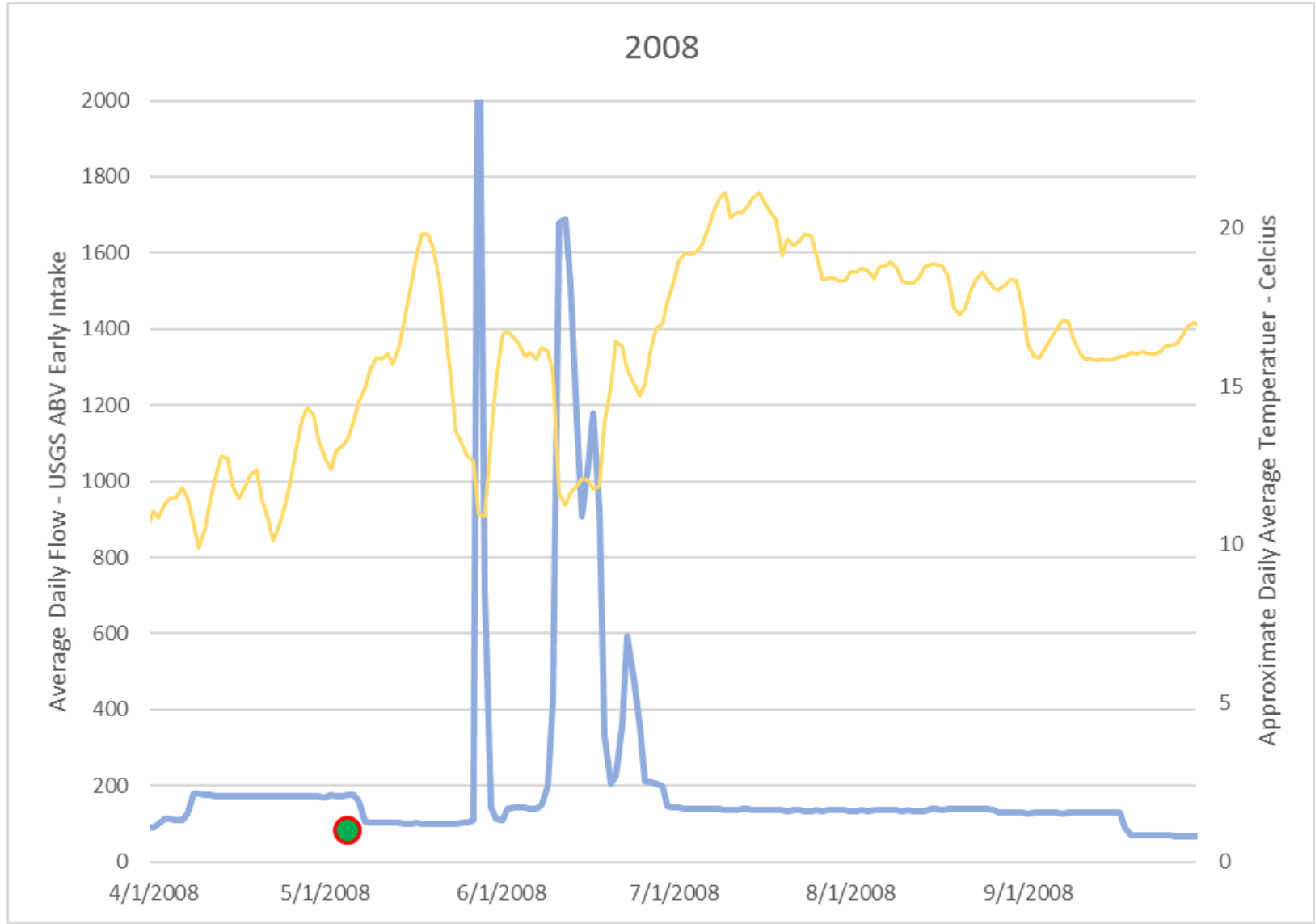
2008 Subadult suggests successful breeding in 2006 and/or 2007



April 1st – September 30th

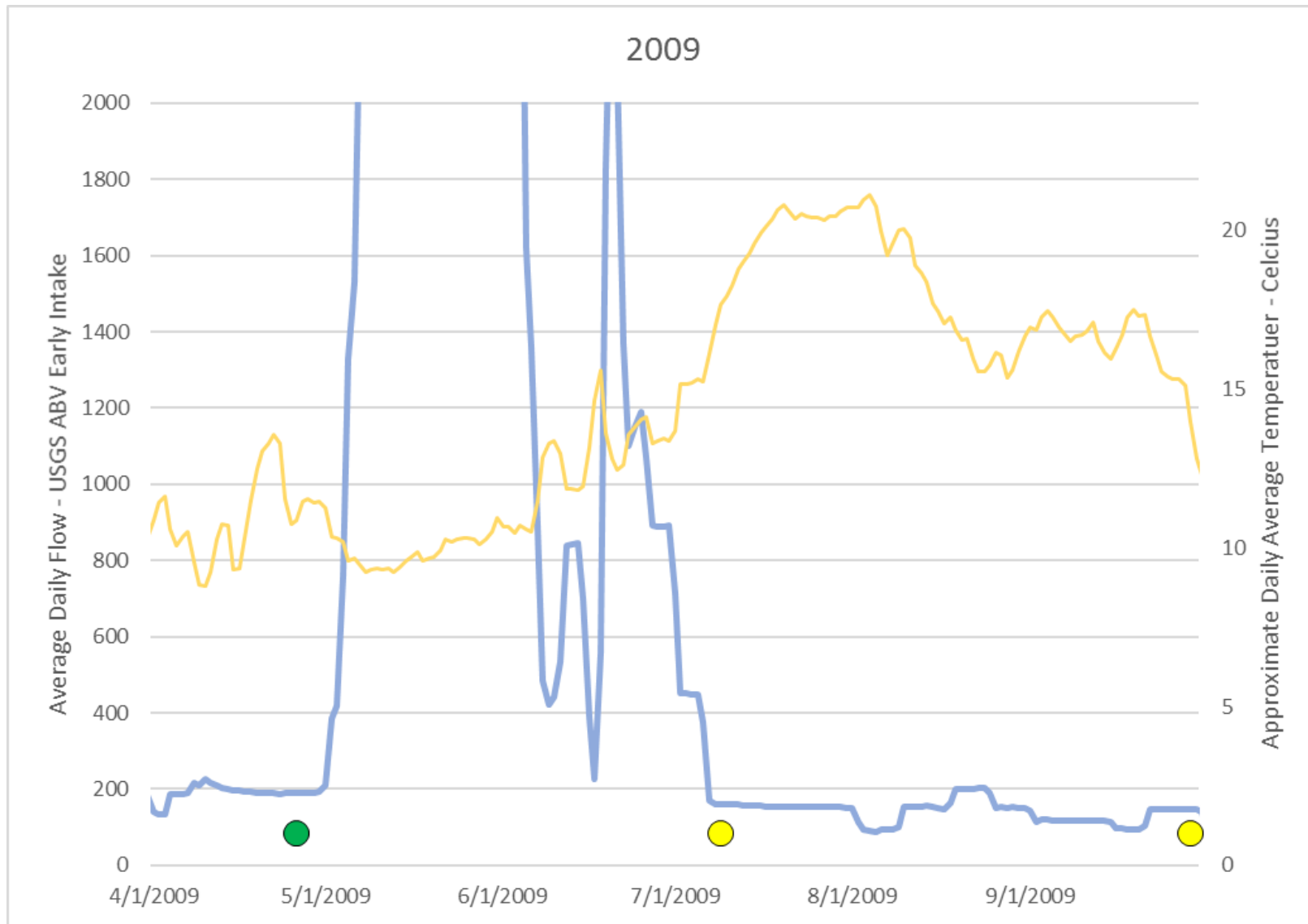
Axis fixed at 2,000 cfs (daily avg at Early Intake gage)

Approximate average daily temperatures at gage.

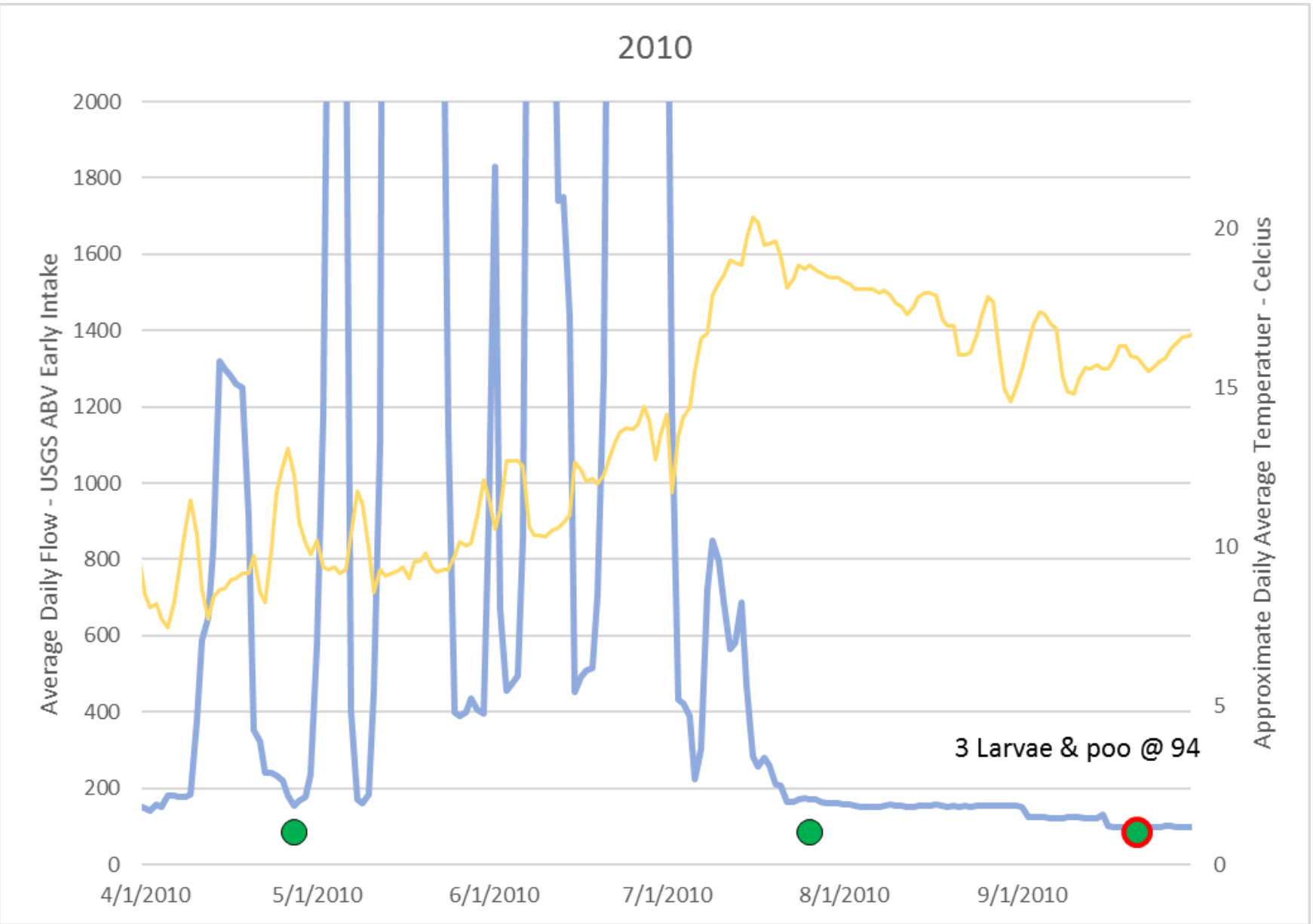


1 “good”
survey:

1 subadult @
93 following
two
“normal”
years



3 surveys but sub-optimal conditions and/or did not complete all transects (i.e. maybe missed stuff)



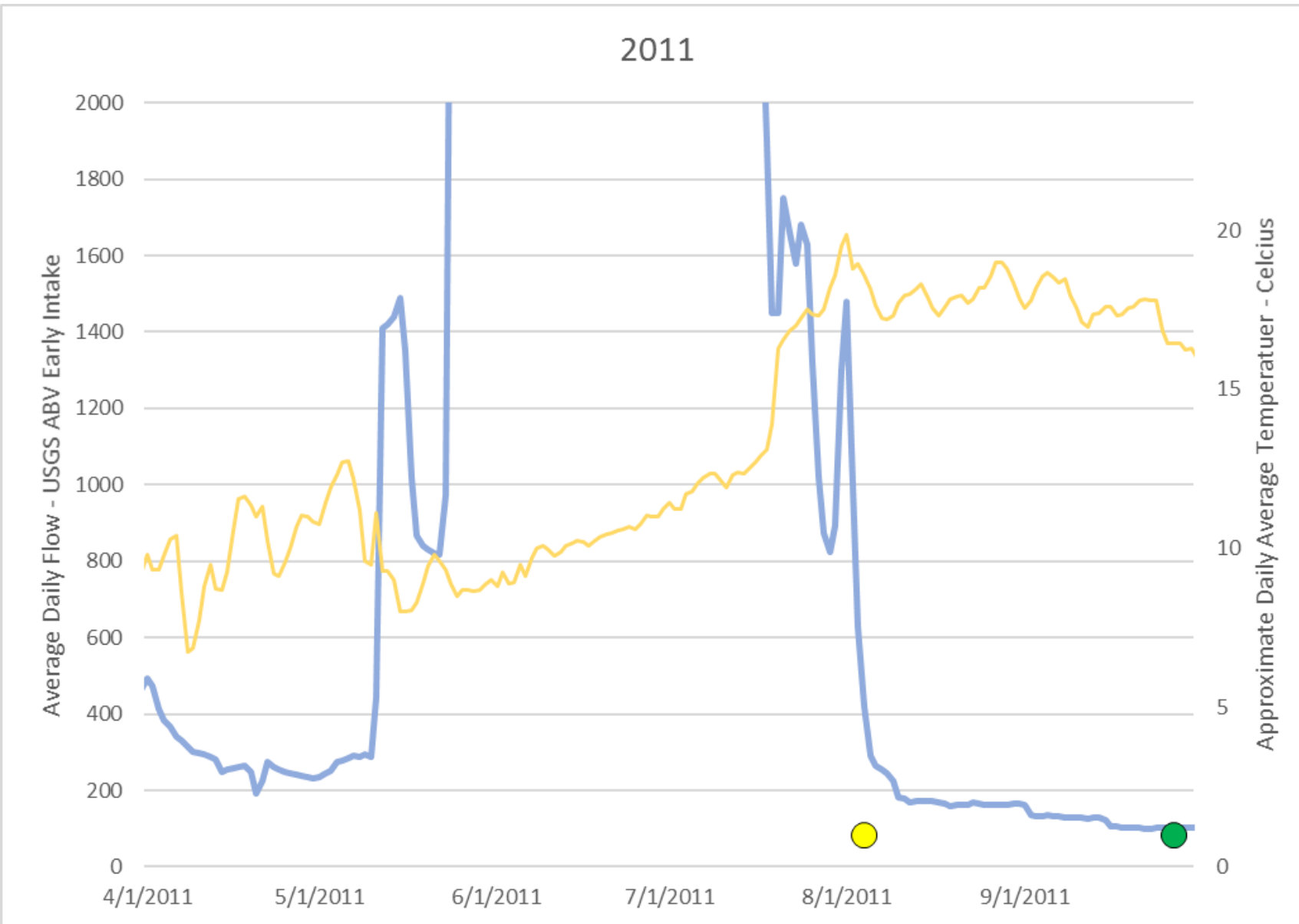
Lots of pulses continuing into July

3 good surveys:

Breeding! Near 94

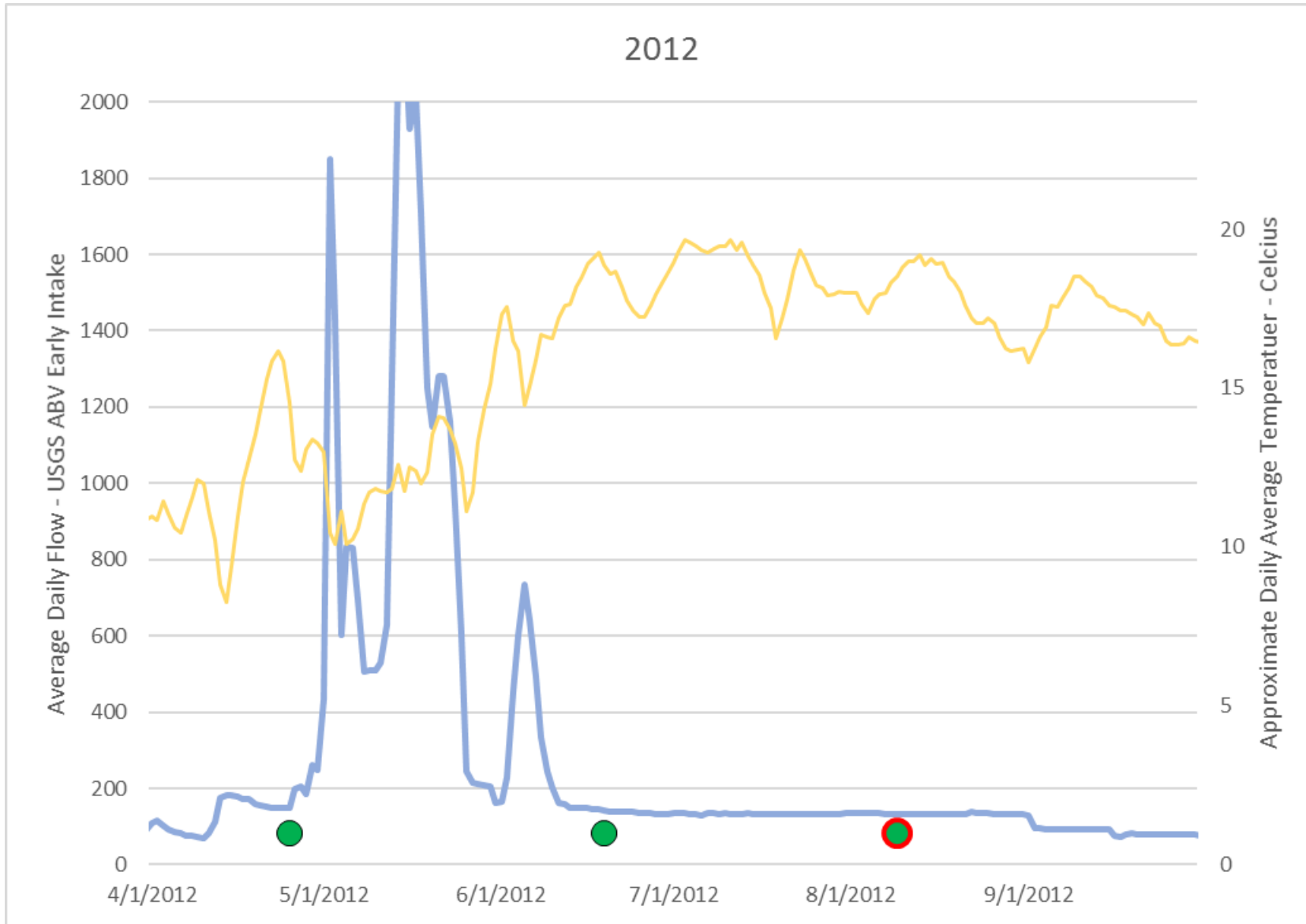
9/21/2010





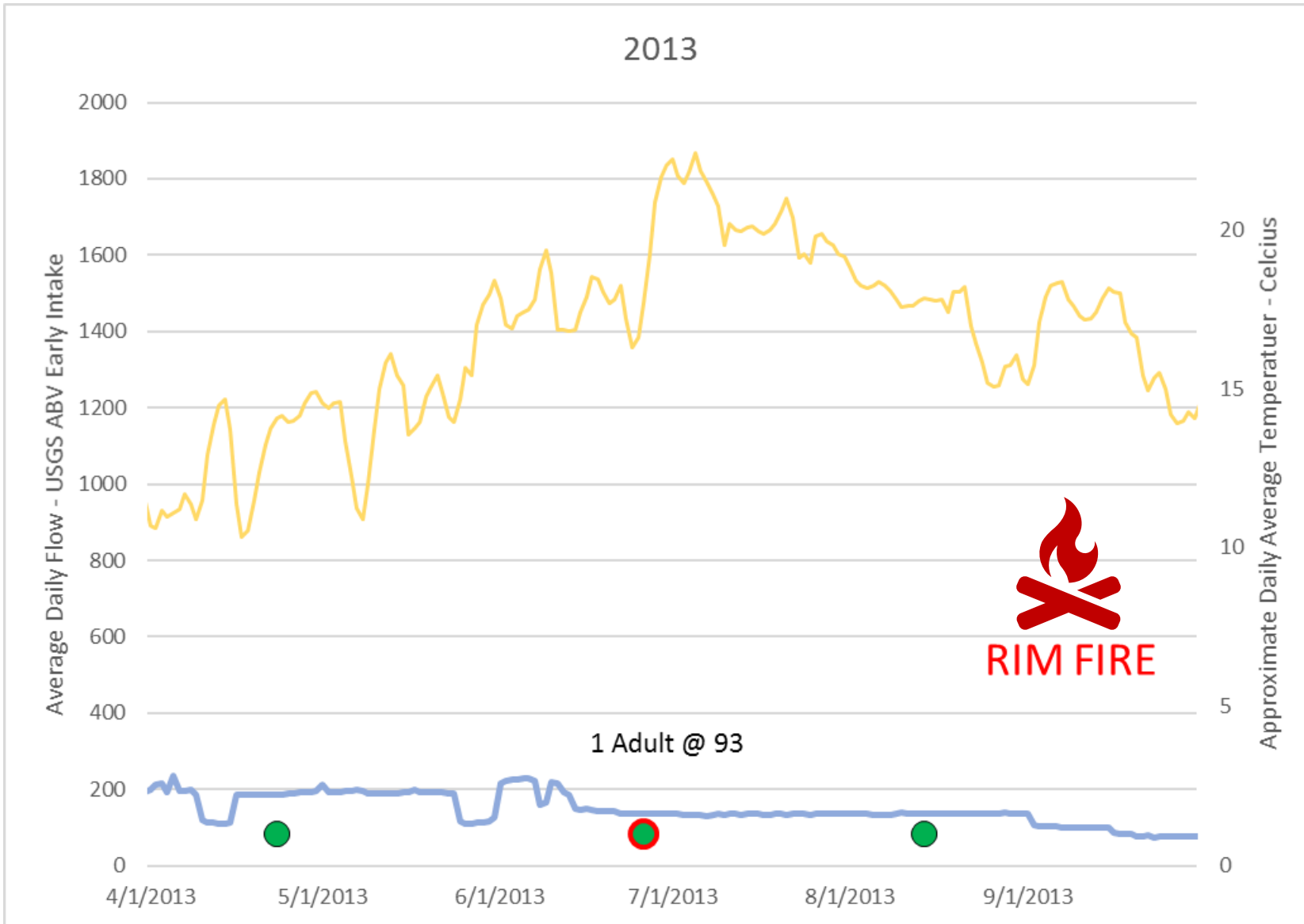
2 surveys:

Big, late
flows likely
preclude
breeding



3 good
surveys:

Breeding!
Larvae at
96

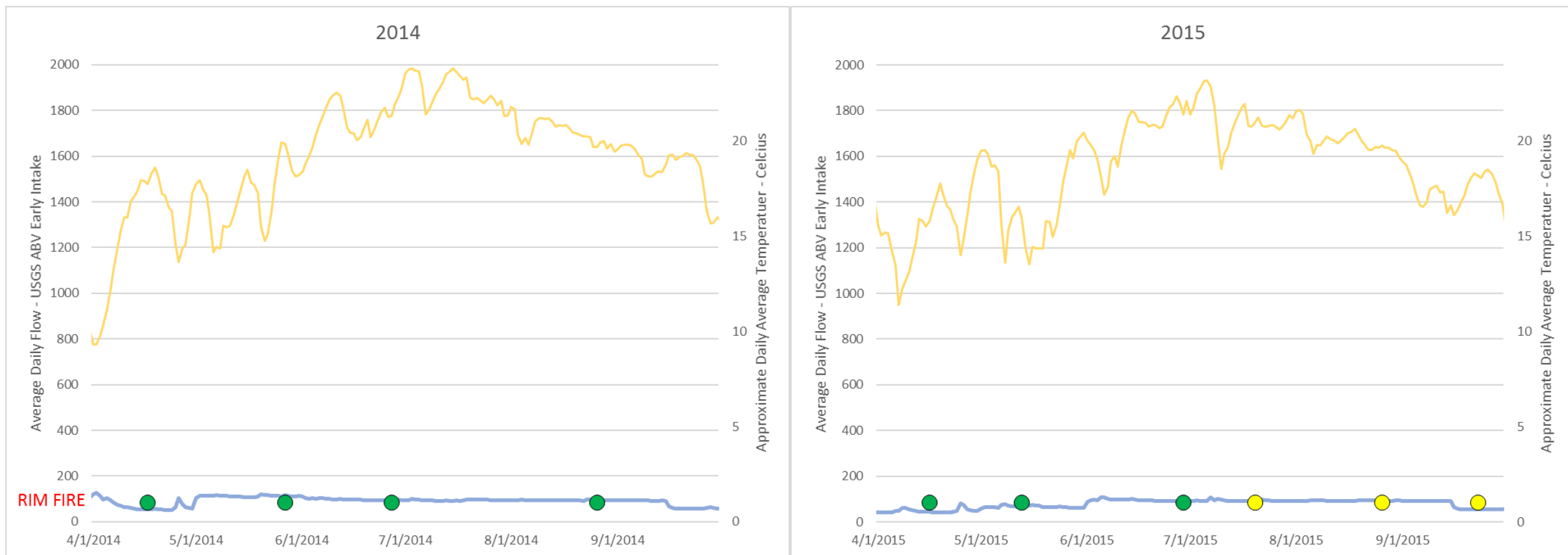


3 good surveys:

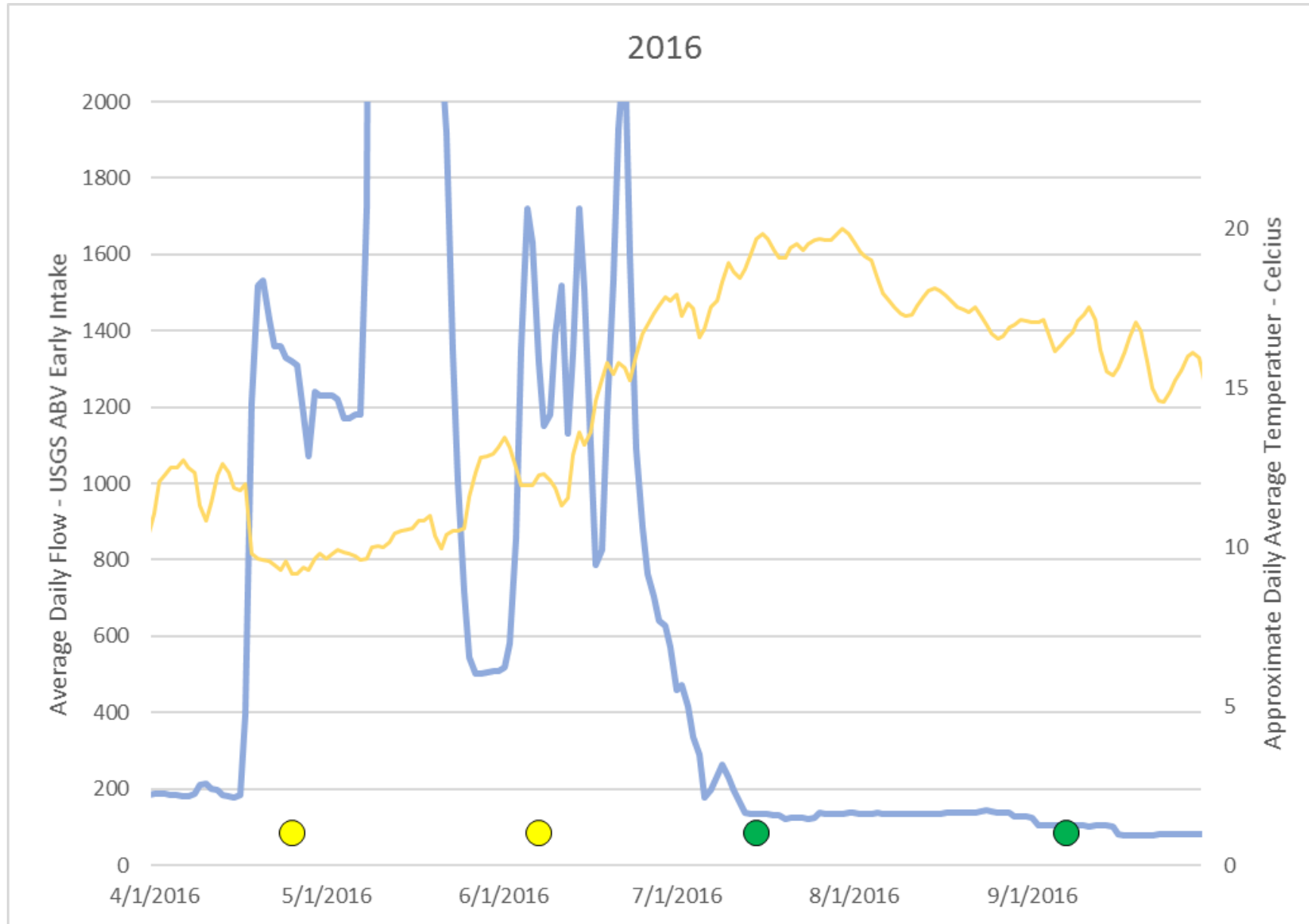
1 Adult observed at 93

6/26/2013





No RABO in 2014 (4 surveys) or 2015 (6 surveys)
 Post Rim Fire direct and indirect affects.

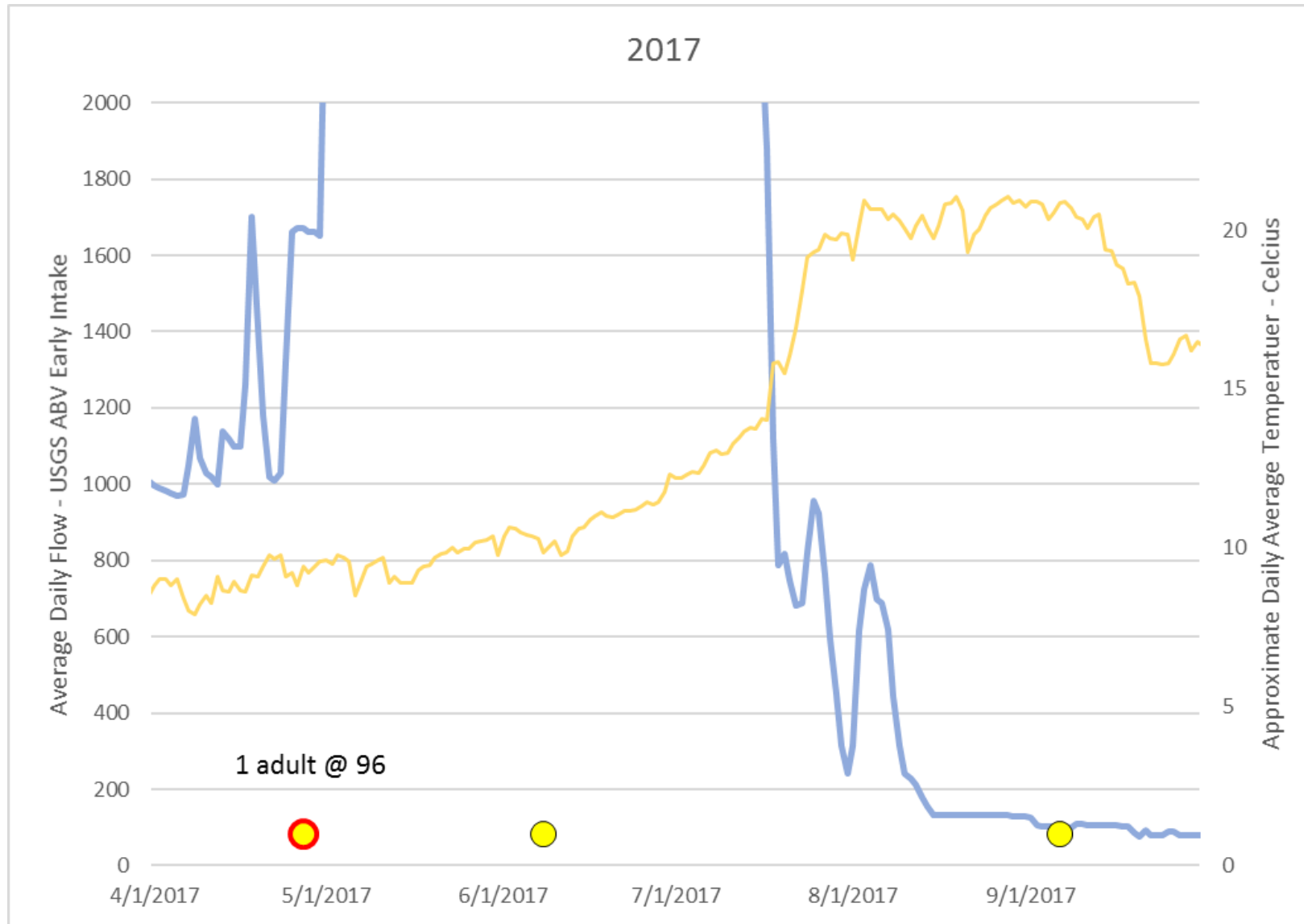


4 surveys:

1 subadult
observed
(incidental)
at 96 trib
on 3/26;
implies
recent
breeding

3/26/2016: Bob Asquith @ 96 (Albino Rock) Trib – Incidental





Water!

3 sub-optimal surveys:

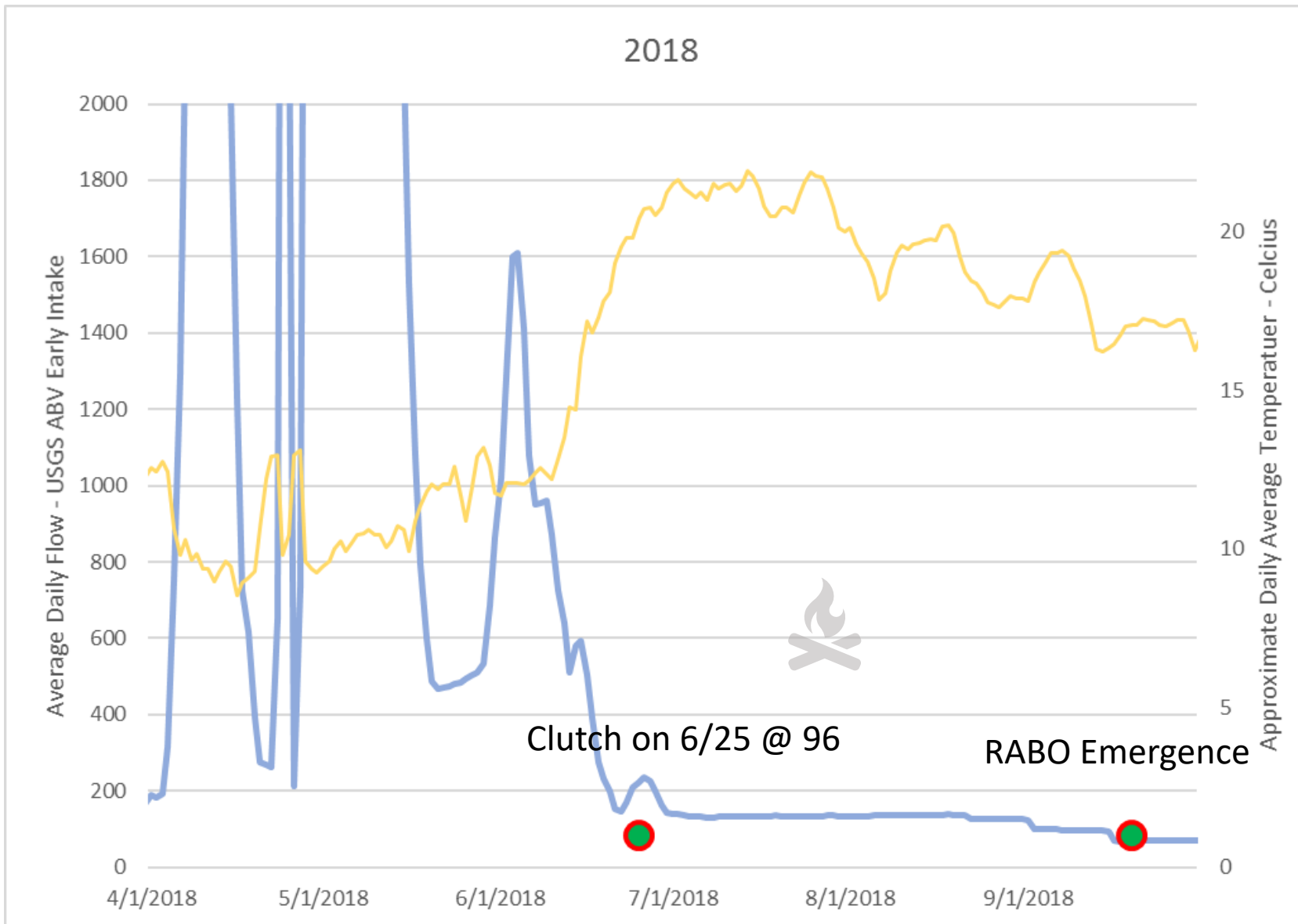
1 adult observed @ 96 (no pic!!?)

January 31,
2018:

Gorgeous
camouflaged
adult
observed at
96-Trib







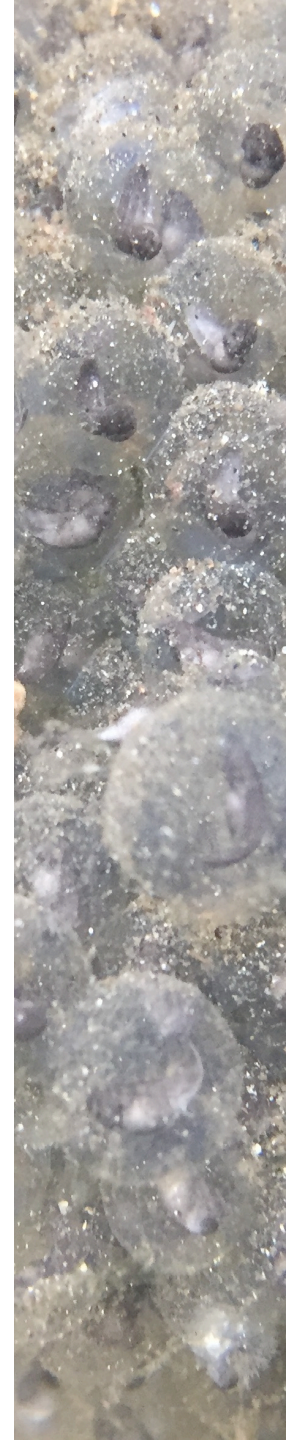
Lots more snorkeling; Ferguson Fire etc.

Multiple partial surveys:

1 clutch and subsequent tads/meta-morphs/sub-adults!



EGGS





6/25/2018

Flow @ 225cfs

(Flow variable from 150-275cfs from
6/18 to 6/29)



6/28/2018

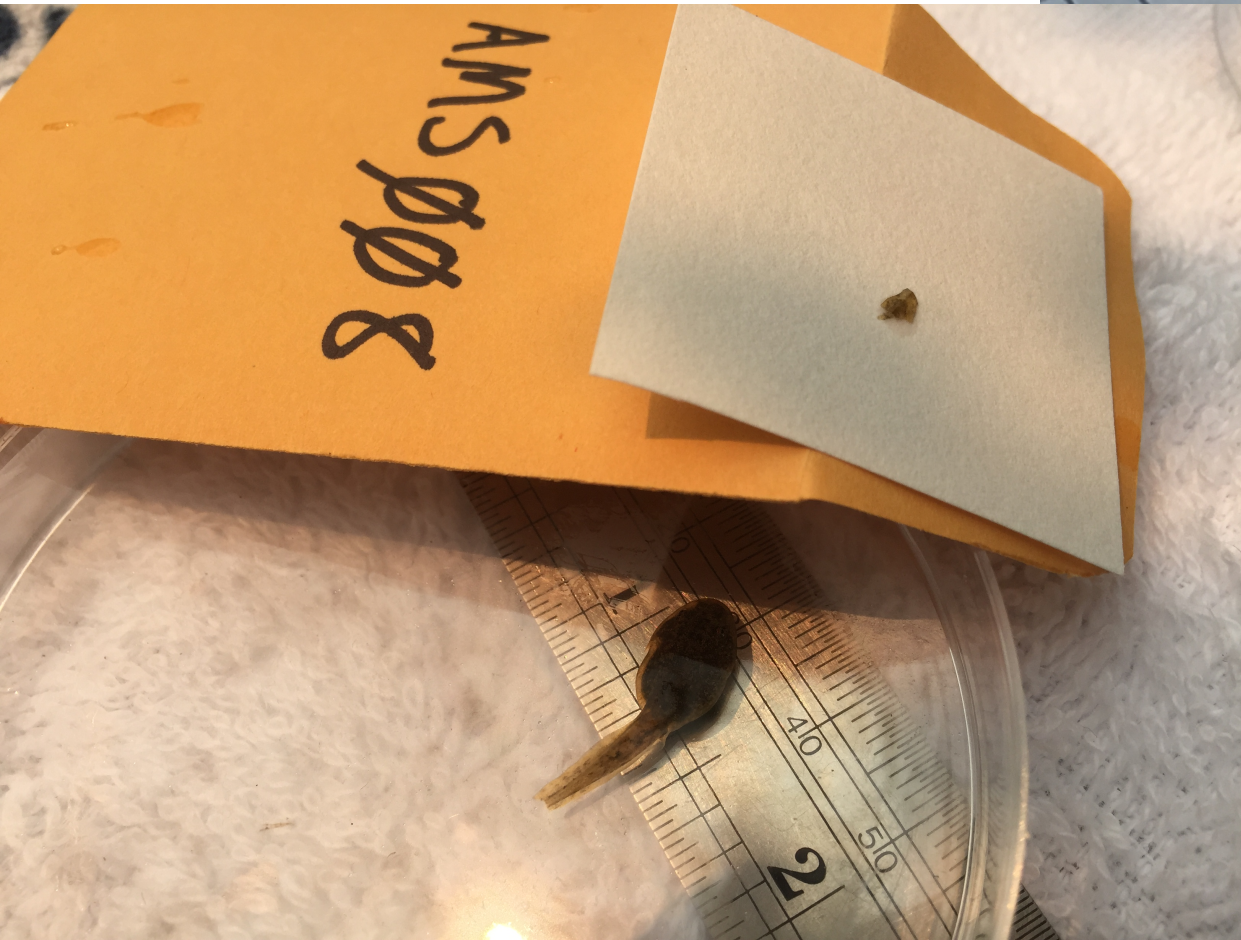


7/17/2018

Lots of tads
within 10m of egg
site



DNA sampling
(tadpole tailclips)



9/19/2018

Numerous recent metamorphs/
sub-adults on
different dates.
Approximately
two months after
oviposition.



9/19/2018 Panorama of Clutch Site (viewer left). Flow approximately 70 cfs







Take-aways

- Not many frogs! Yes, they are hard to find and we have clearly “missed” some, but the frequency and targeting of surveys likely captures a significant, although unknown, amount of the activity.
- There appears to be a resolute, albeit small population in that 1-mile reach above EI with little observed variability in the last 12 years of drought, fire, and variable releases and timing.
- Snorkeling is effective for tadpole and fecal observations, especially in July and early August. April surveys have been relatively effective.
- More breeding than it “seemed”:
 - Confirmed larvae (breeding) in 2010, 2012, and 2018
 - Based on sub-adult observations; there was likely breeding in 2007 and 2015
 - In these years, the last high flow event of the spring ranged from late May through early July (esp 2010).



Thank-aways

- William Sears, Mike Horvath, Travis Espinoza, Andie Irons and lots of other SFPUC biologist and Hetch Hetchy operations staff (oh, and Tim and Neal because they are likely here reading this).
- Ninette Daniele, Rob Grasso, Colleen Kamaroff and the other NPS rockstars who helped with fieldwork and data.
- Don Aston, Sarah Kupferberg and some fine humans at McBain & Assoc.
- Steve Holdeman and the exceptional staff at USFS.
- You, for listening and reading and asking good questions. . .