

Monitoring of potato psyllids, *Candidatus Liberibacter solanacearum*, and zebra chip in Idaho



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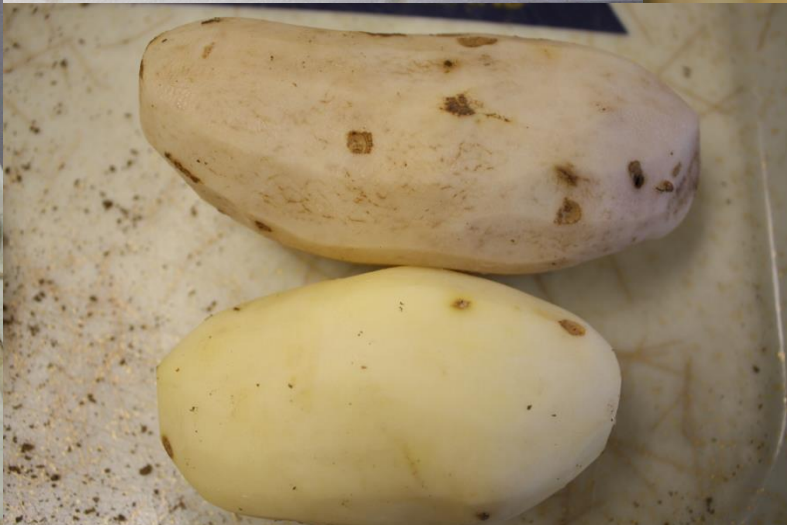
University of Idaho

College of Agricultural and Life Sciences

Zebra chip (ZC) disease

- Disease caused by bacterium
(*Candidatus Liberibacter solanacearum* [Lso])
- Bacterium vectored by the potato psyllid
(*Bactericera cockerelli*)





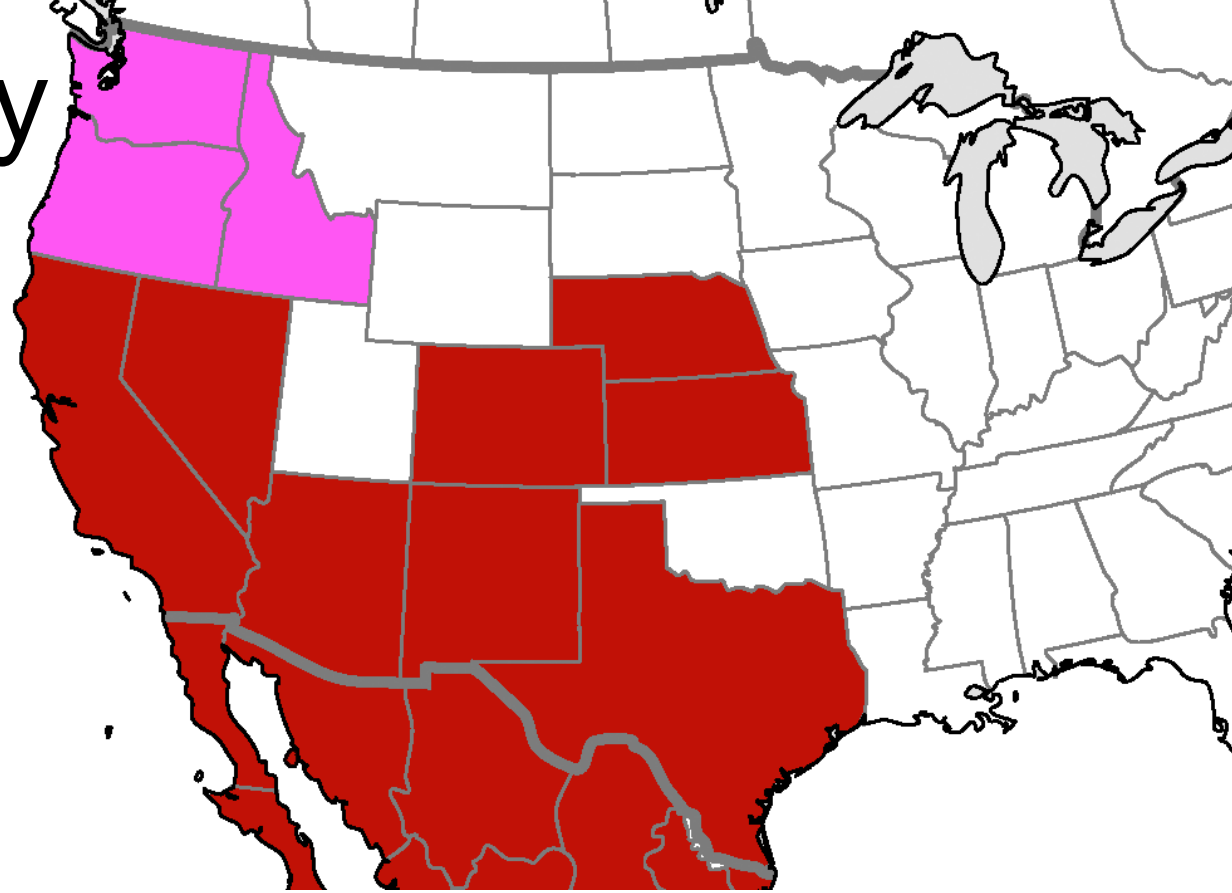


(5 nymphal instars)



- 1 generation = 2-3 wks
- 25-30 C = optimum temp

A brief history of ZC



- 1994 – Mexico
- 2000 – Texas
- 2000... – Southern states / CA
- 2008 – liberibacter identified
- 2011 – Pacific Northwest
- (Also present in New Zealand and C. America)

A brief history of ZC in Idaho

ZC in ID;
ca. 1% incidence;
mostly Magic Valley

Monitoring program expanded



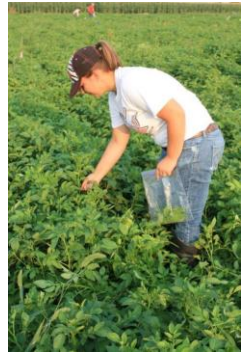
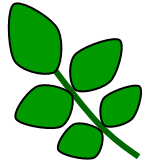
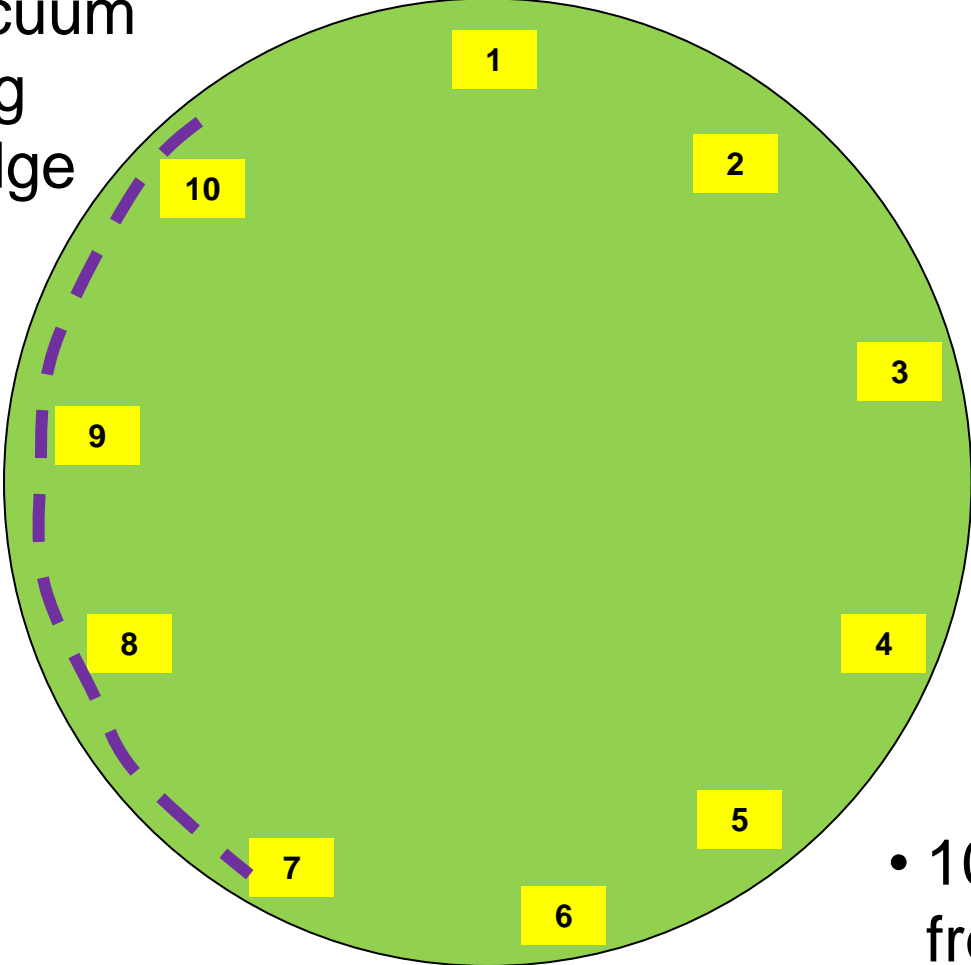
2011 | **2012** | **2013** | **2014** | **2015**

monitoring began;
ca. 1% incidence,
some fields 3-15+%;
mostly Magic Valley



- 10 sticky traps per field arranged around perimeter

- 5-minute vacuum sample along windward edge

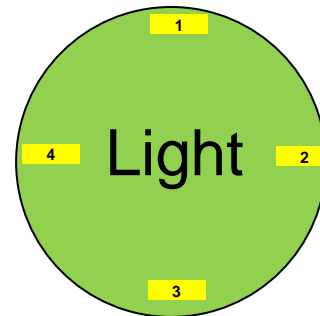
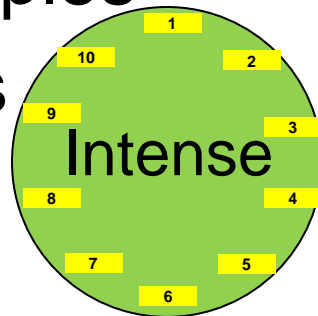


- 10 leaf samples from each sticky card station (100 leaves per field)

2012-2015 Monitoring programs

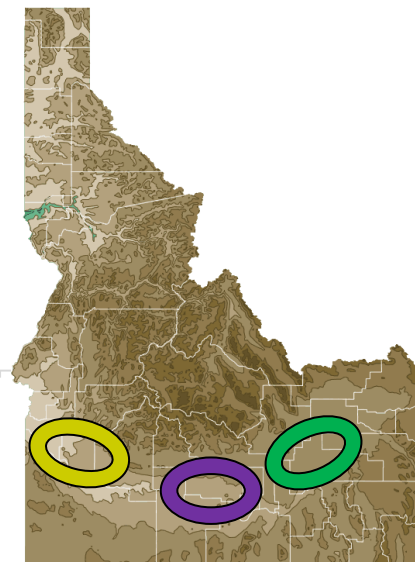
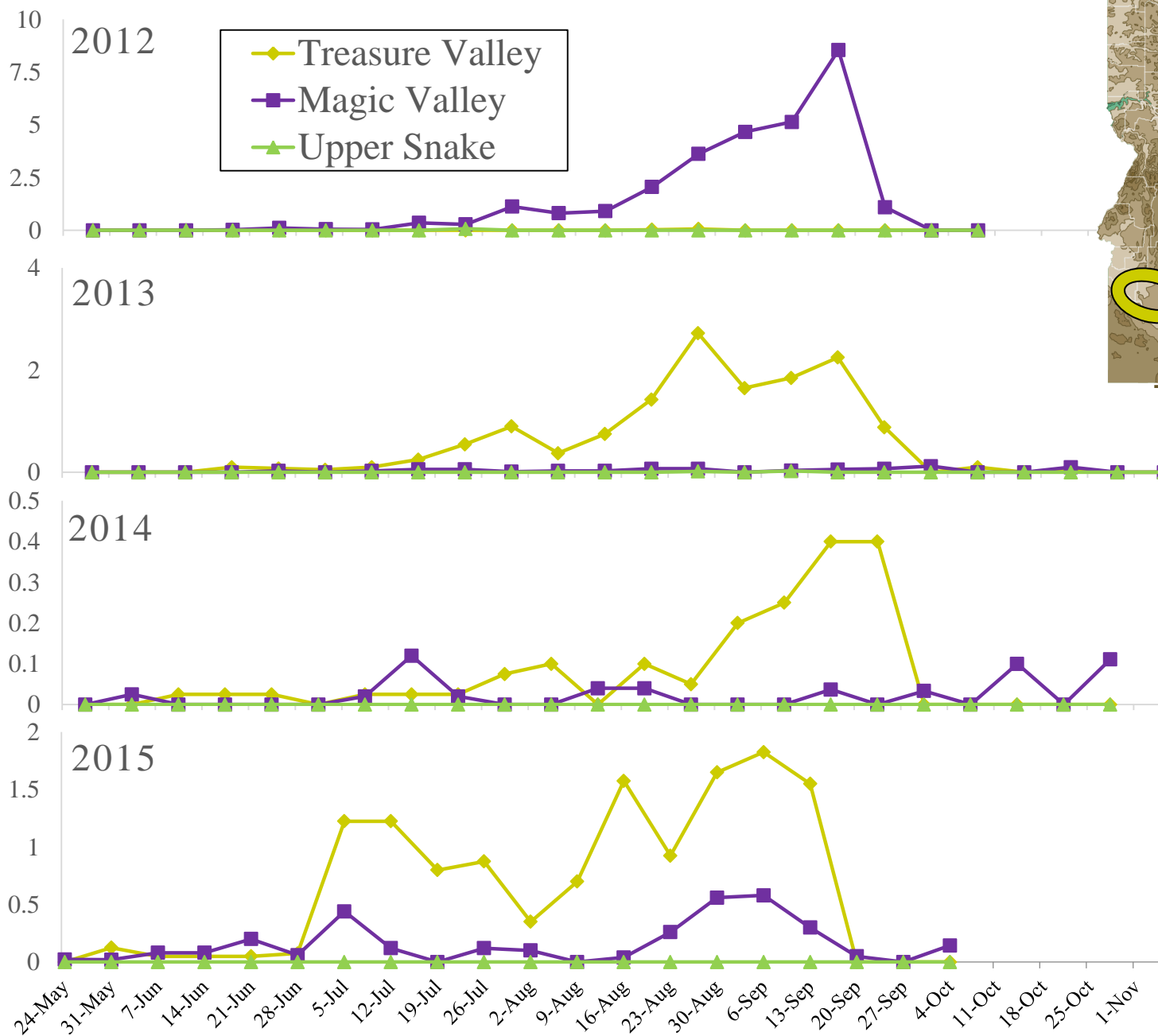
- “Intense” program
 - 13 fields
 - Weekly sampling
 - 10 sticky traps per field
 - Vacuum samples
 - Leaf samples

- “Light” program
 - 75-94 fields
 - Weekly sampling
 - 4 sticky traps per field



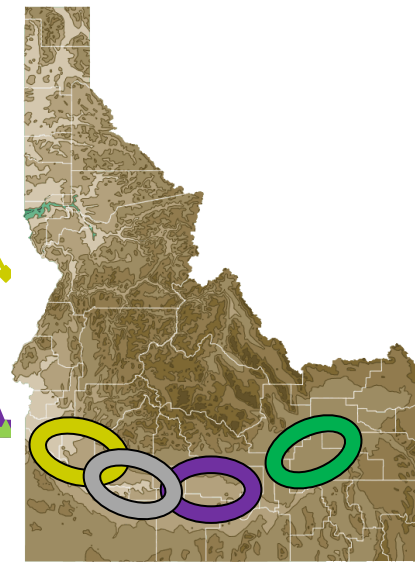
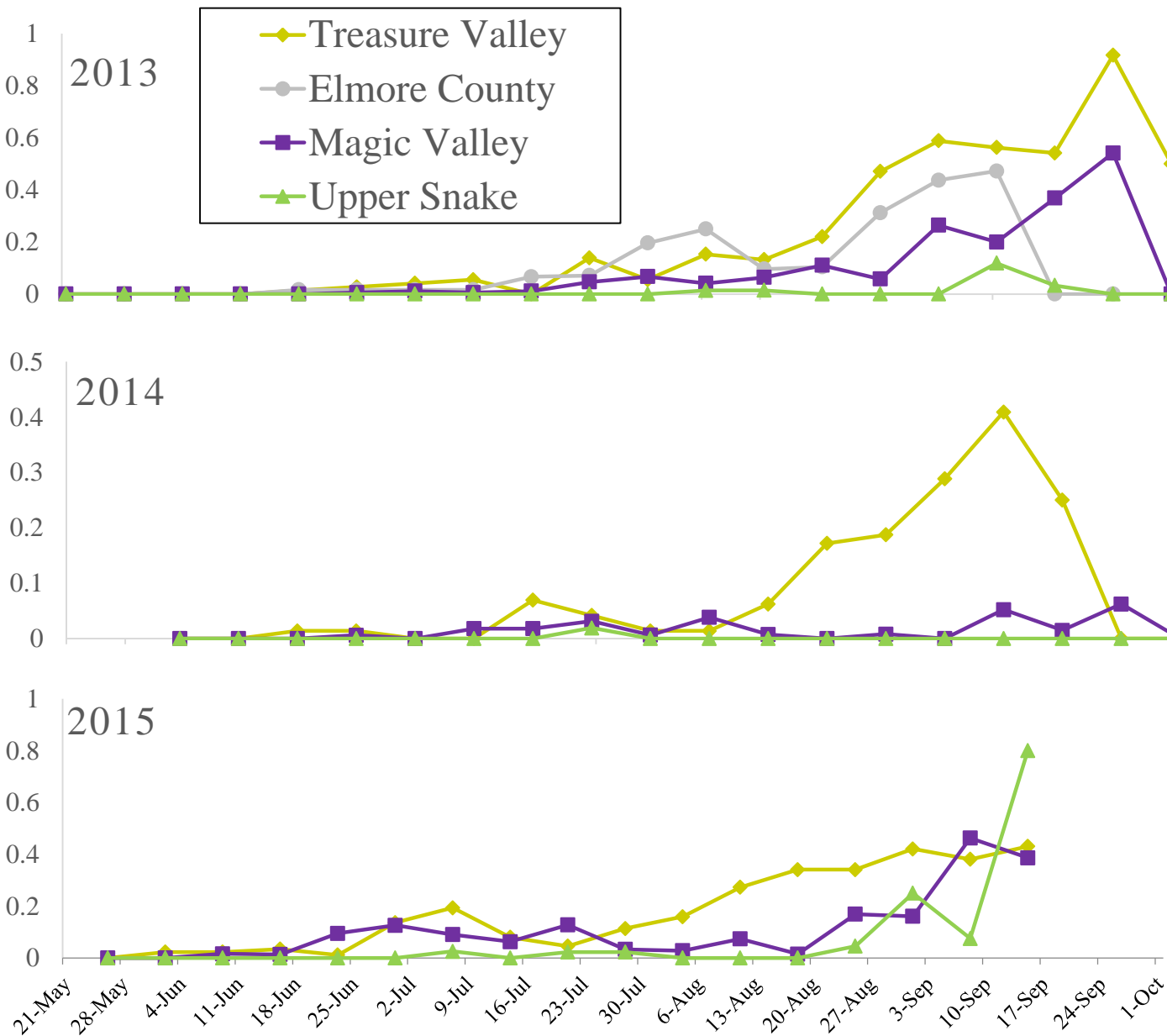
“Intense” sticky traps

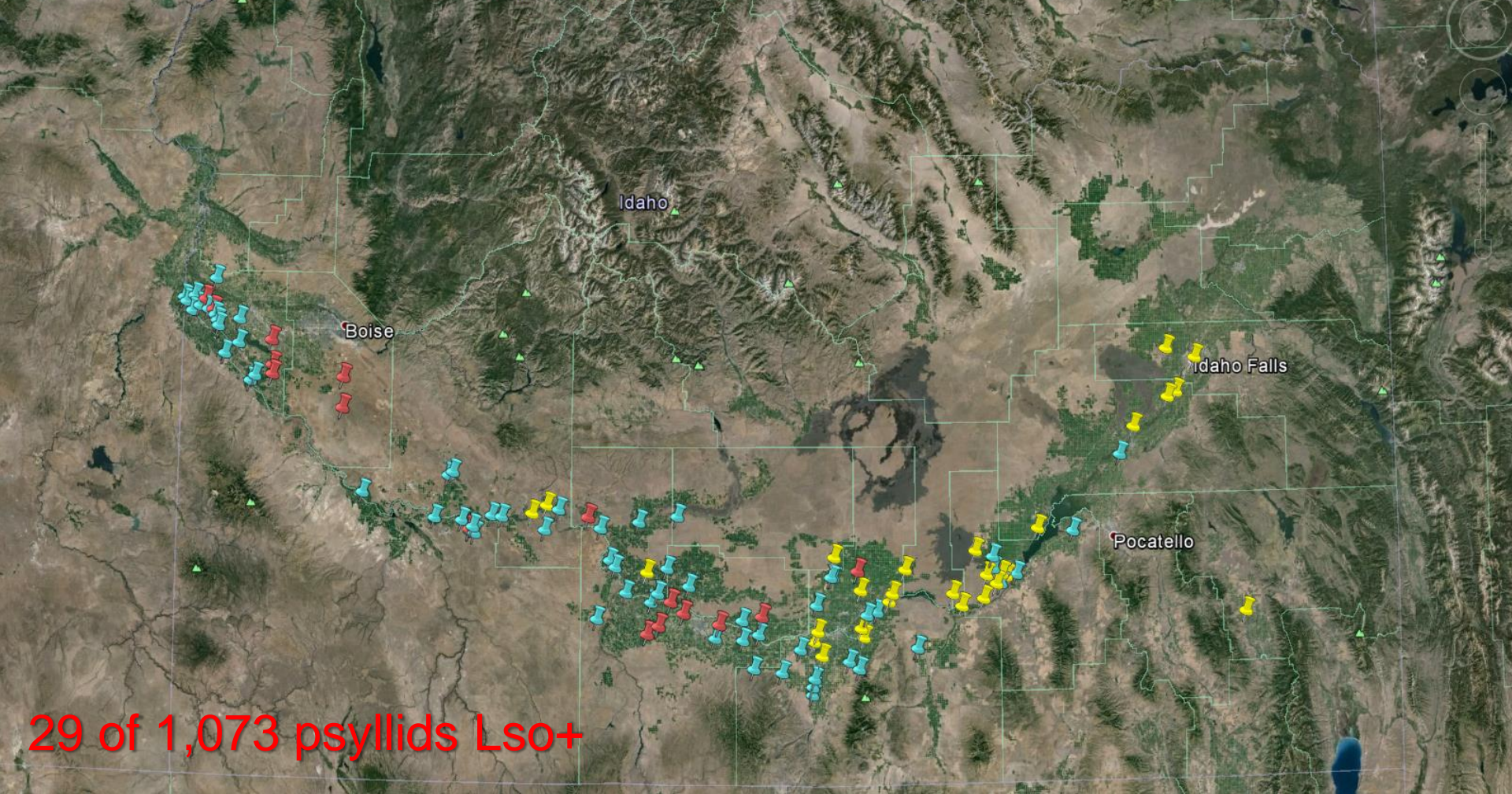
Mean *B. cockerelli* per trap per field



"Light" sticky traps




Mean *B. cockerelli* per trap per field





29 of 1,073 psyllids Lso+

Full Season, 2013

-  No psyllids
-  ≥ 1 cold psyllid
-  ≥ 1 hot psyllid

	2012	2013	2014	2015
No. Intense sites	16	13	13	13
No. Light sites	0	94	75	77
Total No. sites	16	107	88	90
Total sticky cards read	2,450	8,246	5,870	6,258
Total psyllids on cards	1,603	1,073	170	1,137
No. psyllids per card	0.65	0.13	0.03	0.18
Total psyllids tested for Lso	1,073	1,070	170	1,136
No. Lso-positive psyllids	250	29	4	40
% Lso positive psyllids	23.3	2.7	2.4	3.5

Conclusions

- Psyllid phenology related to elevation / temperature gradient across Idaho
- Psyllids: 2012 > 2013 > 2014... 2015 ≈ 2013
- Lso high in 2012; more “typical” 2013-2015
- Anecdotal evidence suggests ZC incidence related to psyllid and Lso incidence
- Suggests monitoring program is effective at predicting ZC risk
- Need to test this more explicitly



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