



Entomology review



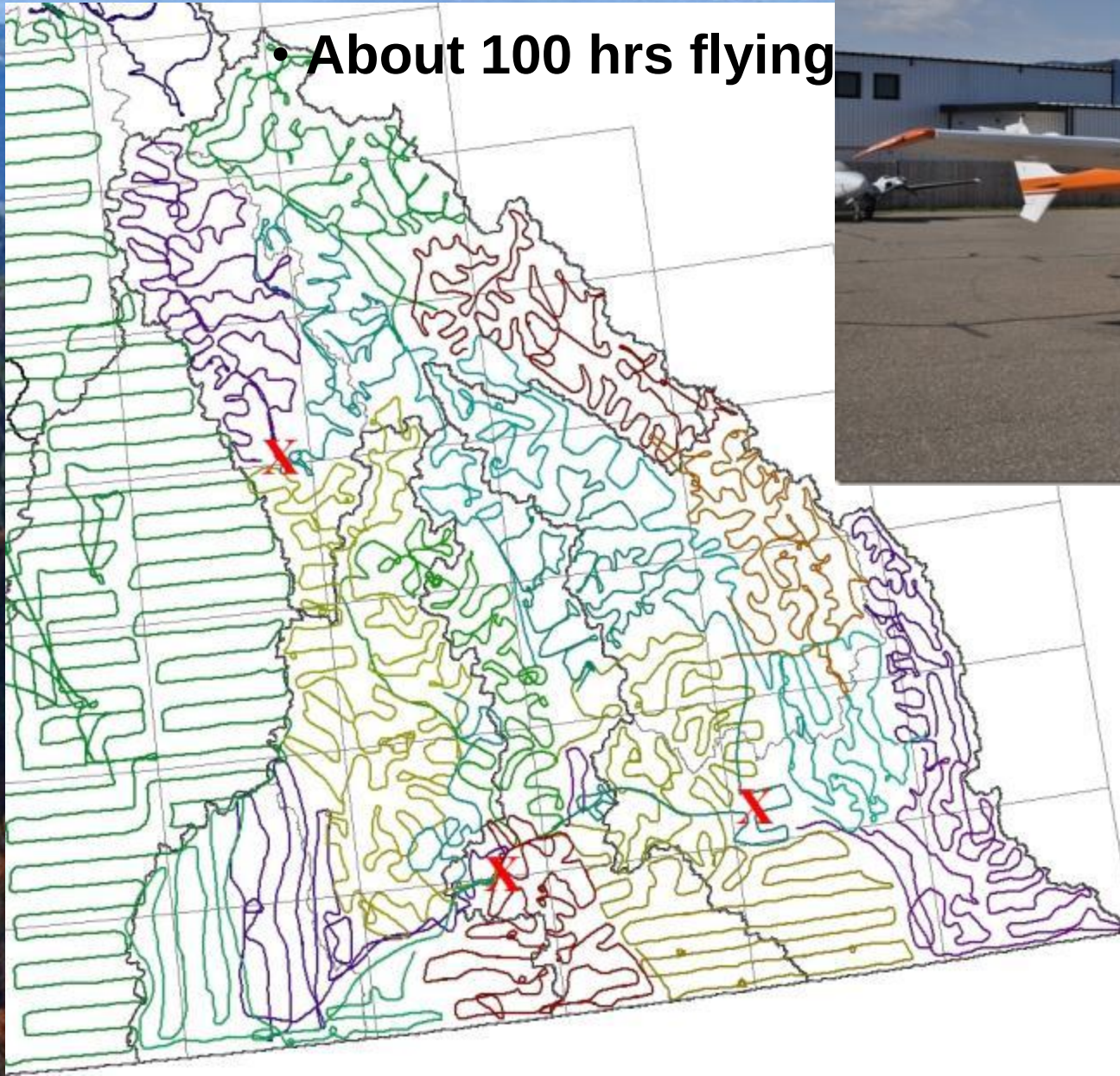
**Kootenay Boundary Region
2014**



Art Stock, Entomologist

RKB Annual Overview - Aerial Survey Track, 2014

- About 100 hrs flying

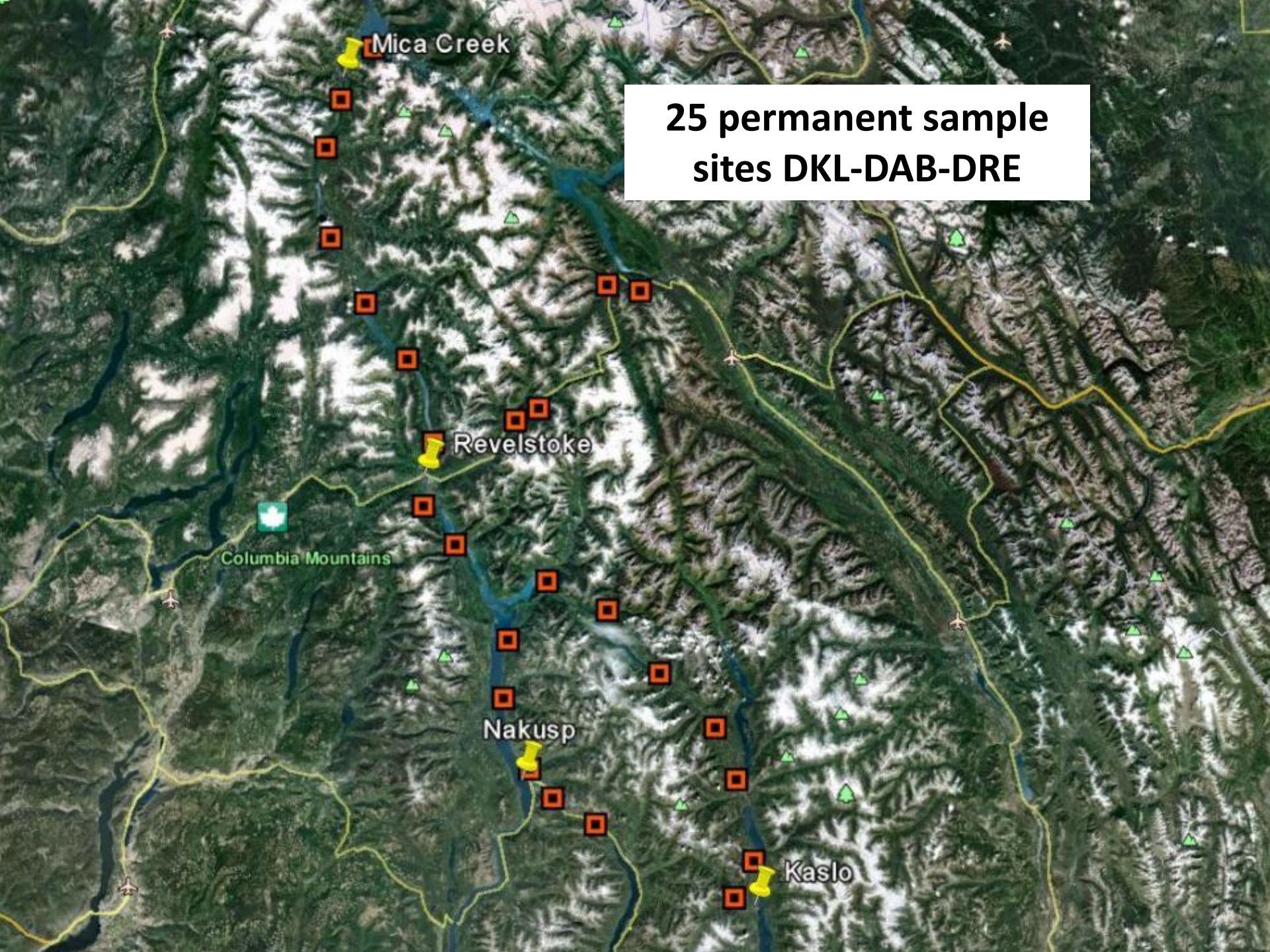


RKB Annual Overview – Ground Surveys

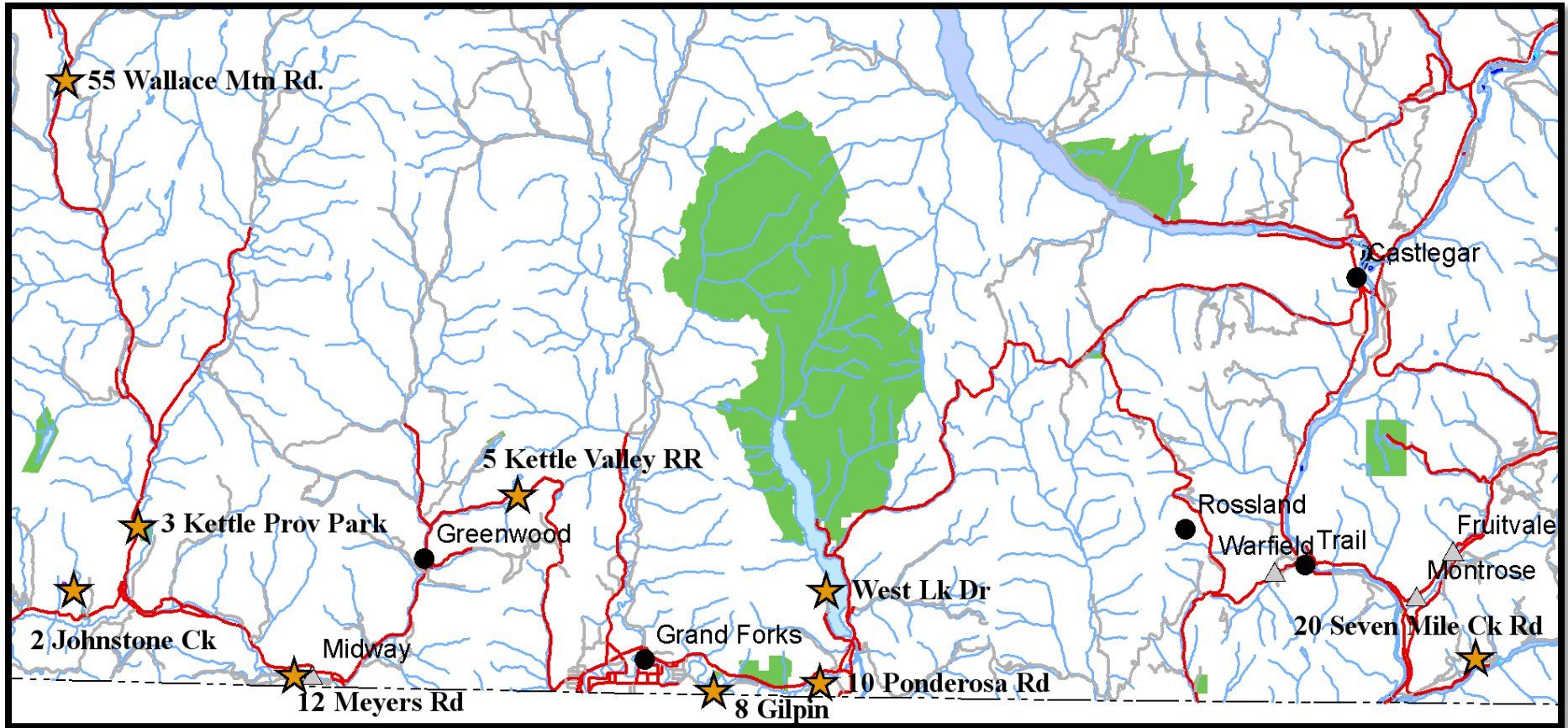
Detection and monitoring of long-term population levels and trends - permanent sample sites (larvae/moths/egg masses).



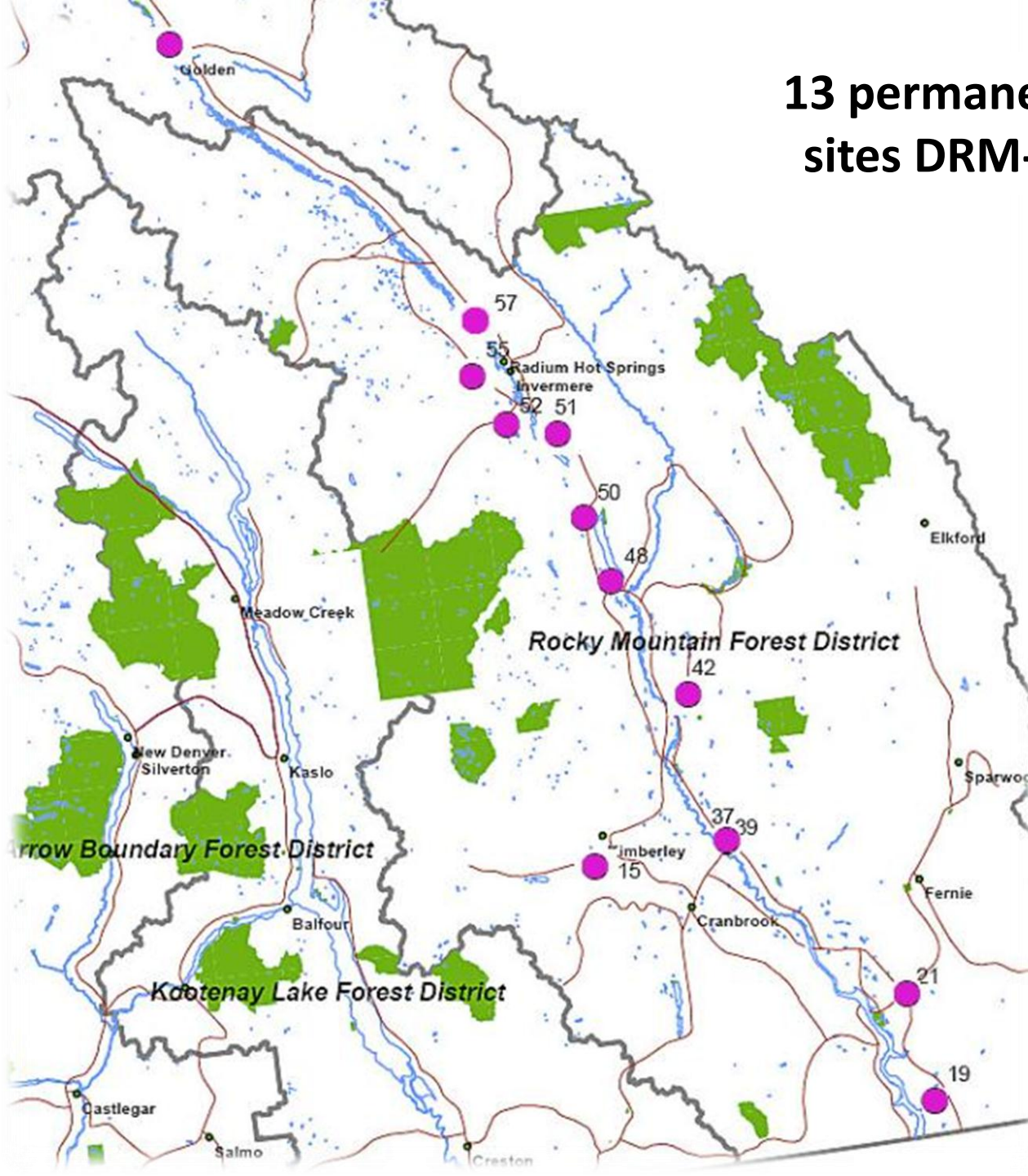
**25 permanent sample
sites DKL-DAB-DRE**



9 permanent sample sites DBO-DAB



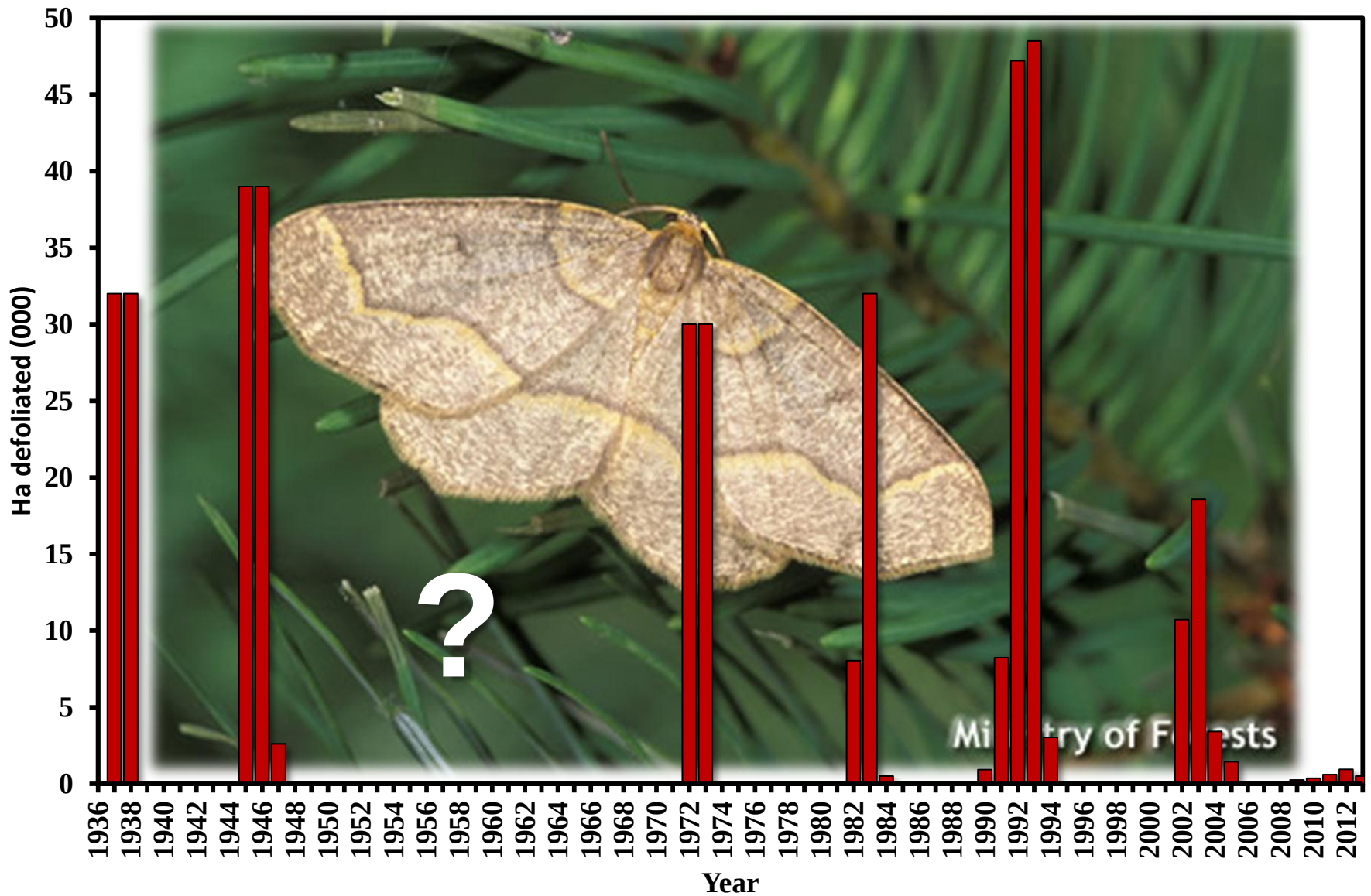
13 permanent sample sites DRM-DIN-DGO



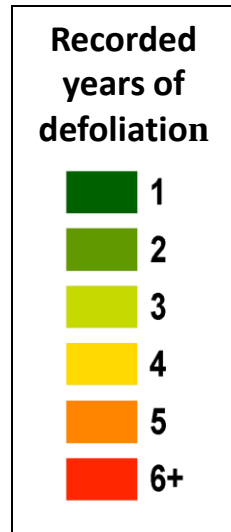
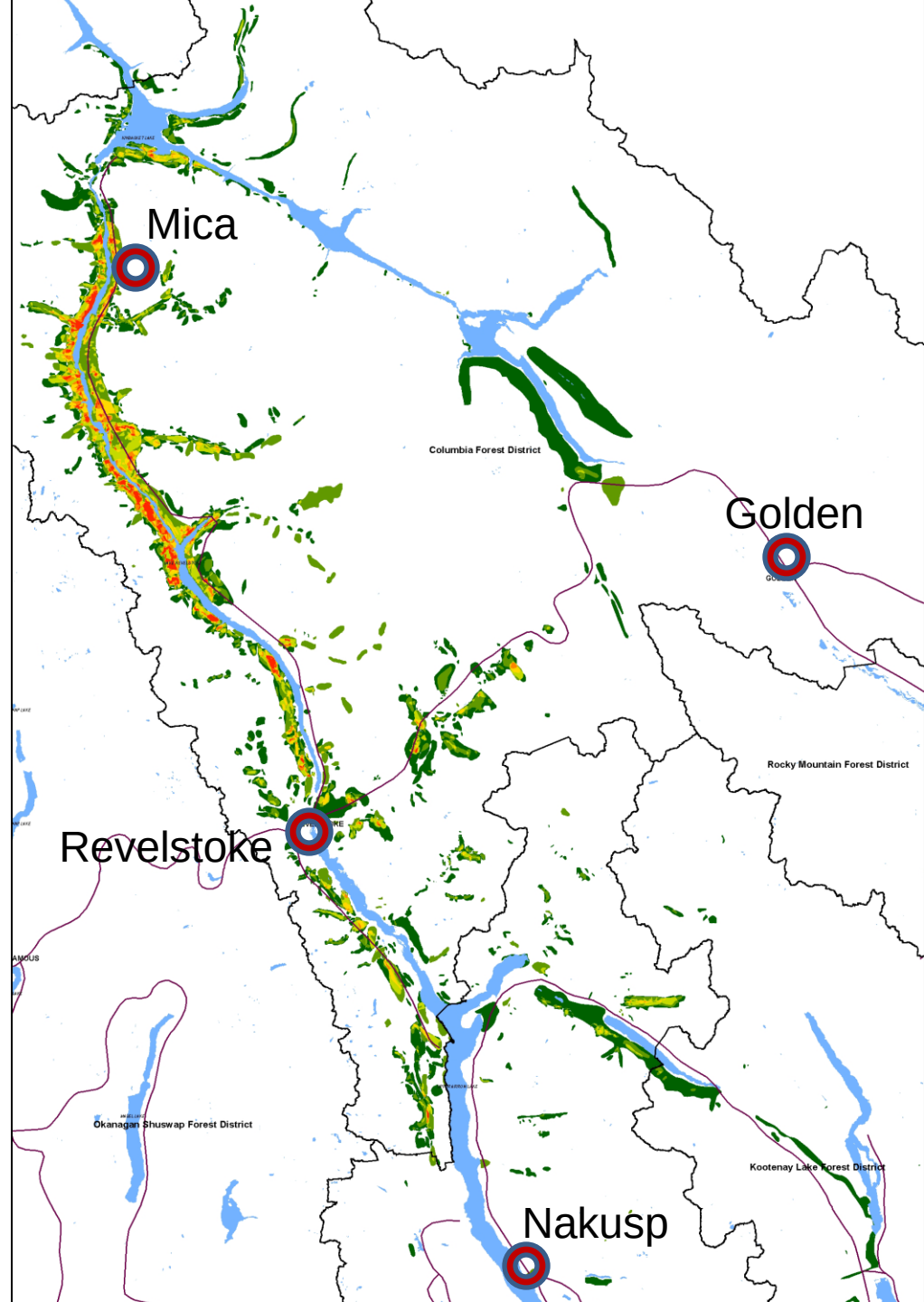


Rec sites, small parks, other “remote” tourist areas

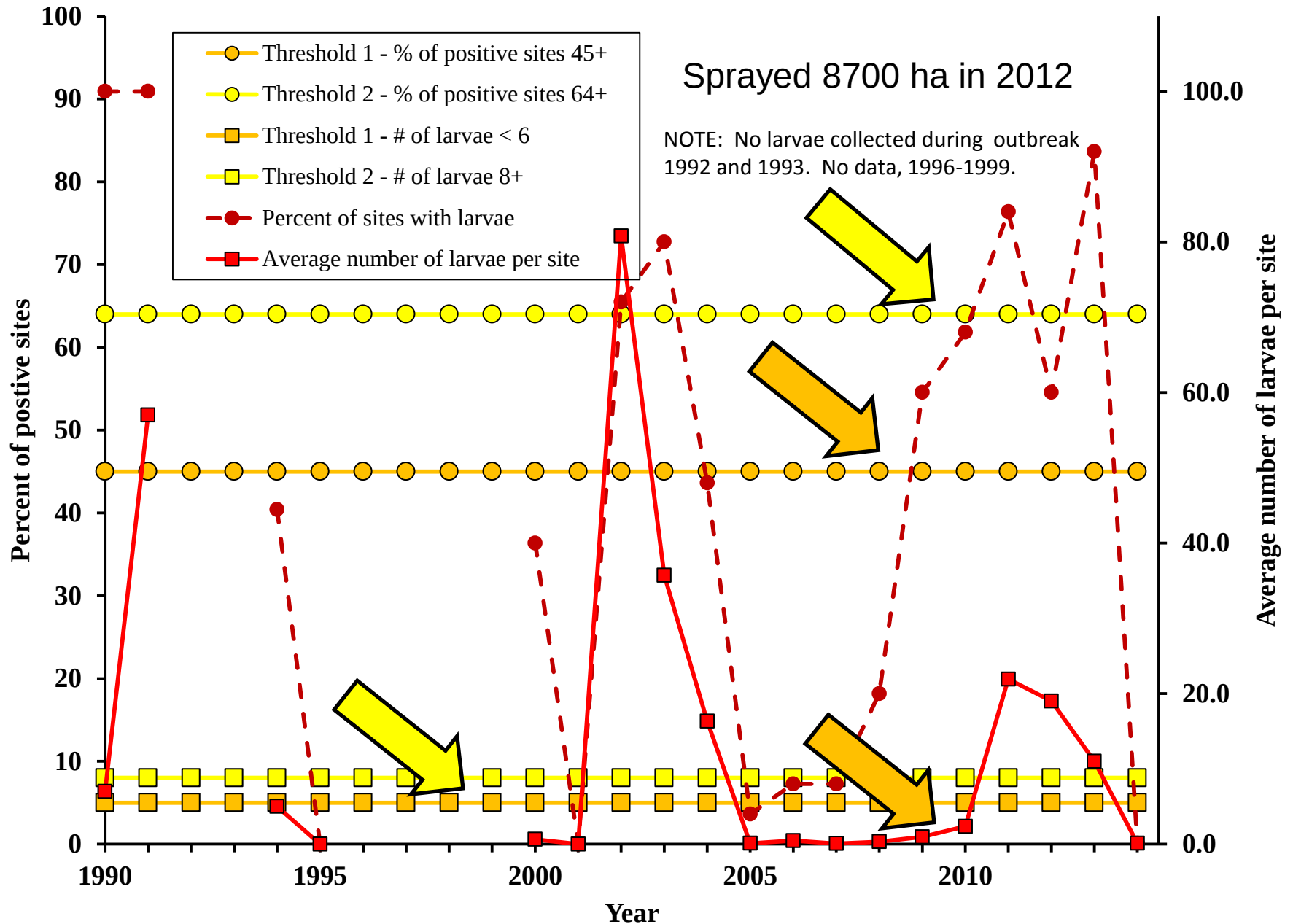
Recorded outbreaks of western hemlock looper, *Lambdina fiscellaria lugubrosa*, Kootenay-Boundary Region (CFS and BCFS), 1937-2013



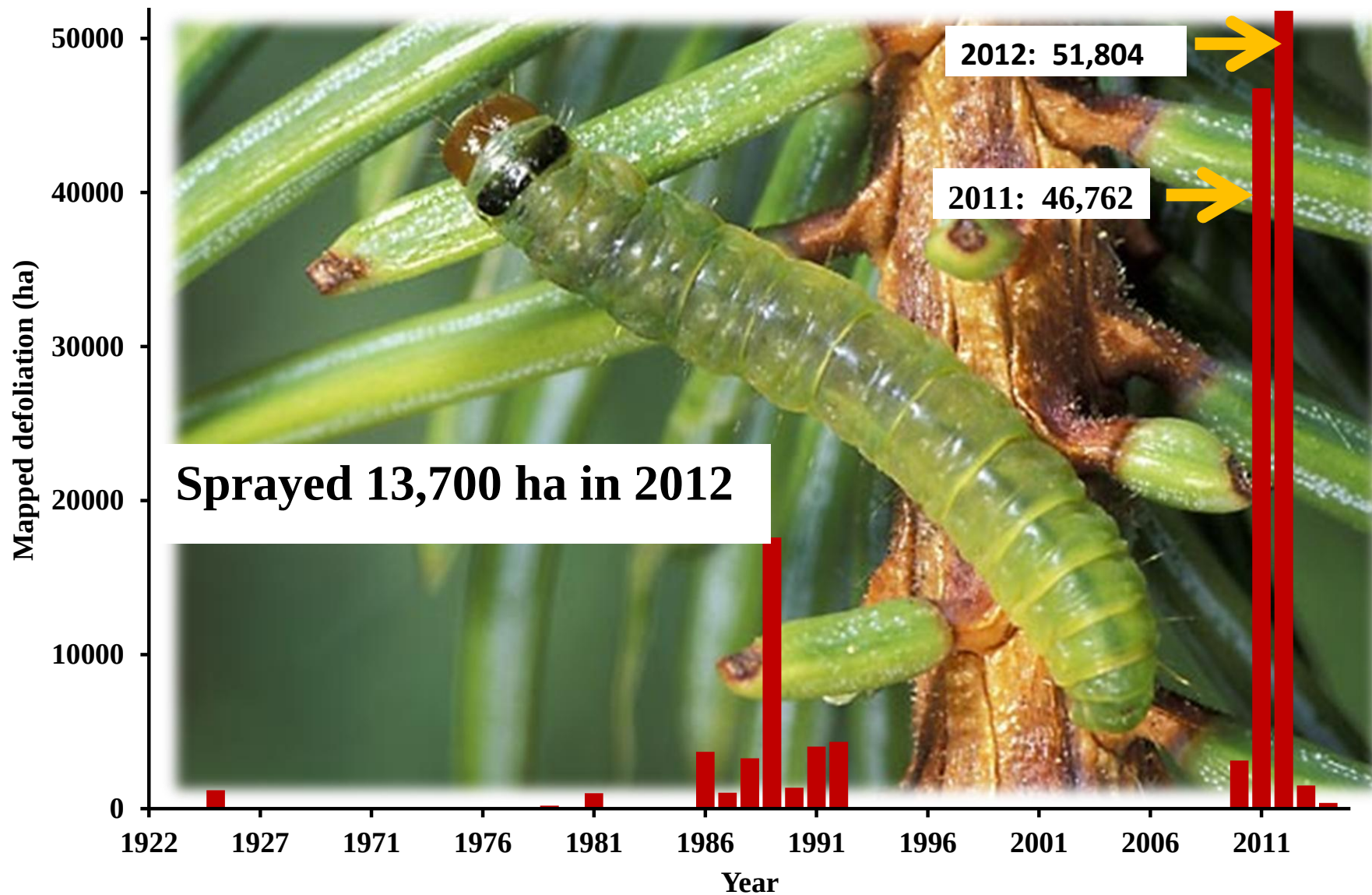
**Recorded outbreaks of
western hemlock looper, *Lambdina
fiscellaria lugubrosa*, Kootenay-
Boundary Region, 1937-2005.**



Hemlock looper larval surveys, RKB 1990-2014



Recorded outbreaks of western spruce budworm, *Choristoneura occidentalis*, Kootenay-Boundary Region (CFS and BCFS), 1923-2014

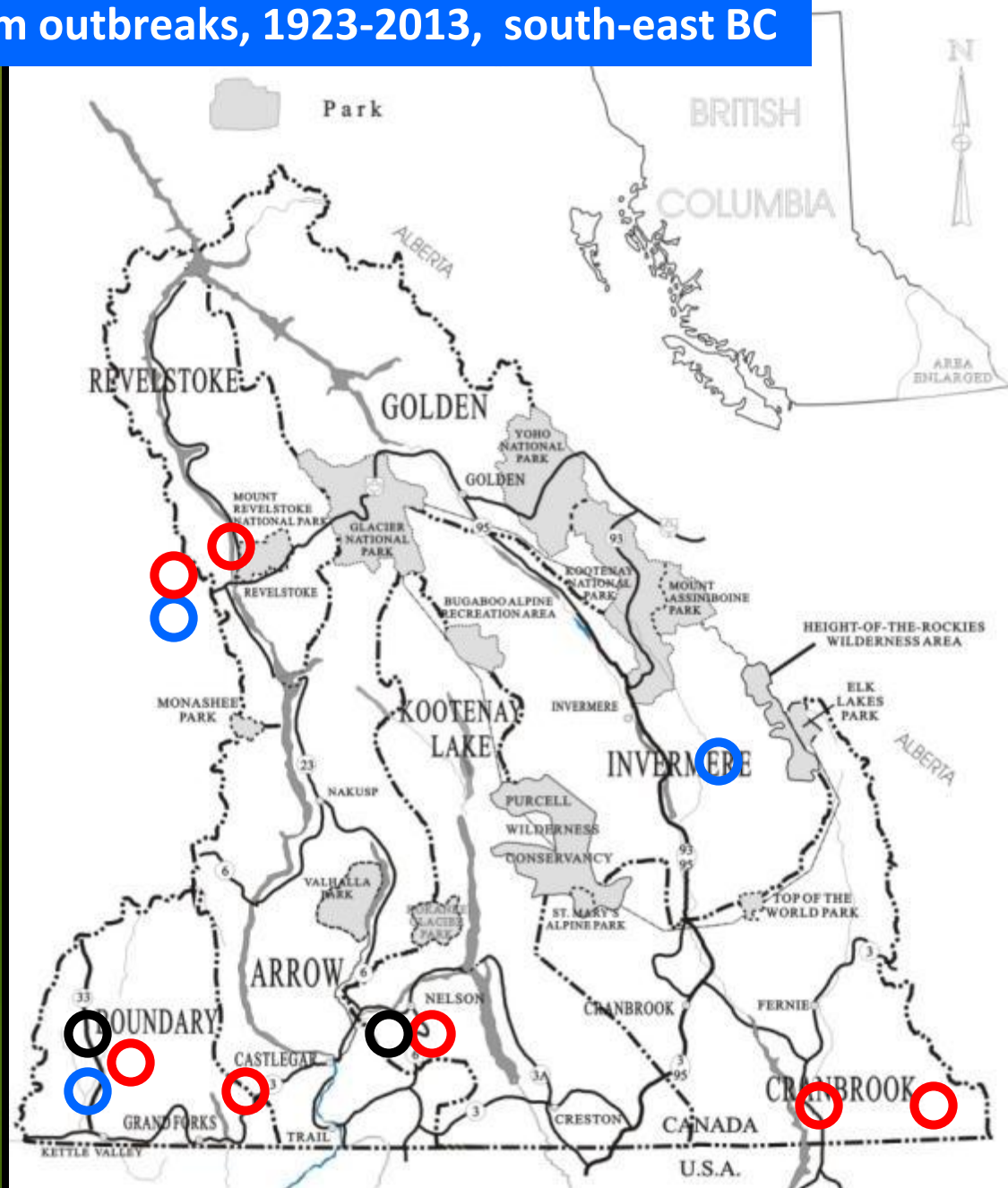


Western spruce budworm outbreaks, 1923-2013, south-east BC

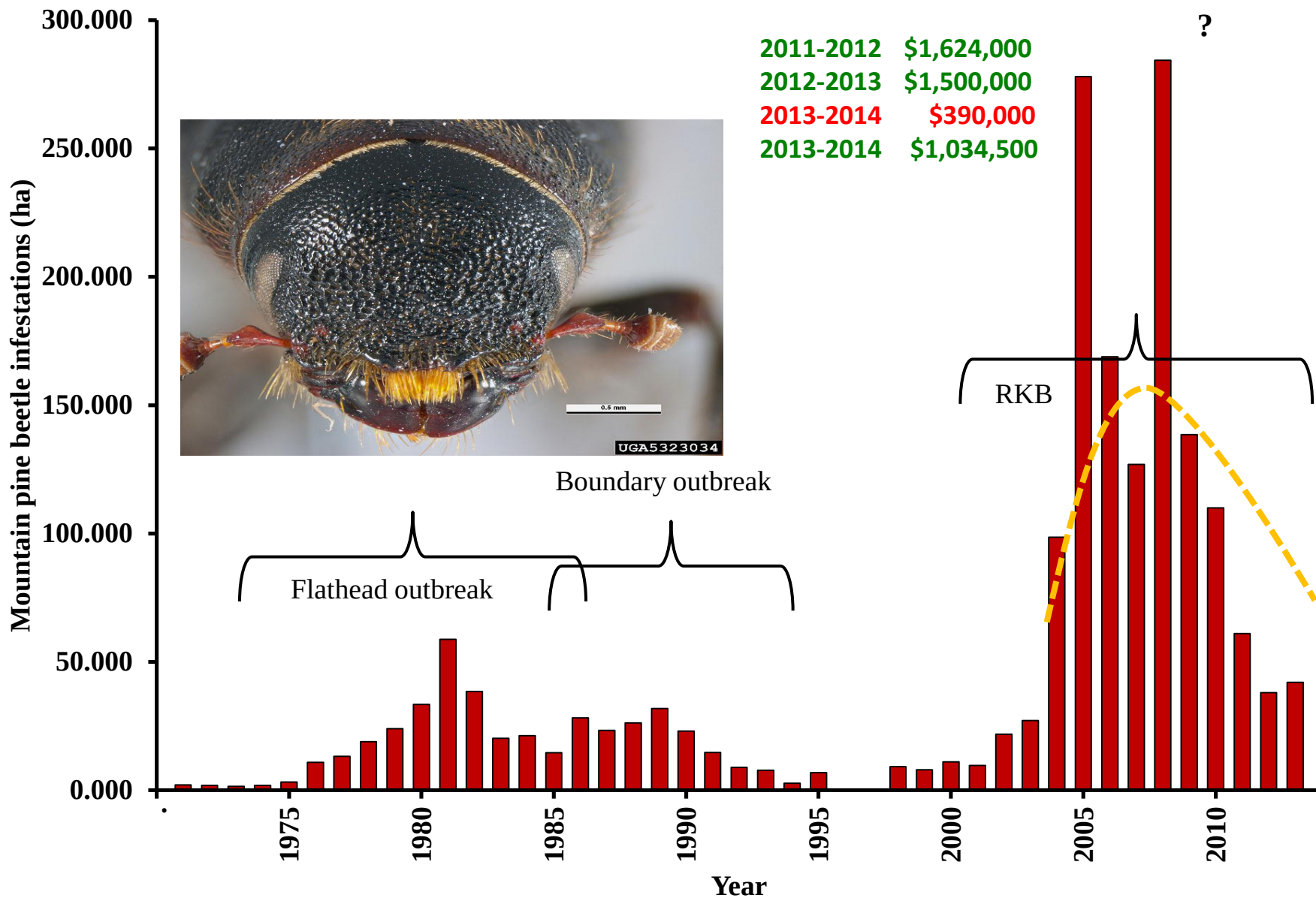
1923-1928 ○

1976-1992 ○

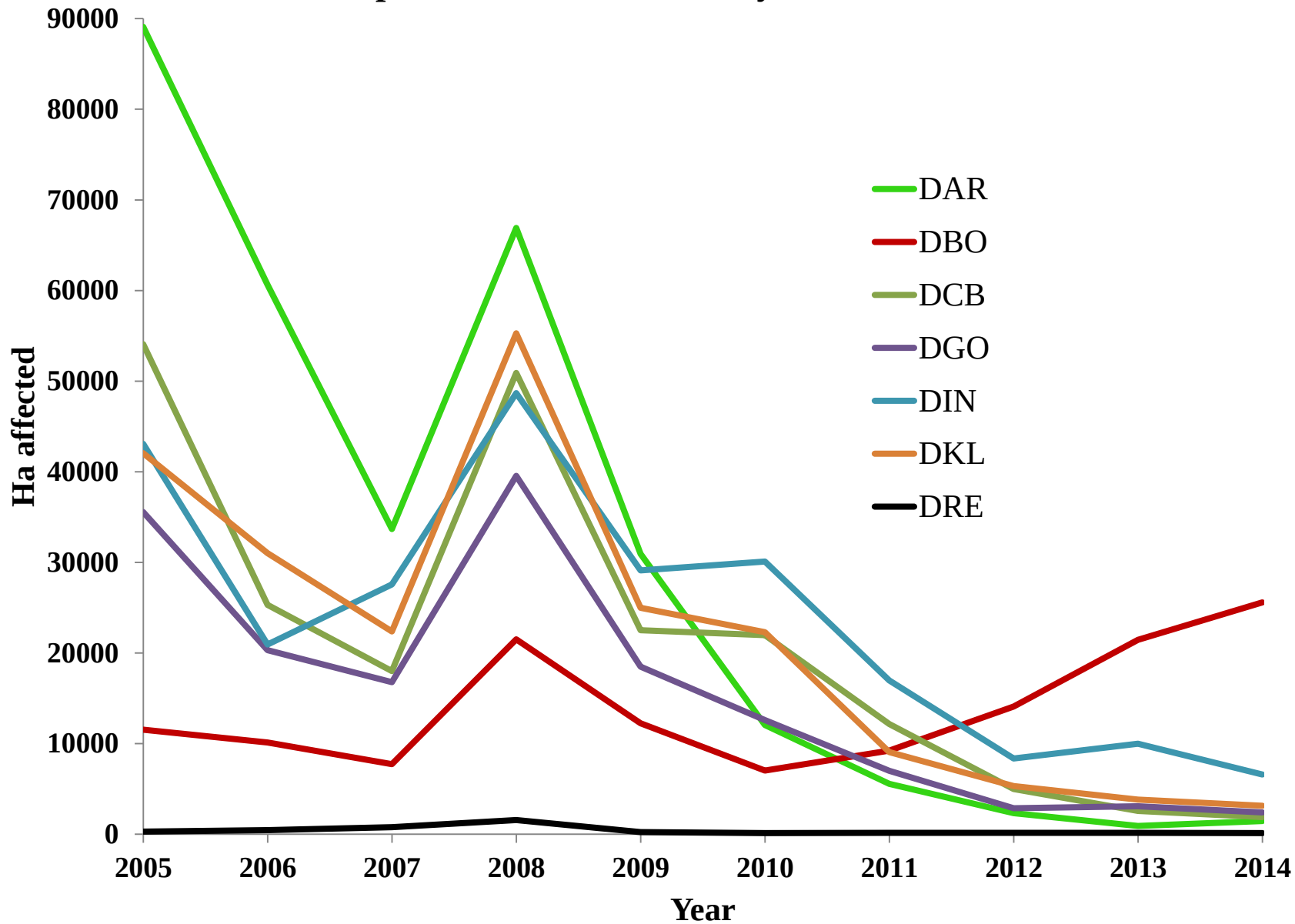
2009-2013 ○



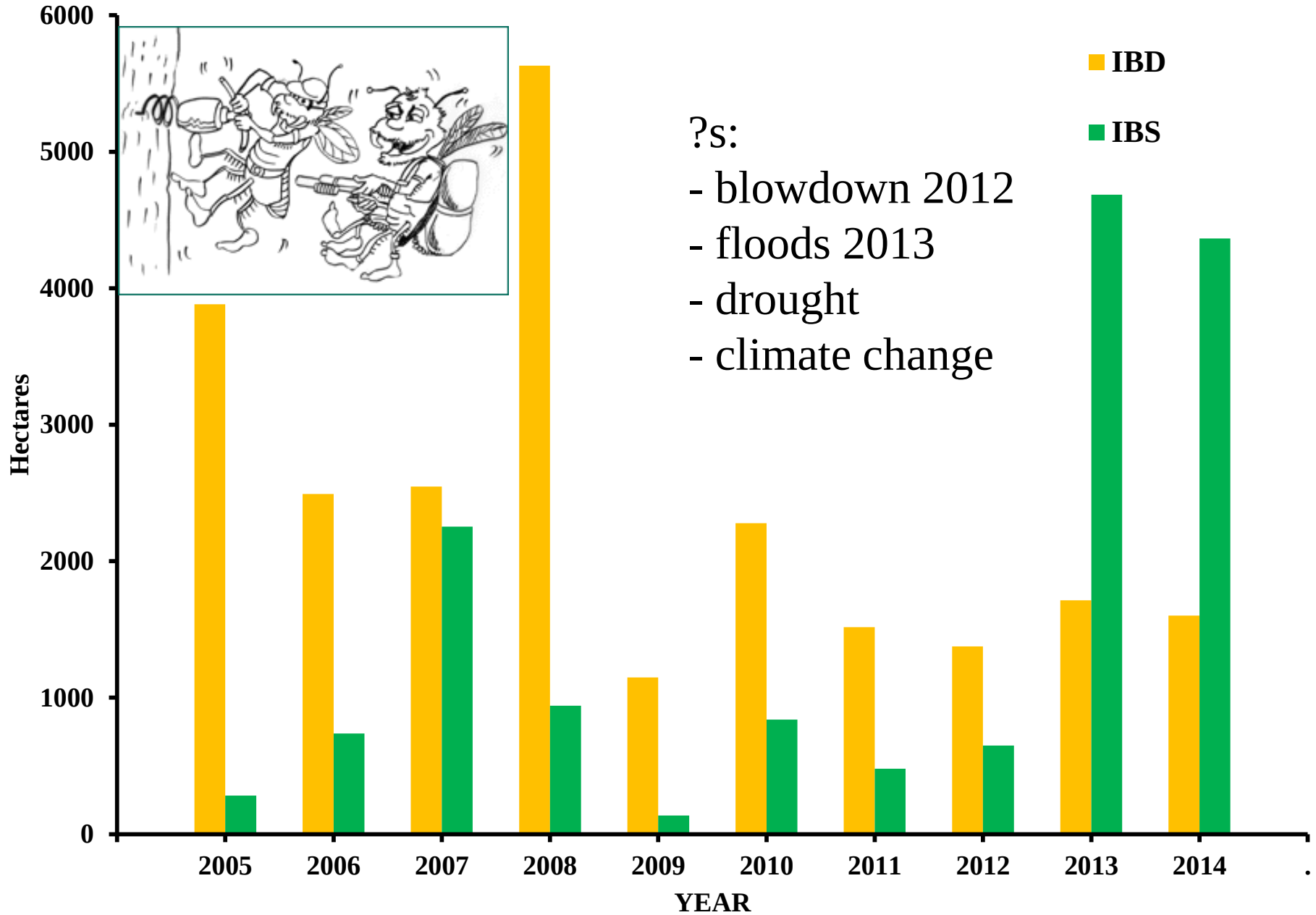
Mountain pine beetle infestations (ha affected), south-east BC, 1971-2014



Mountain pine beetle ha affected by TSA, RKB, 2005-2014



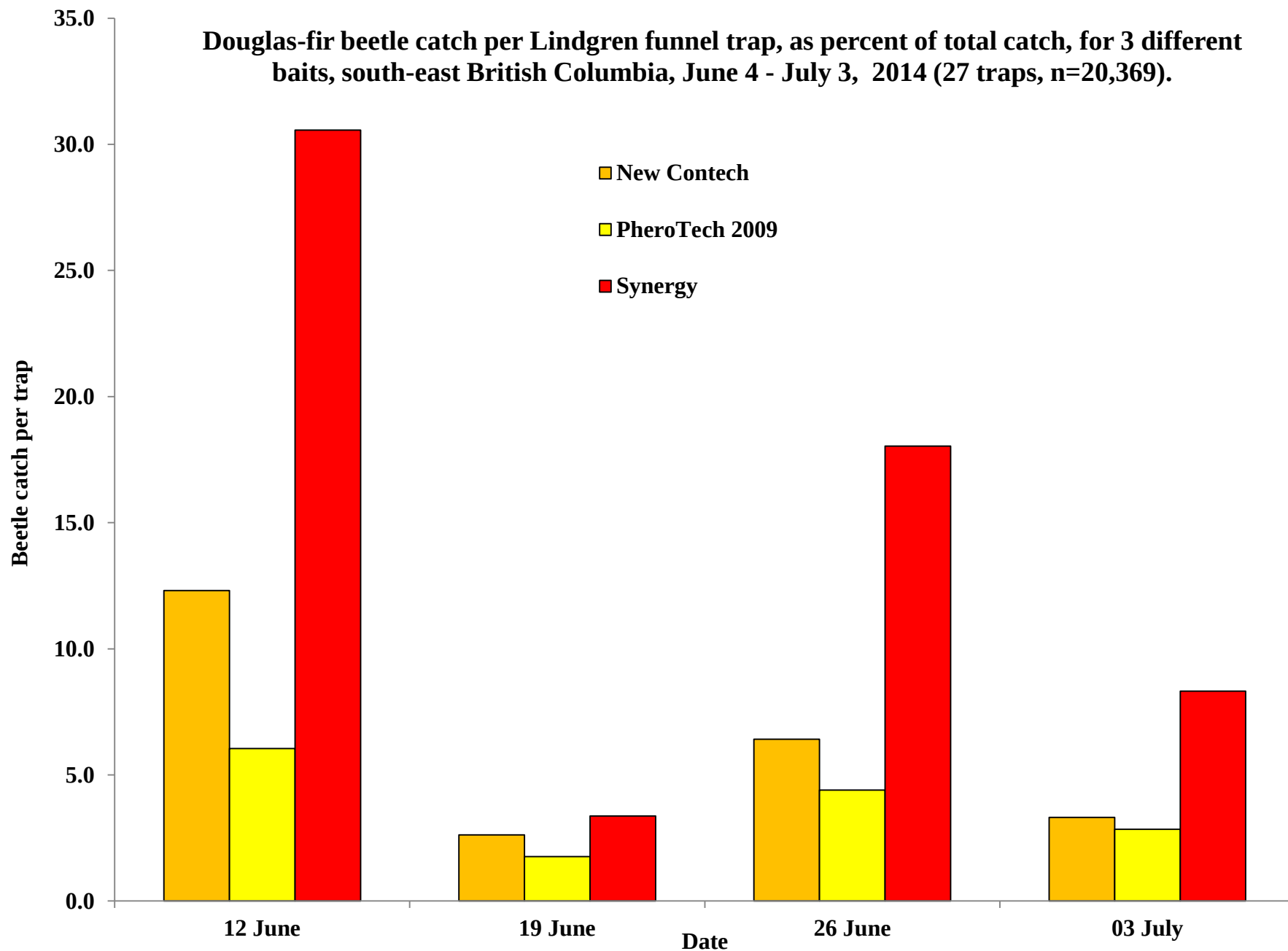
Douglas-fir beetle and spruce beetle, ha affected, Kootenay Boundary Region, 2005-2014.



Douglas-fir beetle trapping



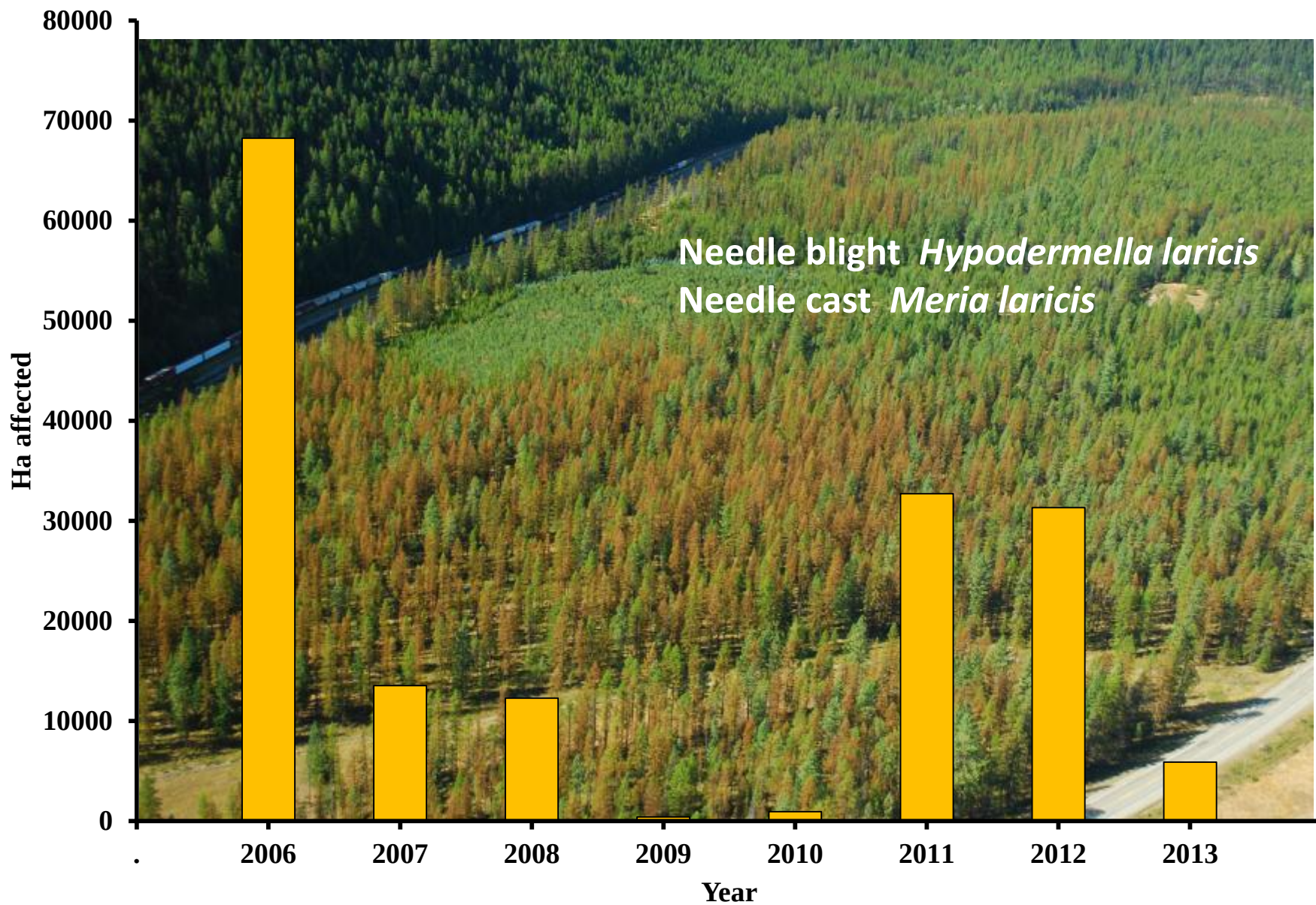
Douglas-fir beetle catch per Lindgren funnel trap, as percent of total catch, for 3 different baits, south-east British Columbia, June 4 - July 3, 2014 (27 traps, n=20,369).



Cedars, Bush River, RKB, 2014



Larch needle diseases, ha affected, Kootenay Boundary Region, 2006-2013.



Defoliation in deciduous

Aspen leaf miner

Birch leaf miner

Cottonwood leaf beetle

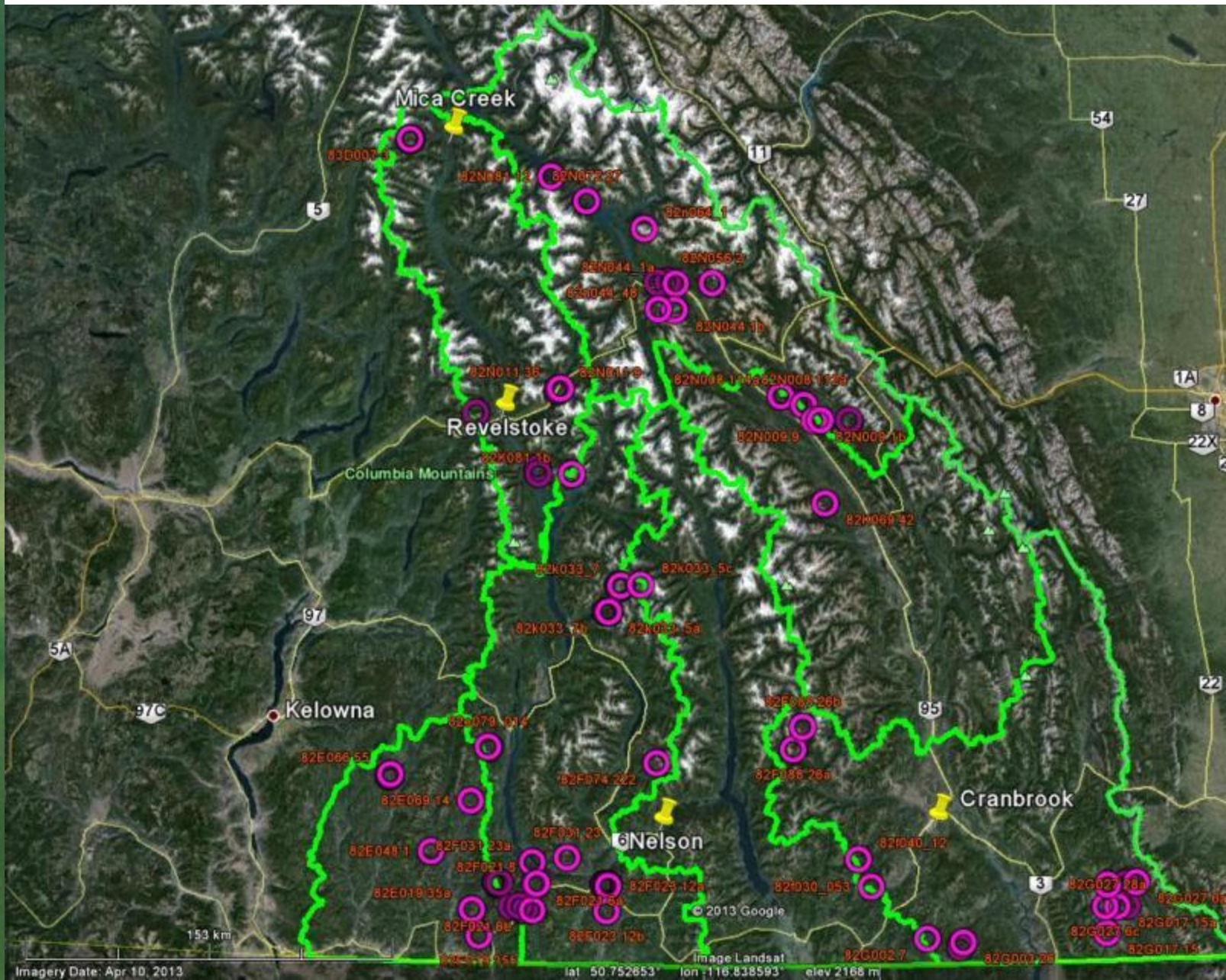
Venturia leaf blight





Bear damage in young pine –
it's worse than it looks. ~
1514 ha in 2013.

Spruce weevil assessment survey sites, 1995



Unusual larch growth: Bottle brush,
multiple leaders, dead lateral buds.

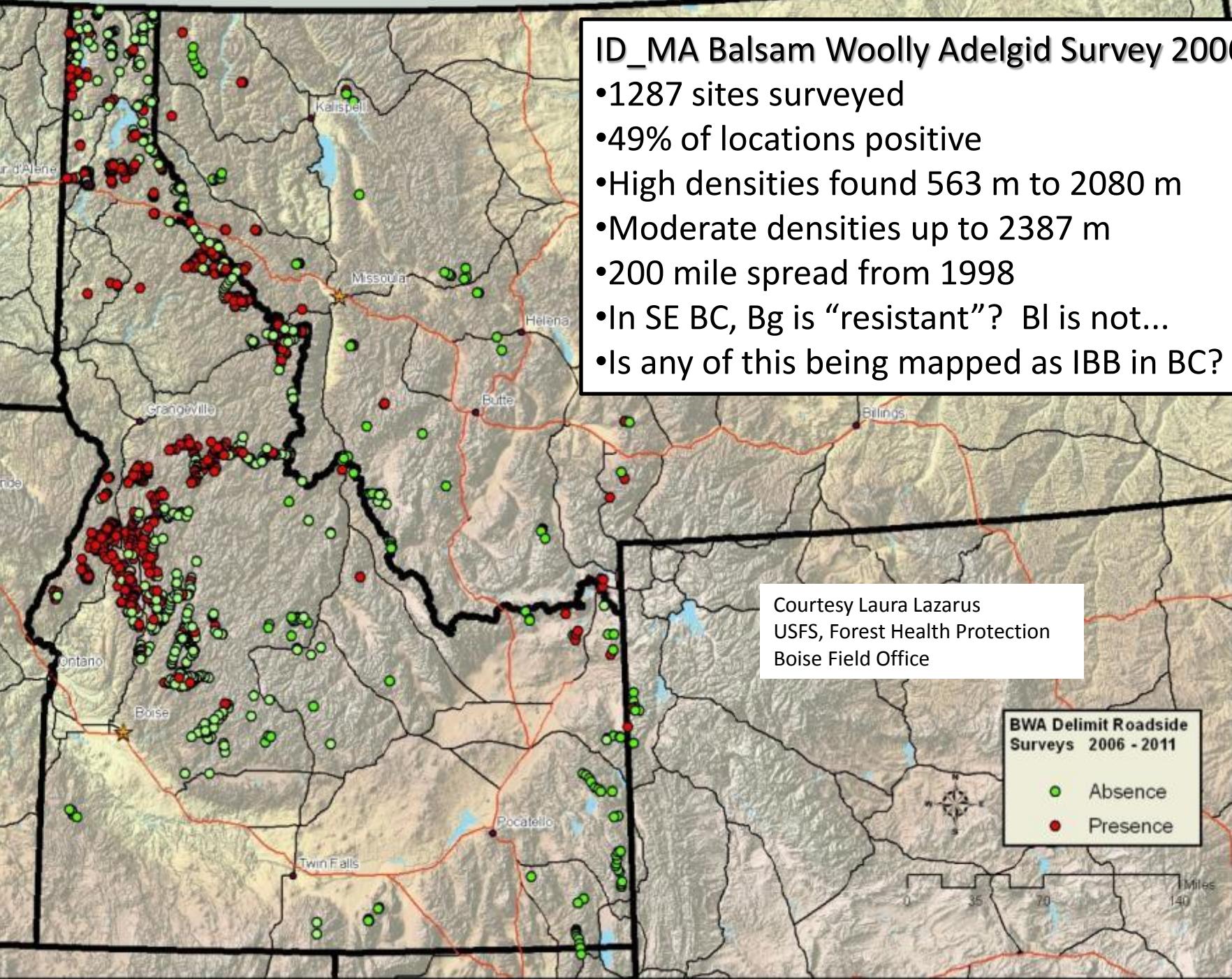


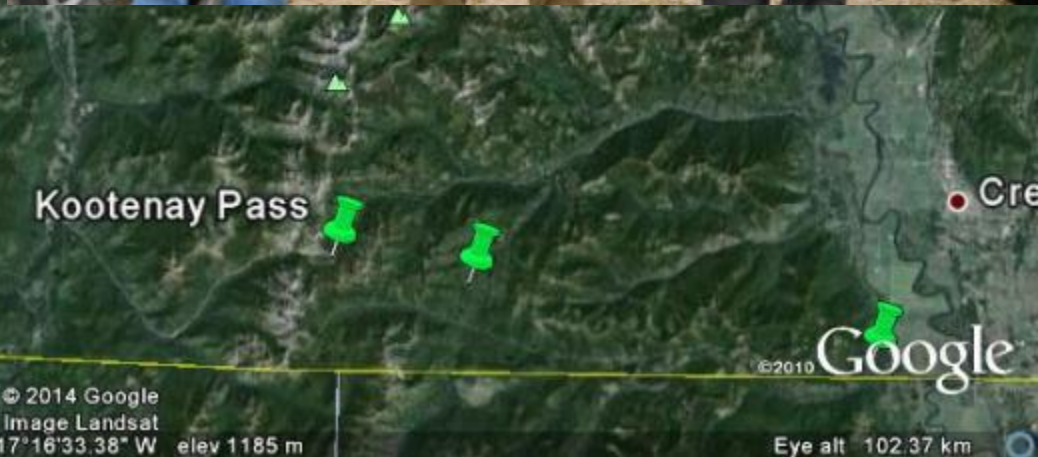
Unusual larch growth: Drought? Foliar disease? Insects? Impact?

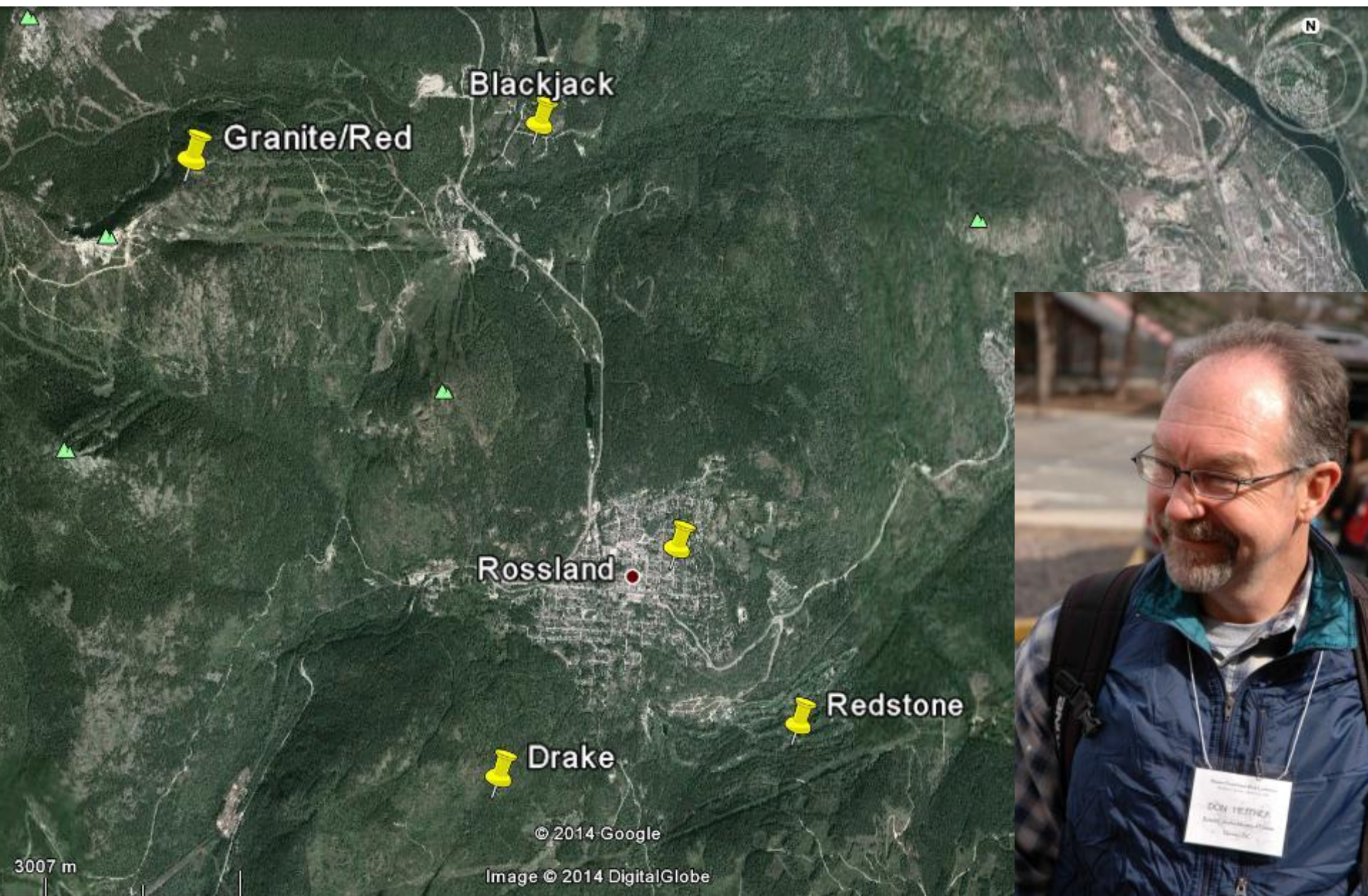


ID_MA Balsam Woolly Adelgid Survey 2006-2011

- 1287 sites surveyed
- 49% of locations positive
- High densities found 563 m to 2080 m
- Moderate densities up to 2387 m
- 200 mile spread from 1998
- In SE BC, Bg is “resistant”? BI is not...
- Is any of this being mapped as IBB in BC?









Key issues going forward

- **Climate change**

- Pest range changes, host-pest interactions on margins, outbreak intensities, outbreak cycles.
- Severe weather disturbances.

- **Invasives**

- Are coming...

- **Monitor**

- Expect the unexpected.

- **Social objectives**

- The best available management tools are useless without the will to use them in a uniform effort over time and space.

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