

**Monitoring
rattlesnake
denning
behaviour
in BC Protected Areas
(and elsewhere)**

BCPARF Presentation
September 2018



KARL W. LARSEN



THOMPSON RIVERS UNIVERSITY

1

Partners :

Robyn Reudink, Kamloops FLNRORD

Jo-Anne Hales, Tk'emlúps te Secwépemc

Frank Ritcey, Wildsafe BC

special thanks to Jared Maida

other field assistance by:

Marcus Atkins

Dana Eye

Cole Hooper

Anna Skurikhina

Stephanie Winton

Funding : Living Lab Program, BC Parks
Land-Based Investment fund



2



3

A quick 'blurb' about rattlesnake life-history

- use traditional and communal hibernating sites



4



5

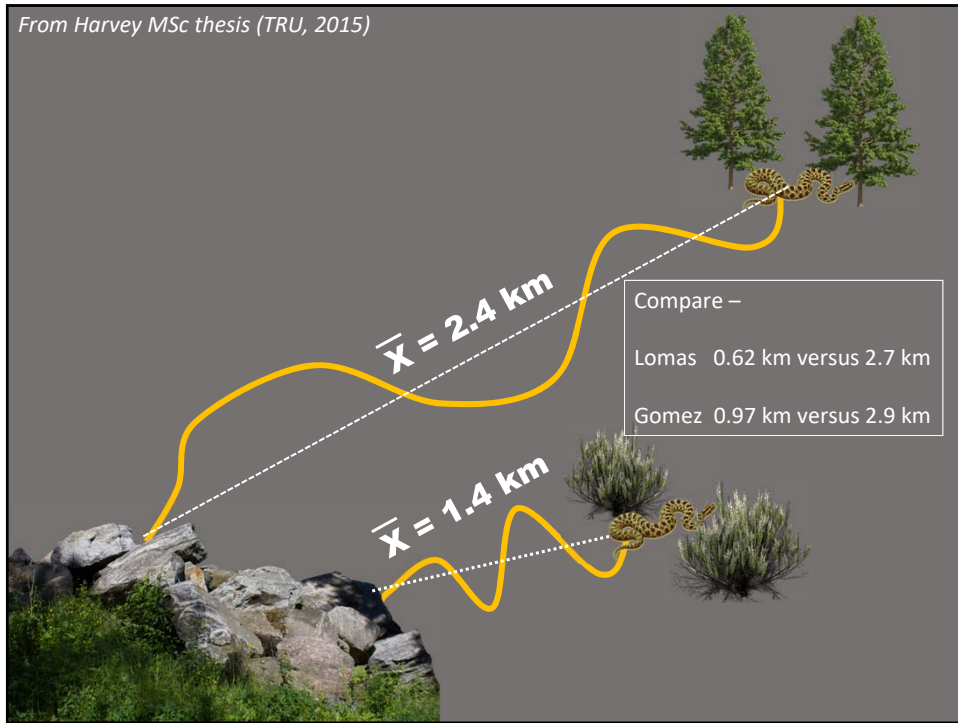
A quick 'blurb' about rattlesnake life-history

- use traditional and communal hibernating sites
 - high fidelity
- emerge in spring ('**egress**') and travel away from den
 - forage, grow, shed, mate, etc.
- in autumn, return to den and enter into hibernation ('**ingress**')
- In BC (at least), summer movement patterns are inconsistent



6

From Harvey MSc thesis (TRU, 2015)



7

Some context to rattler movements:

- BC rattlers are at the extreme northern limit of rattlesnake range



8

Some context to rattler movements:

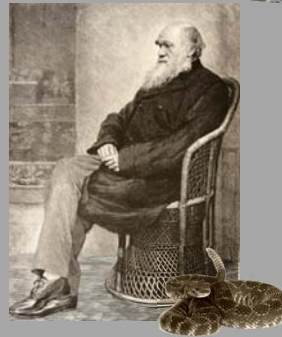
- BC rattlers are at the extreme northern limit of rattlesnake range
- Movements and total time away from dens have costs when summers are...
 - short in length
 - lower in quality
 - travel increases risks



9

Some context to rattler movements:

- BC rattlers are at the extreme northern limit of rattlesnake range
- Movements and total time away from dens have costs when summers are....
- Natural selection should be strong on honing cues and timing of ingress and egress

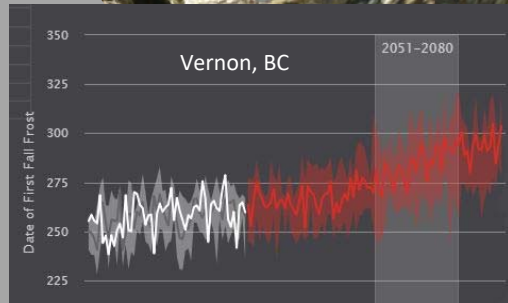


10

Enter climate change...

Vernon, BC

	1976-2005	2051-2080
Freezing Degree Days	385	157
Days >30°C	22	59
Date of First Frost	Oct 4	Nov 1
Date of Last Frost	May 5	Apr 3



source: Climateatlas.ca



11

Scenarios:

Doom-and-gloom

- Snake return to dens 'too early' and remain quasi-active too long
- Snake emerge and leave dens 'too early'
- Shifting ecotones affect distance snakes must travel

More rosy

- Behavioural shifts (plasticity or new adaptation) enable coping



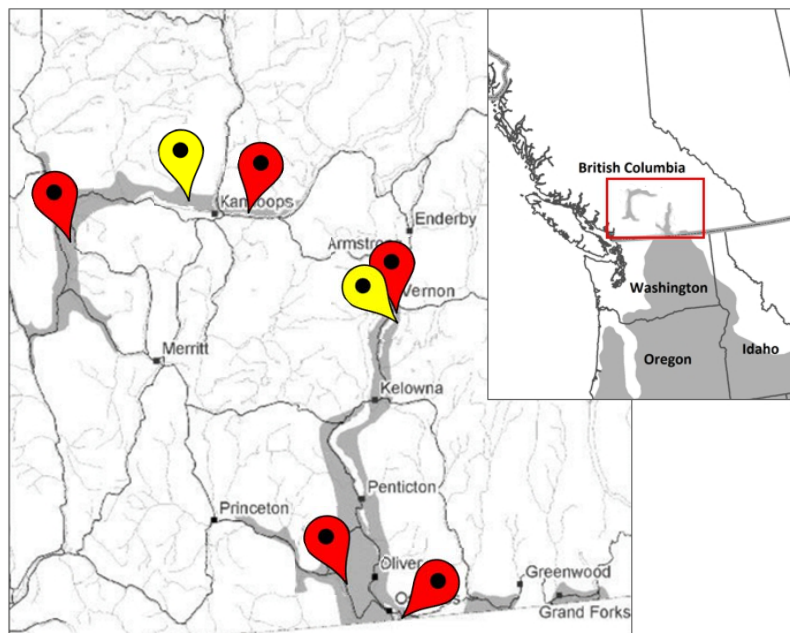
12

Objectives of our study:

- Monitor snake emergence patterns at a sample of den sites across the range of BC rattlers
 - timing and duration of egress and ingress
 - correlation with local temperatures
 - correlation with plant phenology



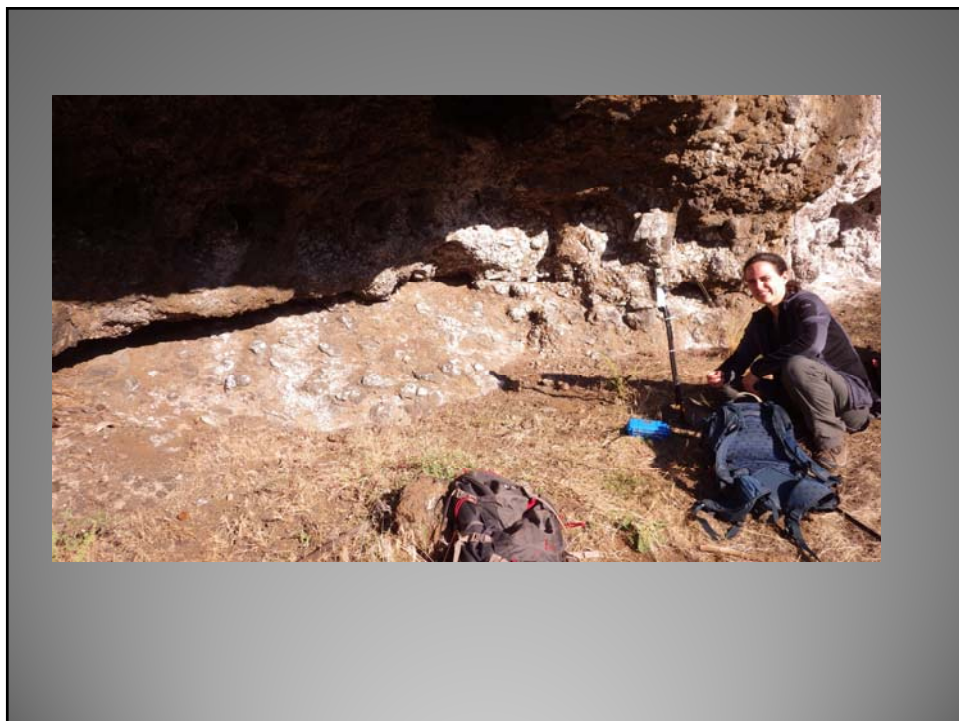
13



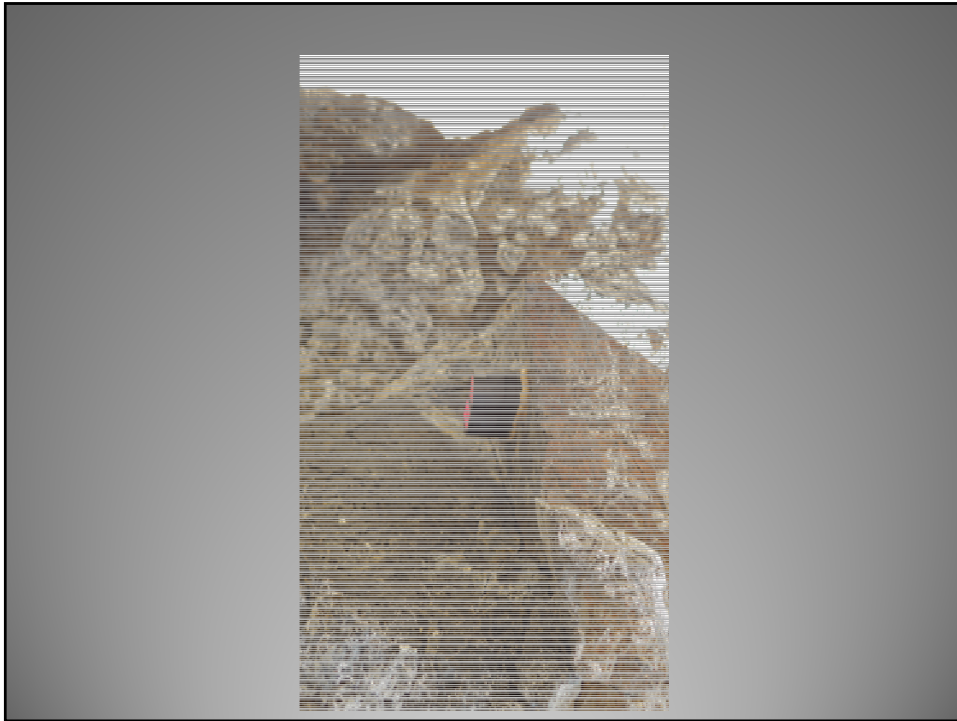
14



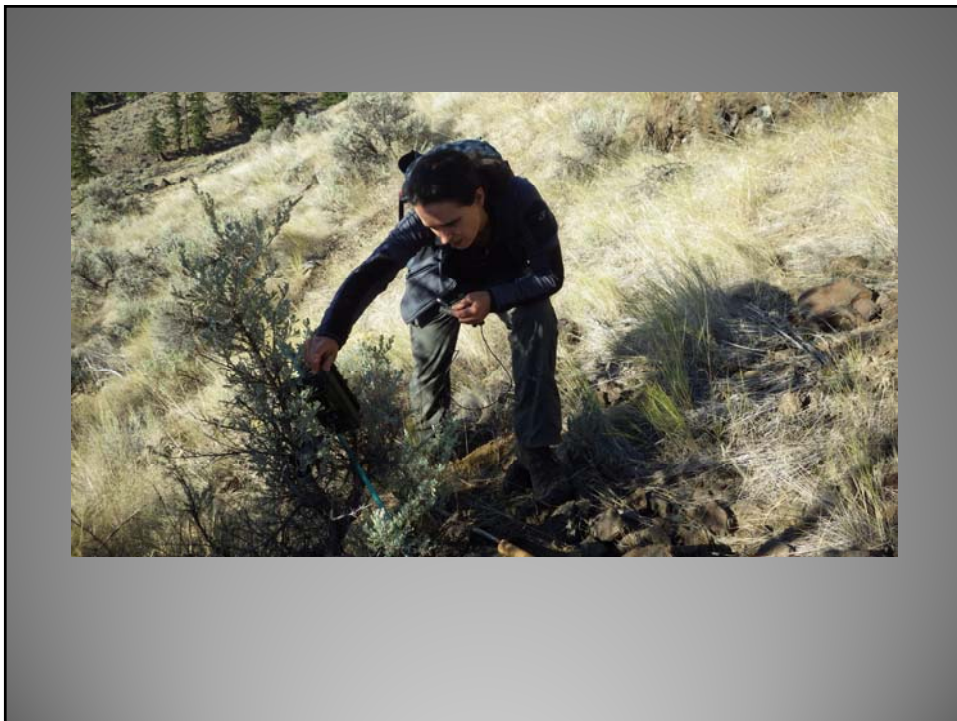
15



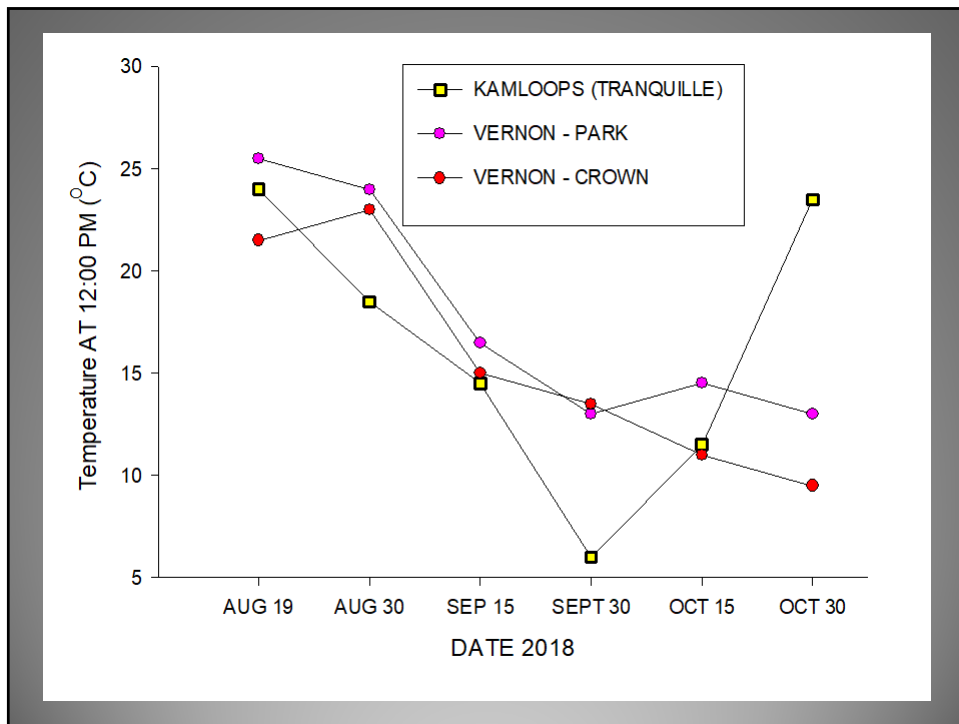
16



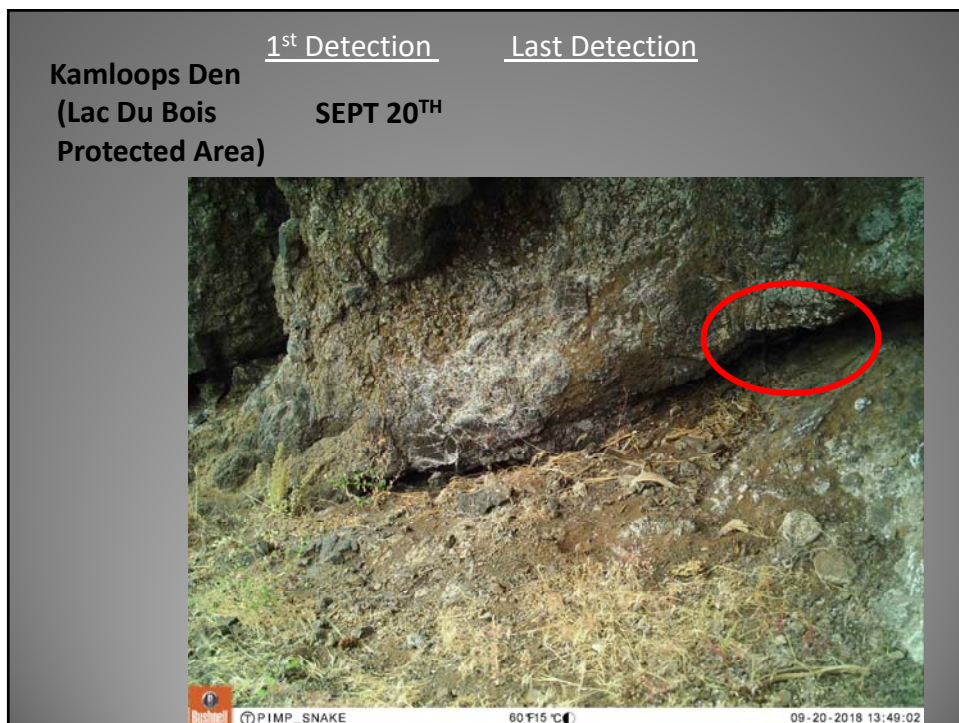
17



18



19



20

	<u>1st Detection</u>	<u>Last Detection</u>
Kamloops Den (Lac Du Bois Protected Area)	SEPT 20TH	OCT 30TH
Vernon Den (Kal-Lake Park)		

21

	<u>1st Detection</u>	<u>Last Detection</u>
Kamloops Den (Lac Du Bois Protected Area)	SEPT 20TH	OCT 30TH
Vernon Den (Kal-Lake Park)	SEPT 18TH	OCT 6TH

VERY Preliminary results!

22

Moving forward:



Intend to run these cameras
'as long as possible' in spring and
fall of each year

- ➡ baseline data on egress and ingress
- ➡ understand variation in above as function of local 'microclimate'
- ➡ can we predict egress by plant phenology?
- ➡ do shifts occur as 🎵 the seasons are a'changin'? 🎵

ALSO could serve as a coarse population monitoring program...



23



24