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

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A quick ‘blurb’ about rattlesnake life-history

- use traditional and communal hibernating sites
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- 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
Compare –
Lomas  0.62 km versus 2.7 km
Gomez  0.97 km versus 2.9 km

Some context to rattler movements:

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

- Natural selection should be strong on honing cues and timing of ingress and egress
Enter climate change...

<table>
<thead>
<tr>
<th>Vernon, BC</th>
<th>1976-2005</th>
<th>2051-2080</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freezing Degree Days</td>
<td>385</td>
<td>157</td>
</tr>
<tr>
<td>Days &gt;30°C</td>
<td>22</td>
<td>59</td>
</tr>
<tr>
<td>Date of First Frost</td>
<td>Oct 4</td>
<td>Nov 1</td>
</tr>
<tr>
<td>Date of Last Frost</td>
<td>May 5</td>
<td>Apr 3</td>
</tr>
</tbody>
</table>

Date of First Frost: Nov 1 to Oct 4
Freezing Degree Days: 385 to 157
Days >30°C: 22 to 59

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
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
Kamloops Den (Lac Du Bois Protected Area)

1st Detection: SEPT 20TH

Last Detection:
<table>
<thead>
<tr>
<th>Den/Wildlife Area</th>
<th>1st Detection</th>
<th>Last Detection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kamloops Den (Lac Du Bois Protected Area)</td>
<td>SEPT 20&lt;sup&gt;TH&lt;/sup&gt;</td>
<td>OCT 30&lt;sup&gt;TH&lt;/sup&gt;</td>
</tr>
<tr>
<td>Vernon Den (Kal-Lake Park)</td>
<td>SEPT 18&lt;sup&gt;TH&lt;/sup&gt;</td>
<td>OCT 6&lt;sup&gt;TH&lt;/sup&gt;</td>
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</tbody>
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*NOTE: Preliminary results.*
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...