

Utilizing Borderlands Indicators of the Porcupine Caribou Herd



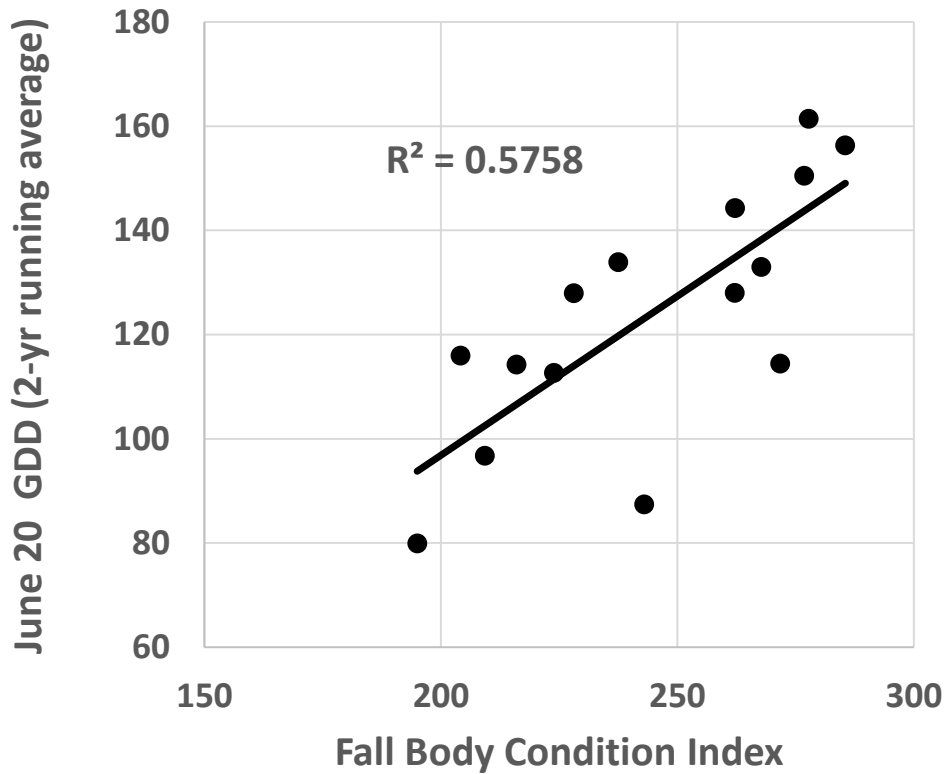
Previously reported to PCMB....

- Russell et al 2013
 - *Co-op indicators showed increasing trends during 2001-2008 for availability, meeting needs, body condition....during period when population estimate not available*
- Gagnon 2016
 - *“how climate and non-climate trends affect the capacity of hunters to meet their needs”*

Current Borderlands initiative: Linking Co—op indicators to climate and herd performance

- Reported here initial results for Fall and Spring body condition.
- Created quantitative index based on weighted responses of Fall and Spring condition
 - poor, fair, average, good, excellent
- Linked to CARMA climate database
- Linked to agency measures of vital rates

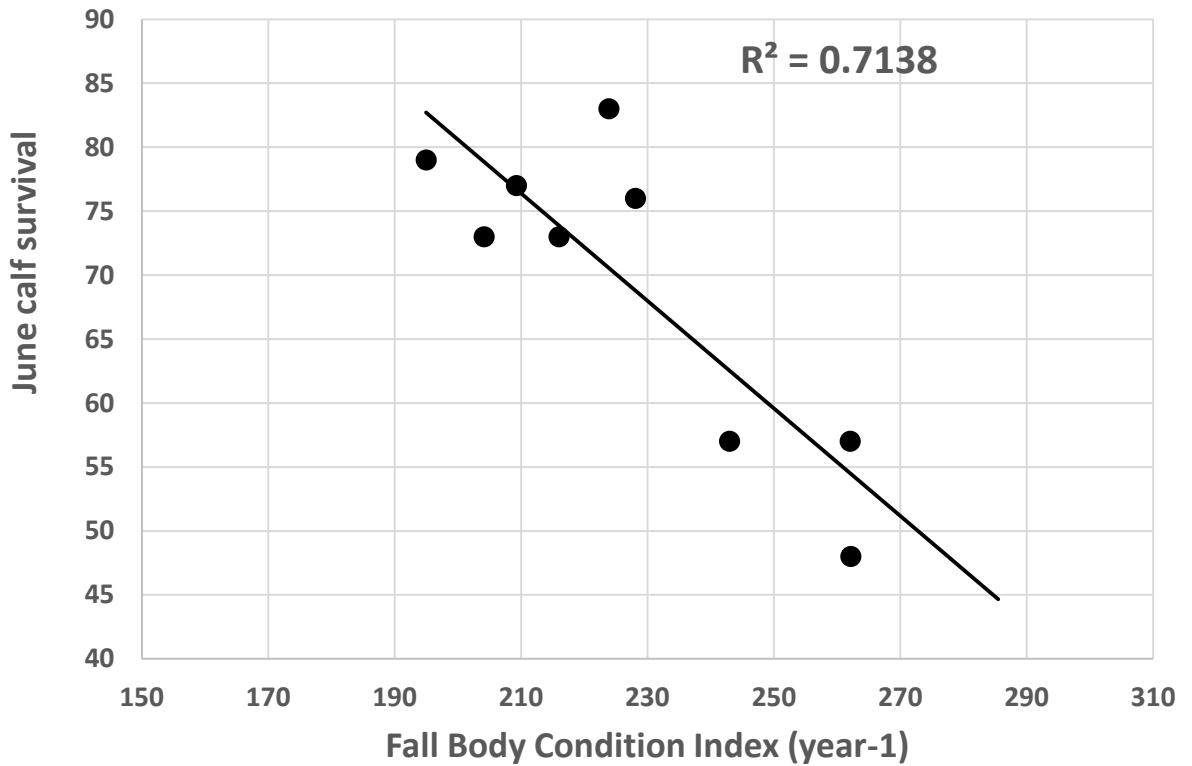
Fall condition and climate



GDD – Growing Degree days

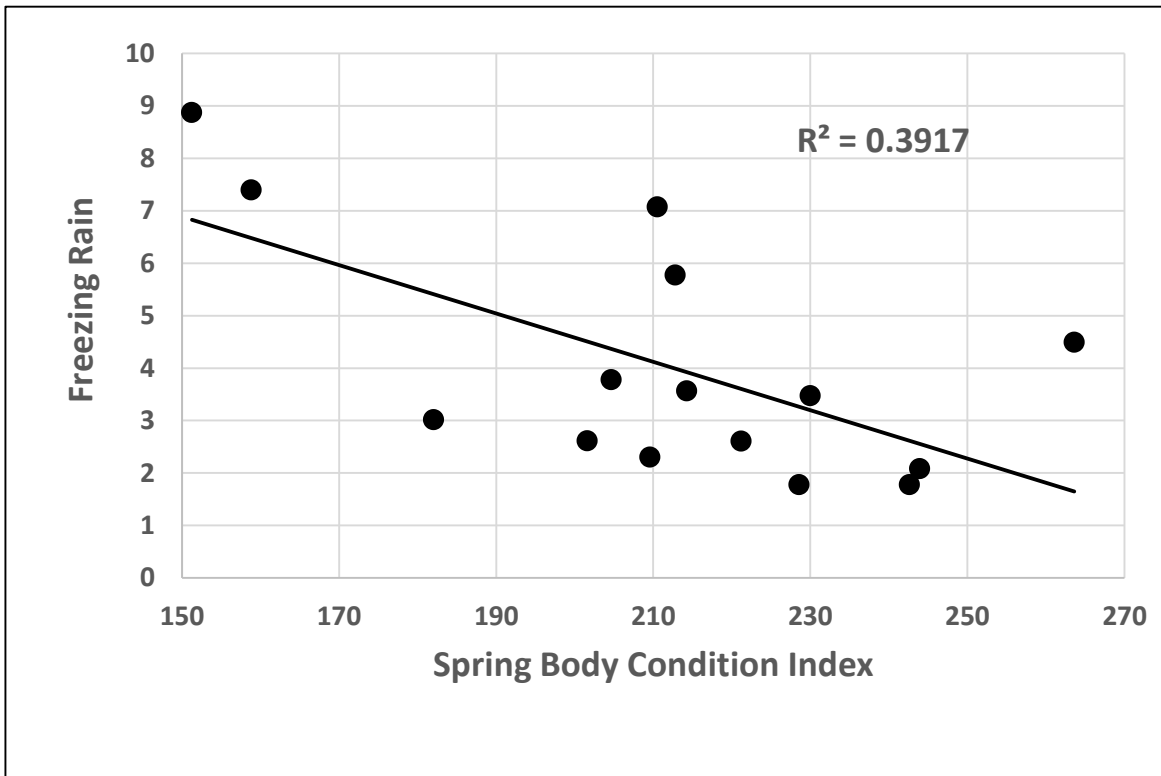
- 58% variability in Fall body condition accounted for by 2-yr average of GDD June 20
- Other summer indicators also significant

Fall condition and Vital rates



- 71% variability in June calf survival accounted for by fall body condition the previous fall

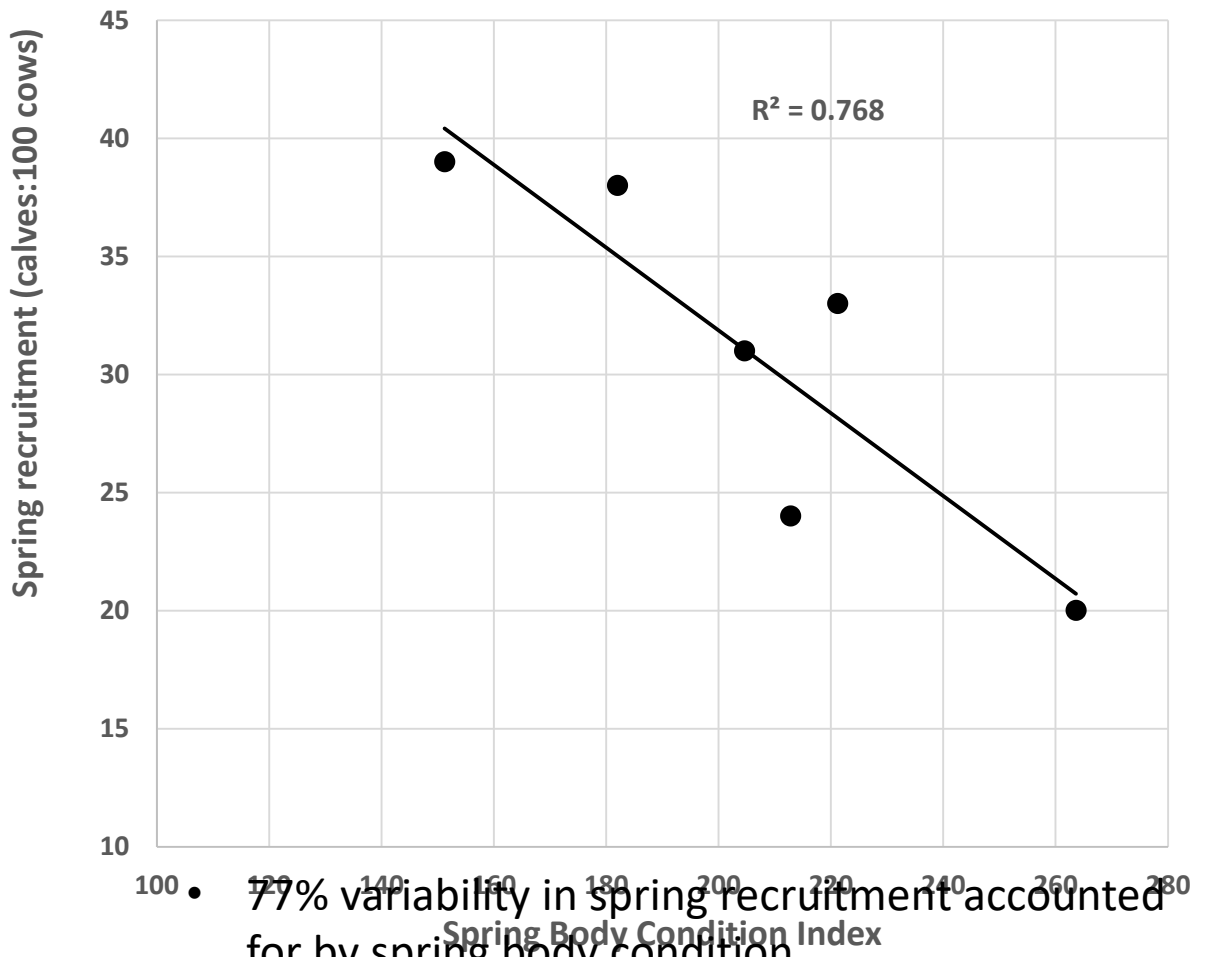
Spring condition and climate



Freezing – total precip. – precip. as snow

- 39% variability in spring body condition accounted for by cumulative freezing rain
- NOTE: relationship seems counterintuitive, thus may be more related to a positive effect of winter temperature.

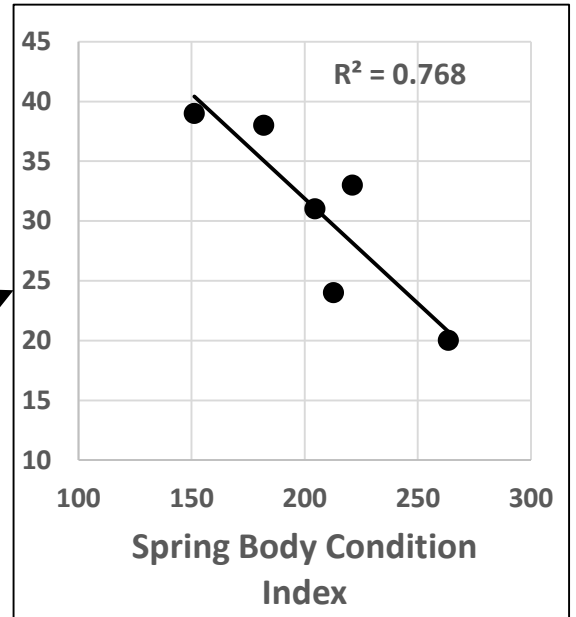
Spring condition and Vital rates



- 77% variability in spring recruitment accounted for by spring body condition
- Seemingly counterintuitive, BUT may be related to more cows with calves being on average in poorer condition in the spring.

Monitoring issues

Year	Spring Recruitment	Spring Condition
2001	31	205
2002	38	182
2003	33	221
2004	24	213
2005		202
2006	39	151
2007		210
2008		159
2009		229
2010	20	264
2011		230
2012		243
2013		244
2014		214
2015		211



- Recruitment only measured twice in last 12 years
- Borderlands offers annual indicator estimates

- No estimate of adult cow mortality available
- Climate indicators annual since 1979

Conclusions

- Co-op data has been available on an annual basis for the last 16 years
- Previous analysis has proven useful when more traditional (population estimates) are unavailable
- Co-op data helps to better understand the relationship between climate and community harvesting activity (Gagnon)
- In this analysis body conditions indicators relate to both climate and herd productivity.
- In recent years, either due to shrinking budgets or shifting priorities, agency monitoring of PCH vital rates have not been a reliable annual source of data, needed to fulfil the mission of the PCH Harvest Management Strategy.