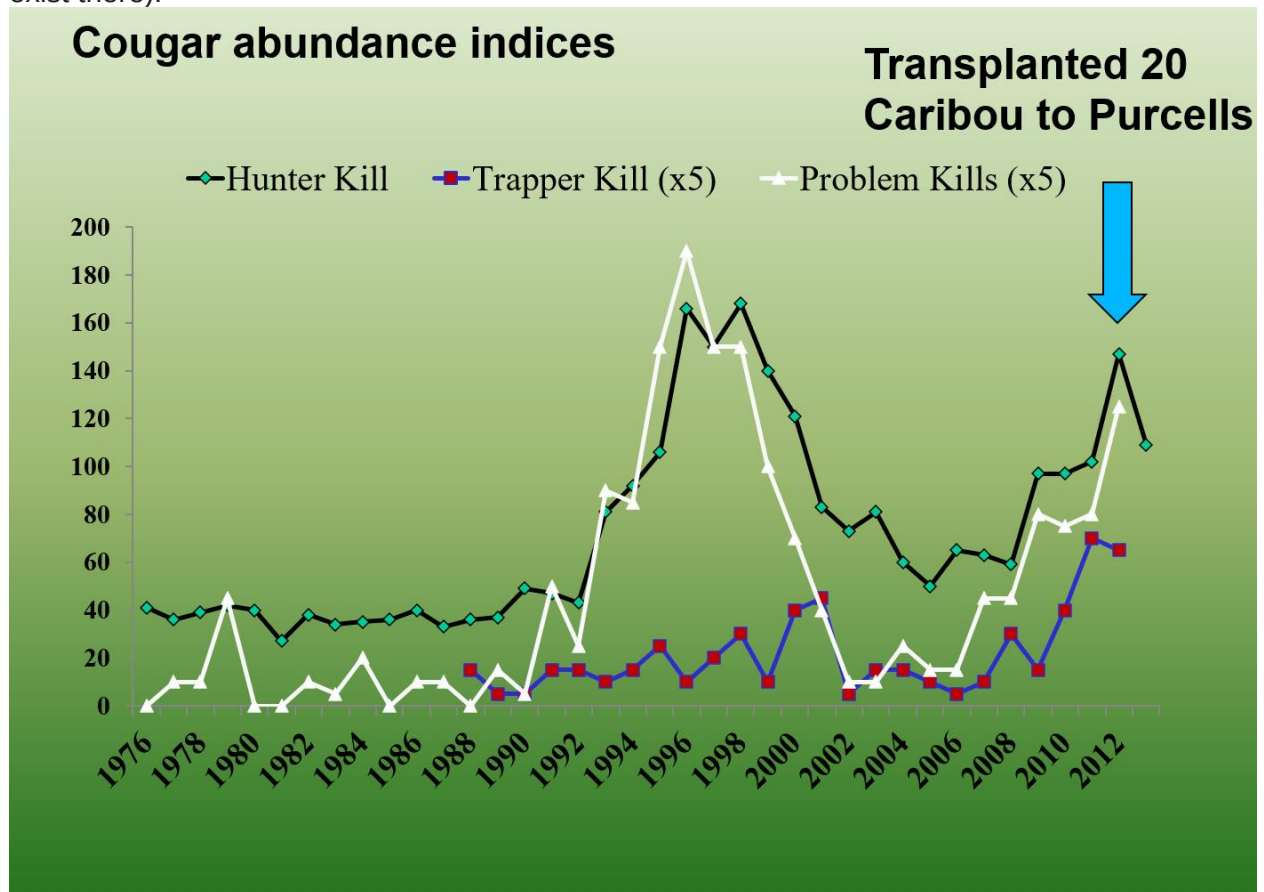


Full disclosure that what I am writing here is naïve in the sense that it does not consider ceremonial, traditional or Indigenous knowledge and values. Furthermore, I am not advocating for any of the options (status quo, move to Central Selkirk, or move to Columbia north). This is simply information to help people decide.

Hard vs soft release

The discussion of hard vs soft release could be put into the context of the “ecological conditions” of the recipient population. To give an example of what I mean, In Ontario, 9 caribou were hard released (no pen) on a predator-free island, all survived (beyond the life of the radio collars) and became pregnant the next season. Another 6 caribou were also hard released but to a more remote location where less was known about their subsequent pregnancy status. The caribou were removed from Michipicotin island because wolves came to the island in 2014-15 on a snow bridge, and then the herd was reduced from > 400 to less than 20 animals. I can provide more details if needed.

In contrast, 19 caribou were hard released in the BC’s Purcell's herd in 2012, when cougar #s were at a peak, and all caribou subsequently died within 12 months. This is a reminder that transplants and similar measures should not be done if the conditions that [led to the decline](#) are still present (which can be assessed by current population growth rate, if animals exist there).



Ecological conditions

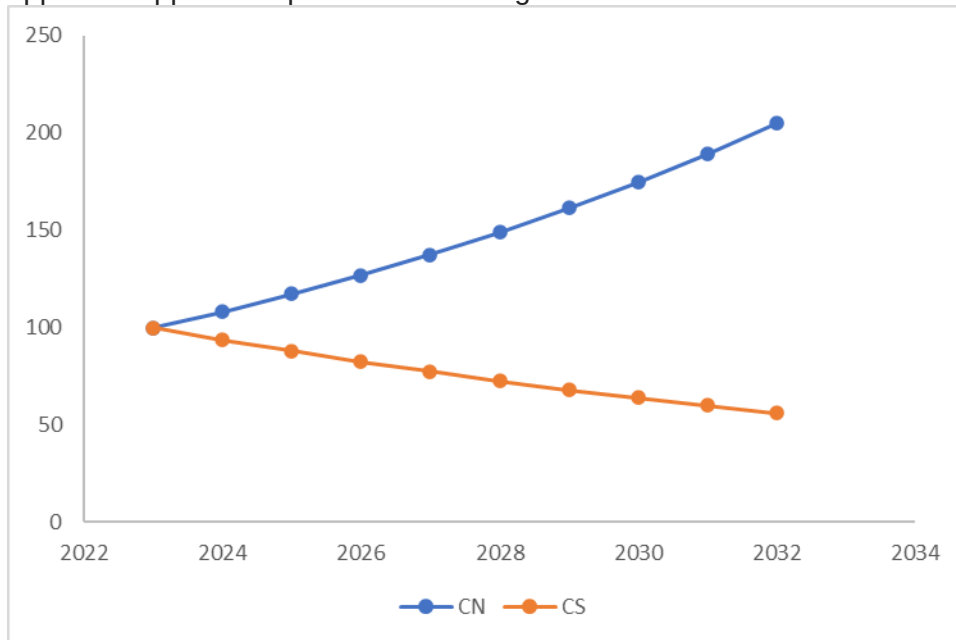
Related to the first section, here a is bit more to consider regarding ecological conditions.

If we take the 5-year average annual population growth rate of Columbia North (CN) and Central Selkirks (CS):

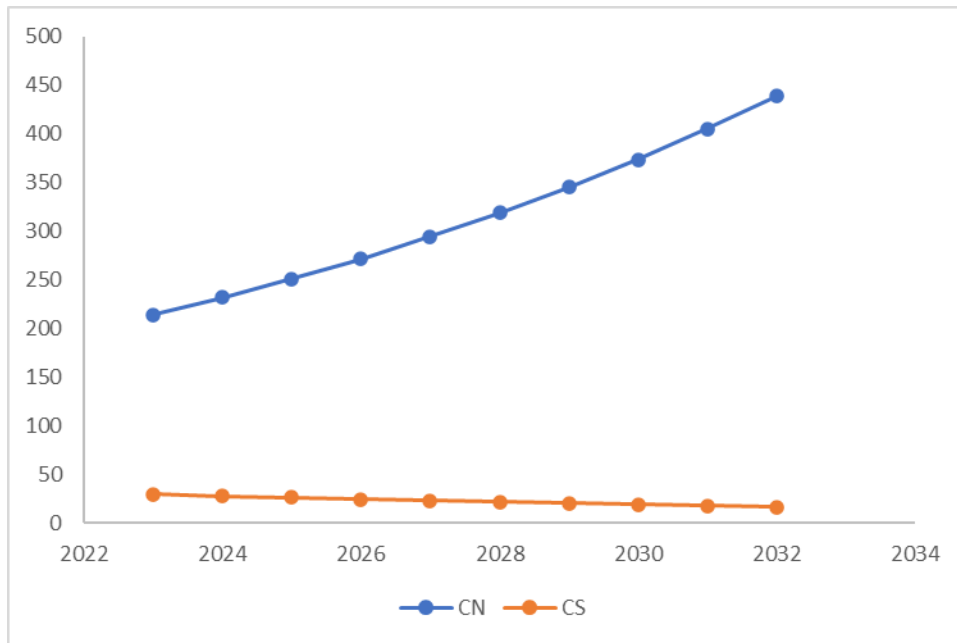
CS = 0.938

CN = 1.083

This is a 15-point difference in annual population growth, which is large for vertebrate populations. To visualise this difference, I can set the same starting population size, to make an apples-to-apples comparison of the magnitude of the difference between growth rates:



One could also use the actual population sizes and project the growth rates to compare CN and CS:



These growth rates essentially combine or integrate habitat condition along with the predator-prey system. They reflect the “ecological condition” for caribou. The logical conclusion is that the ecological conditions are superior in CN. Incidentally, during our meetings, I never heard anyway say that Central Selkirks was not viable. But it is defensible to say that CN has better ecological conditions, almost by definition. Another key ecological metric is deer abundance, which we can index with deer harvest records. More deer is generally bad news for caribou. The deer harvest rate per km² is > 5x higher in the management units encompassing Central Selkirk compared to Columbia North. Previous research has made a similar point about probability of persistence of these different subpopulations, based on landscape conditions (see [here](#)). Related to this point, one may also want to consider [this recent](#) paper and associated easy-to-use [online tool](#).

Finally, I dispute a statement in the BC provincial summary (Columbia South Translocation Provincial Summary_.pdf) that was sent around last week. It reads “Central Selkirk population est. ~28 caribou and has experienced longer term decreasing population trend and short-term stability.” The population model paper that is being submitted (that includes many BC govt authors in this group) shows that the 3, 5 and 10-year annual population growth rate is 0.955, 0.938 and 0.92, respectively. These values do not indicate recent stability.

Survival in Pens

The survival rate in Southern Group pens is lower than wild rates at a similar time of year (i.e. April, May, June). By southern group I mean herds from Prince George down to the US border. SG pens have had 5 adult cow mortalities inside the pen (4 in RCRW, 1 in Central Selkirk, out of 79 cows).

Importantly, the local herds (Col North, Col South, Frisby-Boulder, Central Selkirk) have an annualised survival rate of 0.953 compared to the equivalent in-pen rate of 0.770. The pen has small sample size (5 mortalities), but the conclusion of all the authors (which included both veterinarians and population ecologists) in the [RCRW final report](#) was that the pen likely played a role in the mortality of these cows. However, as the Parks Canada veterinarian correctly pointed out to me recently, the Columbia South cow may not be pregnant, which may mitigate some risk of being in the pen (most of the 5 in-pen deaths

were related to birthing). By the way, the survival rate inside the KlinseZa Pen (central group animals) is much higher than our southern group pens.

Pen or Wild		April to June rate	ANNUALIZED RATE
Pen	Southern Group pens (RCRW aka Col North) and Central Selkirk)	0.937	0.770
wild	Southern group wild animals 1990s to present	0.950	0.814
wild	Southern group wild animals 2014 to 2018 (similar to RCRW pen years)	0.982	0.930
wild	Local Herds 1992 - 2020	0.951	0.818
wild	Local herds, recent data (2014-2018)	0.988	0.953

Southern Group herds mean all herds from about Prince George down to the US border

Local herds mean Col North, Col South, Frisby-Boulder, Central Selkirk.

Moving one cow

It is impossible to know how one cow will react to a hard release. Integration with other animals clearly has a higher chance in a pen. However, if a hard release to Col North is chosen, there are tools that can be used to try to “keep the cow” from running off. Dumping a large amount of lichen and/or caribou food pellets may help anchor her to an area with lots of other Col North caribou. This could be done in a separate helicopter on the same day (but just before) the Col South cow is moved. In support of this approach, we’ve just learned that the Simpcw-led feeding trial has had success, with one group of caribou finding the food and hanging around that area.

I hope this information can be helpful.