"Following are notes from a CARMA 7 break-out session, and as such reflect the group ideas and participation and are meant to help CARMA set priorities".

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| **CARMA Protocols** | **Community members** | **Managers/ Biologists** | **University researchers/Graduate students** |
| Are protocols useful? | Few direct users.  Use is made indirectly through community advisers.  Use local understanding of environmental conditions as indicators of likely condition of caribou before the hunt commences.  Buy-in to assess body condition and health is needed in communities. | ~5 direct users and an equal number of indirect users.  Concern expressed on whether data collected was representative of the population. Importantly, what sample size is representative? E.g., do 20 animals from a herd of 100,000 represent condition of the whole herd (formulas available to calculate sample size for detecting disease at certain prevalence levels, is there the equivalent for body condition). Need these tools. Anecdotal evidence suggests potentially important differences between groups in a single herd.  Can existing CARMA data be used to determine samples sizes and provide sampling guidelines  Could collections be more regionally representative. | ~5 direct users and an equal number of indirect users.  Based on a study on the GRH/LRH body condition (body fat) measurements cannot substitute for population measurements to determine status and trends in a population.    Is there some convergence of sampling indices?  Can we conclude something on the health of the population from the individual measurements? That is, although they may not directly predict population trajectory because of multiple factors influencing this, they may provide insight into individual resilience and productivity (this latter part is my addition but is, I believe, what Ryan was getting at). |
| How could protocols be improved? | Condition Manual: Include hunter impression and technical feedback.  Insert a pre-protocol protocol that involves community inclusion and builds trust between community users and co-management/management boards.  There is a lack of information transfer relative to sampling reasons and then the results.  CARMA does not capture the hunter-to-hunter information flow. | Could/should CARMA include a process for assistance in interpreting data collected by the protocols? ? (yes, e.g., a rump fat index on hunter reports/licenses accompanied by cm/inch ruler on license + guide for how/where to cut into rump fat)  Consider targeted sampling to cover population demographics ;  age x sex x reproduction status. Given Power analyses, suggest a minimum sample size depending on what questions you seek to answer (how many splits of group/class will you consider comparing against each other within just a sampling of cows, e.g., P NL, P L, NP NL, NP L)  Sampling a small population where hunting may not be an appropriate means of accessing samples.  Develop an *in vivo*/ non-lethal sampling protocol. Non-invasive monitoring is necessary in small populations  Can protocols be modified to maximize information gained for a bull-only harvest – with declining herds bull-only is the recommendation, what data can we collect that could be meaningful for the herd as a whole?  Consider application of data to management. Address carrying capacity- range status/ deterioration. Specifically how the body condition and health results can be used for management.  Do not modify protocols until there is time for adequate feedback. Because mortality rates are missing in the CARMA protocols…perhaps, provide a protocol for possible ways to get mortality rate approximations for adults + calves in the absence of collar data  Need more concrete recommendations as to what, who and when to sample.  Are there ‘triggers’ that we should recognize/establish. ie. points at which management actions are put into place – e.g., if herd average ceruloplasm decreases to X, if fall body condition is at X etc. Ultimately, can we use the individual animal monitoring to make management decisions/ recommendations/anticipate changes in abundance etc. ?? | Concern over sample sizes and statistical analysis.  Concern over bias in samples due to measurement accuracy and the way the samples were taken in the field.  Given the few sizes samples, and lack of statistical significance, should we stop doing body condition measurements? Discussion on pros and cons.  Are we making too many measurements of fat? Could a single measure of weight and body length, or another measure of dimension, substitute for multiple indicators?  Protocols – are good and helpful, but need some direction as to priority for sampling given limited resources/time.  Protocols – need specific protocols for specific types of sampling – ie. if for genetics, how to collect and store, if for pathogen X, how to collect and store etc |
| How could accessibility to protocols be improved? | There is a variable view of accessibility.  Web-based access not always available.  Timely access to data generated and what it means for the community and management was a common concern.  Input of hunter impression of condition of the animals varies depending on whether the hunter is working from a protocol-based hunt or a personal hunt on the land. Both views are important to the impression/ranking of caribou health and condition, however both may not be possible at the same time from the same person. | Issue was not addressed | Issue was not addressed |
| Future | Community/users should develop a health-body condition protocol that is the community equivalent to the CARMA body condition protocols. Important is that it is developed so comparable across communities.  Protocol should be based on TK and local ecological knowledge and expressed in colloquially recognized language and/or words.  Protocol would address concerns for respect to the caribou.  Capture the hunter-to-hunter information flow. | CARMA could expand extant protocols to include sections on:  Non-lethal sampling/ in vivo sampling techniques for condition and health assessment.  Access to advice on use and data analysis/ interpretation.  Discussion about ensuring that we know Why the monitoring is done. That is, don’t just monitor for the sake of monitoring – this gets back to previous discussion of how do we put these data to use. Why monitor using the manual/ protocol?  GNWT – John Belanger statistician is going to look at demography – population counts, recruitment, male:female ratios, calving rates, etc. and do power analyses. These will be made available to CARMA network | CARMA could/ should develop a sampling protocol for:  Genetics  Traditional Knowledge  CARMA could expand extant protocols to include sections on:  Priority of indicators  Frequency of sampling  Statistics????  Address what and how many variables/ indices are needed to assess population trends?  What alternative statistical approaches and packages are |
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