Grizzly Bear Program Quicknote #1

March 2010: Why We Need to Study and Understand Grizzly Bear Health - Part I Background

The Foothills Research Institute Grizzly Bear Program (FRIGBP) was established in 1999. Its primary goal is to provide knowledge and planning tools to land and resources managers to ensure the long-term conservation of grizzly bears in Alberta. The core of the program is a multi-disciplinary team of research scientists from across Canada representing fields that include remote sensing, veterinary medicine, ecology, genetics, molecular and biochemical physiology and bio-statistics. Financial and logistical support for the team’s activities is provided through a diverse partnership of industry, government, universities, environmental organizations and funding agencies. The merging of resources made possible by this remarkably broad partnership in pursuit of a common goal has enabled a large-scale approach toward grizzly bear conservation in which wildlife health is playing a pivotal role.

Background: Provincial grizzly bear DNA-based population inventory work completed by our program over the past five years has provided the first baseline dataset on population status of grizzly bears in Alberta. Reports from these annual inventory efforts are available at www.srd.alberta.ca/ManagingPrograms/FishWildlifeManagement/BearManagement/GrizzlyBears.aspx.

In 2002 the province estimated that there were over 1000 grizzly bears in Alberta (Kansas 2002). We now have data to suggest that there are approximately 582 grizzly bears in Alberta. Whether this difference represents changes in approaches to estimating population size, a true decline in numbers, or a combination of the two is unknown. Nonetheless, the fact remains that current grizzly bear numbers are much lower than expected and long-term sustainability of grizzly bear populations in Alberta is uncertain.

Scientific literature suggests that the best predictor of the long-term persistence of a species is population size (IUCN 2002). Combined with this understanding is the finding that for species with a population size between 50 -100 individuals the risk of population extinction is high (Reed 2003). The new DNA inventory data has shown us that 4 of the 5 management units sampled in Alberta sampled to date, have population sizes either within or below this range. These data show us that a serious and important management challenge exists for the long-term survival of grizzly bears in Alberta.

The expense and difficulty involved in tracking grizzly bear population size (to determine population trend) remains a significant challenge and one where ongoing research is required to determine the most feasible approach. We believe that although monitoring population size is appropriate and necessary, other measures of population status (using more non-invasive sampling techniques) are required.
Current Challenges: Large scale, human-caused changes to the environment often have negative effects on wildlife populations, or do they? It’s logical to conclude two events, for example, such as the development of a regulation-size golf course and a subsequent decline in numbers of local songbirds, are related because both events occurred in the same place with changes to the environment preceding changes in local avian populations. Often though, the mechanistic factors coupling these events are undefined. Yet, without knowing what these factors are, and how they link to each other, the question of whether the events represent cause and effect, or are merely coincidental remains unresolved. More importantly, from the standpoint of taking wildlife management and conservation actions, how can you mount an appropriate response if you don’t know what you’re up against.

This dilemma applies well, but is certainly not unique, to the current situation with grizzly bears in Alberta. This is a province that in recent years has experienced unprecedented economic growth coupled with increased exploitation of its lands for resource extraction, agriculture, urbanization, and recreation, and many of these activities are occurring throughout the province’s distributional range of grizzly bears.

Ensuring Relevance

The FRIGBP was established to address specific challenges in Alberta related to issues of grizzly bear sustainability in the face of increasing societal demands for natural resources. These challenges, however, are not unique to grizzly bears in Alberta; there are other species in Canada and throughout the world also threatened by the environmental impacts of human activities. With this in mind, the research team is striving to ensure the knowledge and tools gained through their endeavors can be readily transferred to land and resource managers for application not only in grizzly bear range, but wherever co-existence between humans and wild species is imperiled.

The products of this research (maps, models, biomarkers) are designed to be immediately used in a wide variety of land management planning and conservation efforts. The team is also working with its different industrial sector partners, as well as government management agencies, to identify a one-window approach to develop and deliver training to all users of the program products. What is perhaps most relevant about the FRIGBP, however, is it provides a solid example of how multidisciplinary research collectively supported by industry, university, government, and non-government partners can provide practical applications for land management and wildlife conservation.

Tracking long-term stress and understanding wildlife health is crucial to establishing if large-scale human-caused environmental change is the cause of, or contributes to, poor performance of resident wildlife populations. Where this linkage occurs, the time lag is explained by the fact that long-term physiological stress develops in individual animals in response to environmental stressors. This, in turn, leads to gradual impairment of health in stressed individuals, but only after enough individual animals are affected will evidence of poor population performance become evident. Ability to detect long-term stress, therefore, provides potential to mitigate environmental stressors before population performance is affected, and equally as important to monitor the efficacy of conservation strategies in recovering populations.

For more information on this or other Grizzly Bear Program Publications, please contact: Gordon Stenhouse, Foothills Research Institute, Tel.: (780) 865 – 8388, Email: gordon.stenhouse@gov.ab.ca or visit www.foothillsresearchinstitute.ca.