Fraser River Bighorn Sheep Disease Mitigation: An Update

By Loyd Csizmadia

The California Bighorn Sheep hear it coming long before they see it, 100 decibels of rotor-noise whirring along the Fraser River as the Hughes 500 seeks its female quarry. Then, looking like the massive head of a dragonfly, the helicopter rises over the benchlands of bunchgrass. The Bighorns bolt for their escape-terrain, but it's no use. The wildlife biologist raises a net-gun and "bang," an ewe tumbles to the ground. The biologist then lands, and, in this specialist's hands, the netted ewe is hobbled, hooded, radio-collared, ear-tagged, swabbed, and released. The nasal swab will determine her fate. If the ewe tests positive for M.ovi, the helicopter will return, she will be shot, and tissue will be removed from several of her internal organs. Euphemistically speaking, this treatment is known as "T and R" (short for "Test and Remove"), and it is absolutely necessary for the survival of California Bighorn Sheep living in the low elevation grasslands between Lillooet and Williams Lake. There is no vaccine.

M.ovi, short for *Mycoplasma ovipneumoniae*, is a pathogen that causes bronchopneumonia in all ages of wild sheep. If left unchecked, it can kill an entire herd. Approximately 17 bands of bighorn sheep live between Lillooet and Williams Lake. In the 1990's there were about 2400 animals. Today, there might be 800, and among those remaining, some carriers of the pathogen remain at large. With a limited budget that is 95% funded by private partners, Ministry biologists are doing the best they can, but it costs a lot of money to locate, test, and remove all of the infected ewes. As of 2023, 40 carriers of M.ovi in 8 bands south of the Chilcotin River have been shot. To find the carriers, 258 sheep had to be captured and tested.

The good news is that "T and R" works. After monitoring the post-treatment health and survival of lambs in the 8 bands treated from 2020 to 2023, wildlife biologists report that generally speaking significantly more lambs are living through the summer. Prior to treatment, infected and uninfected ewes gathered and gave birth on the same lambing range. The infected mother would nuzzle her baby, and through this nose-to-nose contact, M.ovi entered the nursery group. Lacking a fully developed immune system, most lambs succumbed to the disease, typically suffocating on their own mucus. Now that more lambs are surviving, it is possible that within eight years time, sheep populations along the Fraser River could rebound to 1990's levels.

For this to happen, however, all of the infected ewes will need to be removed. Between 2024 and 2028, 305 more ewes in 9 bands will need to be captured and tested. Ideally, this should happen in one rather than four years, since M.ovi-free herds could be reinfected by bighorn sheep from untreated herds. Unfortunately, the cost to do this is well over a million dollars—on top of what has already been spent.

And there will be other costs. Habitat will need to be enhanced, some predators may need to be culled, but most importantly, the main sources of M.ovi will need to be controlled.

Domestic goats and sheep are the best understood source of M.ovi, domestic sheep in particular. Three in ten B.C. sheep carry the disease, but unlike their wild counterparts, few die from it. When wild sheep come into contact with domestic sheep, transmission is very likely. Domestic grazing allotments within 10 kilometers of a wild herd could impact rams, ewes, and lambs alike. Allotments beyond 10 kilometers might still attract males. Rams occasionally foray over long distances and have been documented

seeking mates among domestic sheep. When an infected ram returns to his home range, he can wipe out 80% of his herd.

The answer to this problem seems straight forward: prevent contact between wild and domestic sheep. Or, at least reduce the probability of an encounter. In British Columbia, cooperation rather than legislation is the norm. For example, BC's Ministry of Agriculture, Food, and Fisheries recommends double-fencing. The outer fence should be higher than a ram can jump, and the inner fence should be far enough away from the first fence to prevent nasal droplets from infecting any curious wild sheep, male or female. If it is unrealistic to double-fence an entire allotment, a small pen of similar design could be built. Whenever a wild sheep forays into the area, the domestic sheep should be isolated until the bighorn moves on. In addition to isolating the herd, the BC Government asks that anyone who spots a wild sheep near domestic herds report it to **RAPP at 1 877 952-7277.** None of this is law.

Another Ministry recommendation is that farmers regularly test their herds for M.ovi. Nasal swabs can be sent to a lab in Abbotsford, B.C. Animals which test positive should be isolated or culled, and then measures should be taken to protect the M.ovi-free herd from reinfection. If necessary, a veterinarian can guide this entire procedure. Again, B.C. farmers are not obligated to do any of this.

Neighbouring Yukon is taking a firmer approach. In 2020, Yukon's Resource Minister began phasing in a strict set of rules for the farmers of domestic sheep and goats. Proper fencing is mandatory, testing for M.ovi is mandatory, and destroying infected animals is mandatory. In addition, farmers must keep track of every animal in their herd. If one escapes, it must be immediately reported. Failing to follow the rules is an offence under the Animal Health Act. In 2020, the Yukon Government budgeted $752,000 dollars to implement their approach, significantly less than the cost of eliminating M.ovi from wild herds.

The future of California Bighorn Sheep living along the Fraser River is of concern to the Williams Lake Field Naturalists. Annually, for at least 30 years, our members have hiked the Junction Sheep Range, basking in its natural beauty while hoping for a glimpse of rams in rut. On March 8, 2023, our club invited Senior Wildlife Biologist Chris Procter to talk about the decline in Fraser River bighorn sheep. Since then, he and former provincial coordinator for the BC Sheep Separation Program Jeremy Ayotte have co-authored a paper titled *Fraser River Bighorn Sheep Disease Mitigation Program 2023 Progress Report.* Published in December 2023, it gives reason to be cautiously optimistic about the future: mitigation appears to be working, some habitat enhancement has occurred, and a comprehensive, collaborative group known as the Fraser River Bighorn Sheep Working Group (FRBSWG) is tackling domestic sheep policy and legislation. This has to work. A Junction Sheep Range without sheep is unthinkable.