And the Facts Say…Global Forest Watch Canada on the Castle

By Ian Urquhart

To this layperson the most two most important contributors to understanding the status and prospects of threatened and endangered species are habitat and political will. I've found it impossible to pick up a report on the status in Alberta of species such as grizzlies or westslope cutthroat trout and not find a discussion about how habitat and how we've altered the natural order has led to the decline of those species. Looking into their future I've yet to read a report that doesn't stress the importance of protecting and restoring habitat to their chances of surviving and thriving in Alberta. Boyce, Herrero, Horejsi, Nielsen, and Stenhouse all have emphasized this fundamental truth in their work.

It's more than a little disconcerting to note that some of these findings were made decades ago. This fact highlights the importance of political will, in this case its absence, to the status and future of threatened flora and fauna in places like Alberta. You can point your finger in just about any direction and see where our failure to rein in our own ambitions, be they to live in that new country sub-division or to send two-by-fours to build houses in the U.S., has degraded the habitat these species depend on. The "quantity of living" we enjoy has come at the expense of degrading those habitats. As citizens we haven't done enough to make governing political parties appreciate there's a significant political price to be paid for sacrificing secure wildlife habitat and compromising the health of watersheds.

Global Forest Watch Canada (GFWC) should be thanked for underlining again how Alberta's industries and residents have "disturbed" (the polite label governments and industry prefer) the landscape. This message comes from three studies on the landscape impact of linear/anthropogenic disturbances. What's especially important about the latest three bulletins from GFWC is their focus on lands found in the proposed Castle parks. By the end of 2016 your provincial government plans to have a management plan in place for these parks. The Alberta Environment and Parks website still displays the same message it did a year ago when Minister Phillips promised to "fully protect" the Castle. Last September it told Albertans… as it still does today… that OHVs, hunting, cattle grazing, and oil/gas activity will be allowed in the Castle. To say it's exceptional to allow these activities in an Alberta provincial park in a gross understatement; this list of what activities will be allowed in the Castle also mocks a common sense understanding of what "fully protect" means. The government's decision to prohibit commercial forestry and mining in these proposed parks is welcome; it doesn't come close to justifying the activities the government feels should continue to be allowed there (http://www.albertaparks.ca/media/6373227/faqs.pdf).

The Global Forest Watch bulletins detail the state of the lands in the Castle parks. Their information should be vital to government officials and interest groups if they believe that science should guide what activities are allowed and prohibited in these provincial and provincial wildland parks. What does the scientific information of these studies say?

The Human Footprint…We Don't Tread Lightly or Rarely

The first bulletin examined the human footprint in these parks and the extent to which our footprint has fragmented the landscape and eliminated habitat. How heavy is that footprint? Is it getting heavier or lighter? The human footprint is relevant and studied in the scientific literature because it contributes importantly to habitat loss and fragmentation. Such loss and fragmentation is well-accepted in the conservation biology literature as a primary cause of species decline.

The GFWC exercise aimed to establish how much of the Castle landscape is still intact. Intact landscapes are valued for three different types of reasons. First, large swathes of forest allow natural ecological processes to mold ecosystems. Second, intact forested lands perform a range of ecosystem services such as water purification. The Castle supplies one third of the annual flow water in the Oldman River basin, the water that's vital to a community such as Lethbridge. Third, we value intact landscapes for heritage, spiritual, cultural, and recreational reasons.

GFWC measured the footprint with satellite imagery. It's clear from those eyes in space that fragmentation in the Castle has increased from 2000 to 2015. The most generous picture of the amount of intact lands still to be found in the Castle, what GFWC calls "Intact Forest Landscape Fragments," is provided by the Landsat satellite imagery. But it's not pretty. In 2000 just over 50 percent of the area covered by the proposed parks was judged intact; the Landsat imagery from 2015 showed these lands shrank by 10 percent from their 2000 extent.

The picture becomes uglier when Global Forest Watch compared the fragmentation trend in the proposed provincial park with

that of its wildland sister. The moderate overall decline of 10 percent masks dramatically different trends in the two park areas. Vanished, disappeared – that's what has happened to the vast majority of the intact landscape GFWC identified in the provincial park area in 2000. Three-quarters of the intact fragments there in 2000 are gone now. The 2000 percentage, an unhealthy 16 percent, is now just four percent. Landscape life support is needed desperately there.

If there's a sanctuary for intact landscapes in the Castle it's found in the proposed wildland park. Two-thirds of the Castle wildlands were covered with intact landscape fragments in 2000; this area only had declined marginally, to 64 percent, in 2015.

The portrait of the Castle is even more disturbing when GFWC analyzed the human disturbance footprint with higher resolution SPOT satellite imagery. Think of the SPOT imagery as a telescope letting us see the landscape in more detail. In the Castle the closer you look the fewer intact landscapes you discover.

The higher resolution imagery found that the intact landscape in the Castle in 2012 actually was 31 percent smaller than what the Landsat imagery suggested. And the proposed provincial park? One percent – that's all of the proposed provincial park that can boast an intact landscape according to the SPOT satellite imagery analysis.

If the Minister of Environment and Parks truly values what GFWC calls the Castle's "important role for biodiversity and other ecosystem values" any new linear disturbances must be prevented and "considerable restoration work" needs to be done.

Linear Disturbances

AWA members know well AWA's longstanding concern about linear disturbances on the land. The second GFWC bulletin focused on this version of the human footprint and detailed its density within the proposed parks. Certain qualifiers should be mentioned before reporting this bulletin's message. First, linear disturbances are not limited to so-called "open roads." Open road density refers only to roads that on-highway vehicles could use. The GFWC definition of linear disturbance is much more akin to the open-route concept used by Alberta in its first Grizzly Bear Recovery Plan. It includes roads, trails (designated and not-designated), and seismic lines. Trails open to ATVs and dirt bikes are included in the GFWC definition; they are not considered "open roads." Second, GFWC used imagery from 2012 and the status and continued existence of disturbances in the backcountry (such as seismic lines) should be verified. Finally, and this is particularly important for a species like the grizzly bear, data on how often these disturbances are used by OHVs and other users should be gathered.

GFWC's work gives policy makers a richer, more detailed appreciation of the extent to which linear disturbances mark the Castle landscapes. Imagine for a moment that you're about to drive from Calgary to Vancouver via the Trans-Canada highway. GFWC discovered that there are as many kilometres of linear disturbance in the Castle as you'll travel on your drive to the coast…and back again. Nearly 2,000 kilometres (1,822) of linear disturbances "graced" the Castle in 2012. Just over 300 kilometres of those disturbances – the driving distance from Edmonton to Calgary – likely were being used as roads.

As the length of these disturbances suggests, the density of linear disturbances is very high: 3.5 km per square km in the proposed provincial park and 1.0 km per square km in the proposed wildland. These densities, according to the report's authors Wynet Smith and Ryan Cheng, "are much higher than previously acceptable thresholds of 0.6km/km^2 to minimize impacts to ecosystems and species and is evidentiary of the restoration required in parts of the Castle."

So What?

The data in these first two bulletins seem sobering. But…maybe these footprints and disturbances are benign. Such wishful thinking is demolished in GFWC's third bulletin. That installment focuses on the implications of the fragmented landscape that is today's Castle for grizzlies and trout. It makes a powerful case for protecting and restoring the landscapes about to be enclosed with park boundaries. Why? Because the current state of and allowed activities on these lands and habitats is a mortal threat to threatened species such as grizzly bears, westslope cutthroat trout, and bull trout. Unless restoration begins immediately, and is commensurate with the damage that's already been inflicted in the Castle, that threat is likely to become a reality.

The density of linear disturbance is the killer; it facilitates the decline of species and the pre-mature deaths of their members. Scientists and policy makers have known this for years. Alberta's first grizzly bear recovery plan was categorical about this: **"human use of access (specifically, motorized vehicle routes) is one of the primary threats to grizzly bear persistence."** (emphasis in original)

The 0.6 km/km^2 density threshold density mentioned in the previous section is regarded generally as an important threshold for establishing viable grizzly bear populations. Some studies define this threshold in terms of road density. Following this definition GFWC discovered that, if roads and designated motorized trails only were considered, then 30 percent of the proposed provincial park and 74 percent of the wildland meets the 0.6 km/km^2 threshold.

But the sky darkens if all linear disturbances are considered. Less than three percent (only eight km^2) of the provincial park satisfies the threshold; at 48 percent much more of the wildland park still is at or less than the 0.6 km/km^2 threshold.

Since grizzlies need to eat as well as to be secure GFWC refined their analysis by adding buffers around the authors' preferred interpretation of linear disturbances and identifying where the best quality bear vegetation was found. They concluded that high quality, secure grizzly habitat essentially doesn't exist in the provincial park; it's only found in the proposed wildland (see the map Grizzly Bear Core Secure Areas with Productive Habitat).

This bulletin's message about grizzly bears to Minister Phillips is stark: if the Minister believes the Castle should contribute to grizzly bear recovery in Alberta the wildland must be protected from "further development of linear disturbances" and linear den-

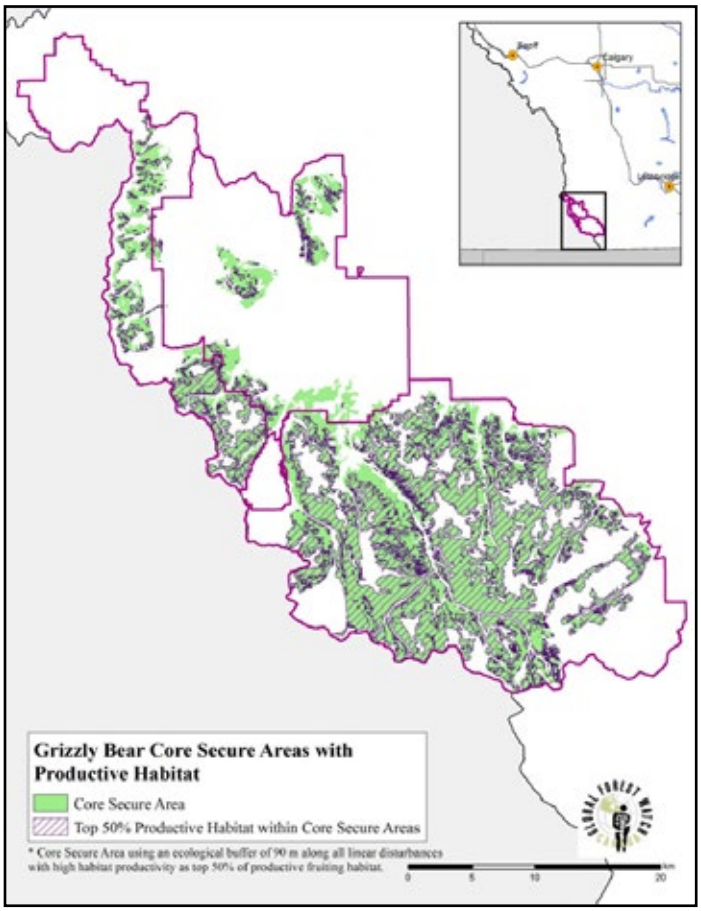
sity in the provincial park must be reduced. These measures need to happen now… not next year, not five years from now. The extent of the fragmentation and degradation of bear habitat in the Castle demands immediate action.

The facts sketch a situation that is at least as dire for westslope cutthroat trout populations within the boundaries of the proposed parks. Unlike the case of grizzlies, for cutthroat (bull trout too) the simple presence of linear disturbances is a threat even if people aren't using them for recreation activities. This is because those disturbances "can still change water temperature and contribute to increase stream sedimentation." (sic) The accompanying map superimposes cutthroat trout critical habitat on linear disturbances in the Castle. It shows unequivocally that cutthroat trout critical habitat and linear disturbances go hand in hand. This same, Siamese-twin-like relationship, exists in the Castle between bull trout critical habitat and linear disturbances. For Smith, Cheng, and Elmeligi, "(m)ost of the critical habitat for both cutthroat and bull trout is at risk from high to extremely high linear disturbance." They are gravely concerned over this situation; the need to restore trout habitat in the provincial park is urgent. The linear disturbance density in the Castle must be reduced dramatically in order to restore the critical habitat these aquatic species need desperately.

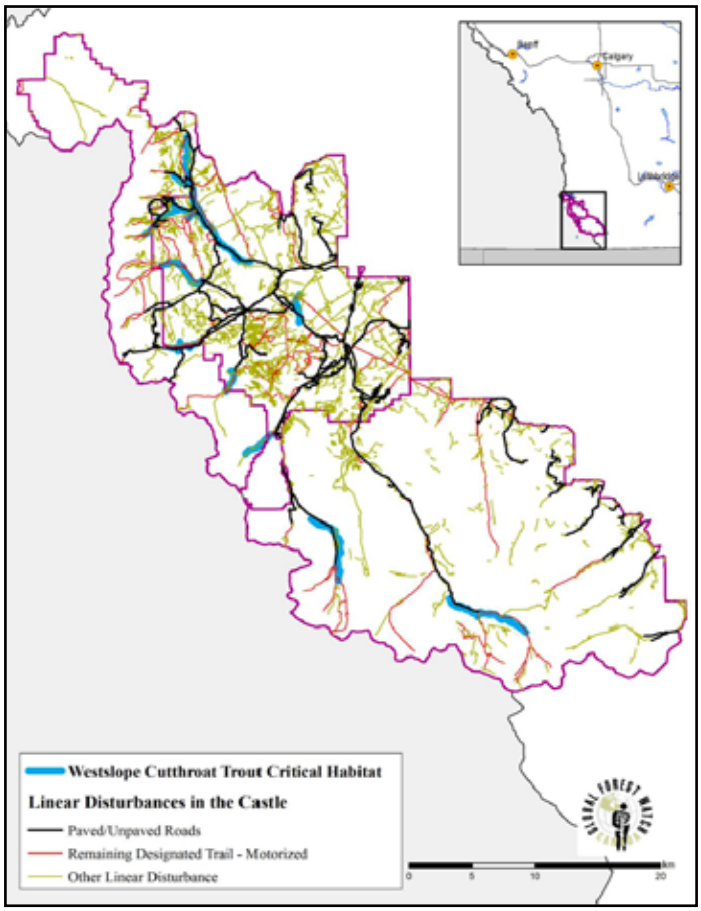
Conclusion

Global Forest Watch Canada's study of the health and intactness of the Castle landscapes comes at a critical juncture in the history of this special place. The GFWC bulletins use sophisticated satellite imagery analysis to test whether well-accepted understandings from the conservation biology literature about the habitat needs of species are being satisfied in the Castle. They're not. Biodiversity and the species who carry that banner – grizzly bears, westslope cutthroat trout, and bull trout – are crippled by the habitat fragmentation that has continued apace for decades in the Castle.

The GFWC bulletins supply the scientific information needed to make the ecologically-compelling case for an immediate ban on OHVs from the proposed provincial parks. It's noteworthy that, when it came to the province's climate leadership initiative, the Minister of Environment and Parks found this type of information to be decisive. In the legislature she called members of the opposition who denied the science of climate change "ideologues." Is that the label she will have to accept if she denies the validity of the scientific information on the Castle that Global Forest Watch Canada has provided? It's never too late to do the right thing. It's time then for this government to use the GFWC data as the basis for prohibiting OHVs from the Castle parks and restoring the area's habitat.



Grizzly Bear Core Secure Areas with Productive Habitat. Credit: Smith, W., R. Cheng, and S. Elmeligi. 2016. Bulletin 3. Linear Disturbance in the Castle: Implications for Grizzly Bear and Trout. A Special Series on the Castle proposed protected areas. Ottawa: Global Forest Watch Canada.



Westslope Cutthroat Trout Critical Habitat and Linear Disturbances in the Castle. Credit: Smith, W., R. Cheng, and S. Elmeligi. 2016. Bulletin 3. Linear Disturbance in the Castle: Implications for Grizzly Bear and Trout. A Special Series on the Castle proposed protected areas. Ottawa: Global Forest Watch Canada.