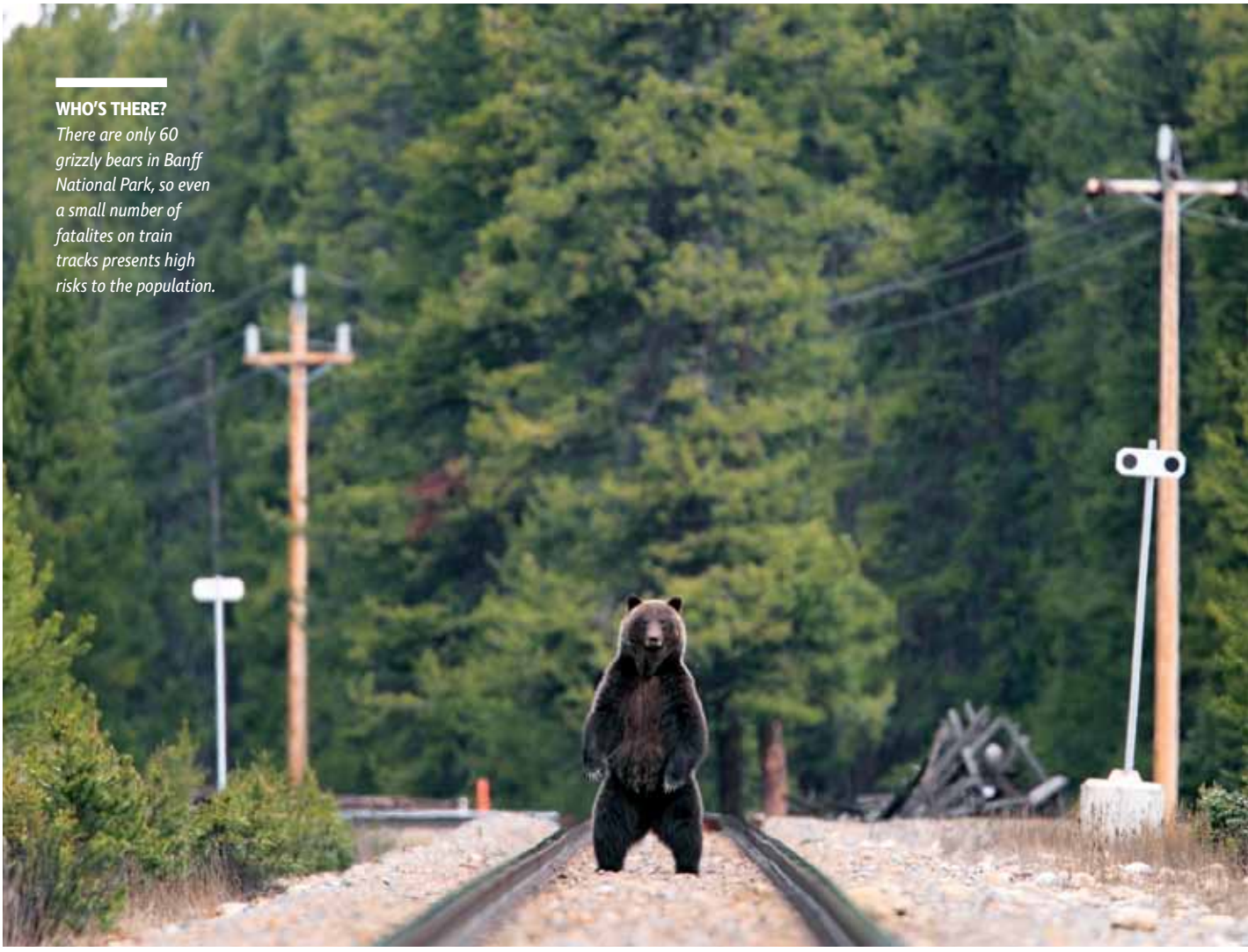


WHO'S THERE?
There are only 60 grizzly bears in Banff National Park, so even a small number of fatalites on train tracks presents high risks to the population.

Danger at every turn

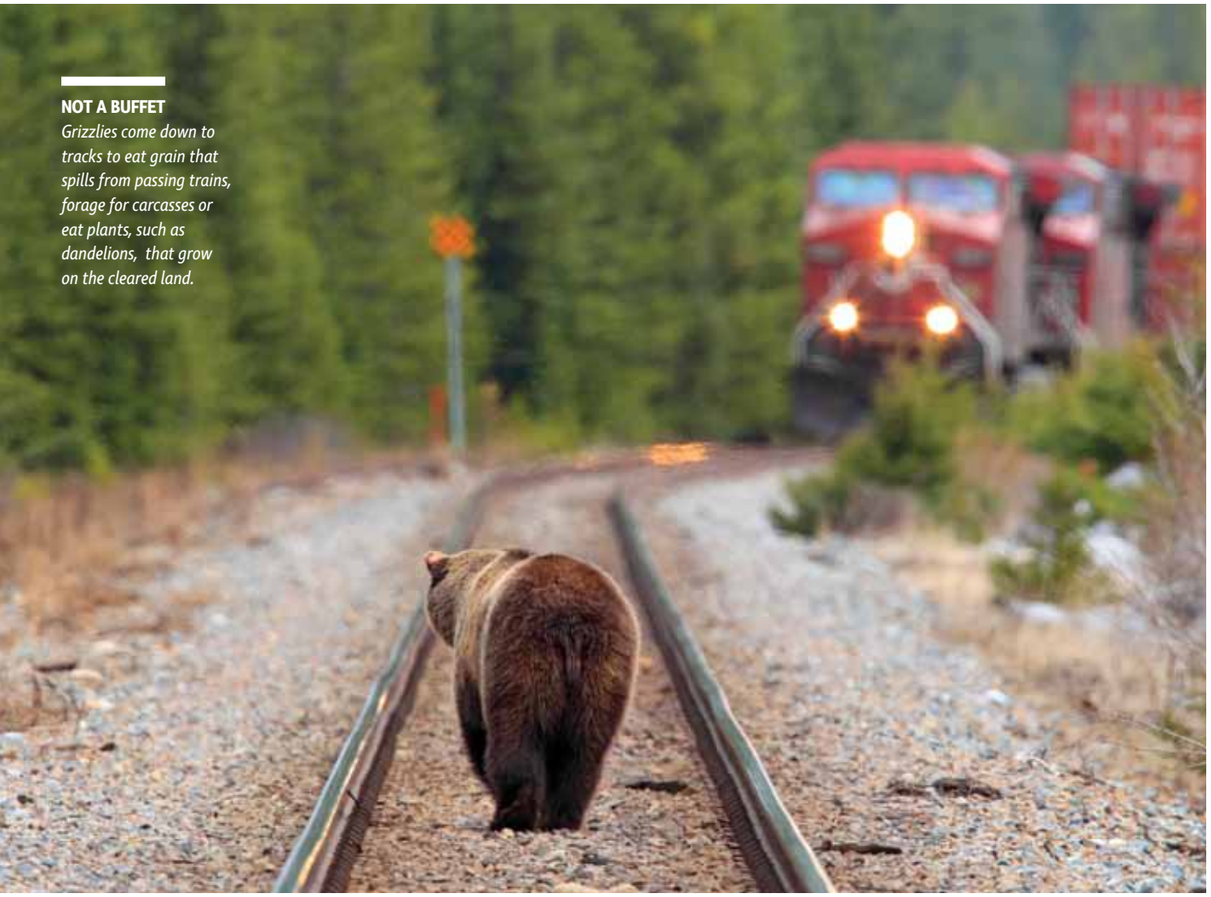
Trains don't kill many grizzlies in Banff. But even a handful of deaths creates major risks — and complex problems

By Jay Ingram Photos by John E. Marriott

There are a mere 60 grizzly bears in Banff National Park. Females don't begin to have cubs until they are five or six years old, so the death of even a single bear is a significant blow. Of course, we humans have heavily populated the park ourselves, so it is up to us to ensure that we are not responsible for any such fatalities. That is why the Trans-Canada Highway has been fenced off between Banff and Lake Louise and equipped with over- and underpasses to allow wildlife (including bears) to cross.

It is also why Parks Canada and Canadian Pacific Railway are collaborating to come up with ways to prevent bears from being killed on the railroad tracks. There aren't many such deaths, perhaps one a year, but even a single fatality can have serious consequences. If that one is a female with two first-year cubs, her death effectively removes three bears from the wild population — first-year orphan grizzlies seldom, if ever, survive. Three out of 60 is an unacceptable five per cent loss.

The cause of bear deaths on the tracks seems straightforward. Bears can't stay away from grain that has been spilled from passing trains and, once on the tracks, are sometimes unable to avoid an onrushing locomotive. This is a particular risk in the spring, when bears are famished, and



NOT A BUFFET
Grizzlies come down to tracks to eat grain that spills from passing trains, forage for carcasses or eat plants, such as dandelions, that grow on the cleared land.

mountains of snow that were cleared from the tracks over the winter are melting to reveal the grain inside. This is a simple problem, so you might expect prevention to be correspondingly simple: seal the grain cars, prevent spillage and stop grizzly deaths. Unfortunately, this simplistic approach is just that.

Canadian Pacific has invested time and money in retrofitting thousands of its grain cars — even running a vacuum car to suck up grain. But not all of the cars moving through the park belong to CP, and it seems that loading and transporting grain is an imperfect exercise anyway. Eliminating the last one per cent or two per cent scattered along the tracks seems unattainable. Even so, the amount of spilled grain has been reduced substantially over the last few years, but bears are still being killed, so what's going on?

It's not just grain. There are carcasses of other smaller animals near the rail line as well, and bears who have been rewarded once by a trip to the tracks will continue to come back. Also, as the land along the tracks is cleared, opportunistic plants like dandelions colonize it — and bears love dandelions. Moreover, the rail bed is a convenient trail in winter, and the location of the tracks, along the Bow Valley, might just be where bears would forage anyway.

At a late-September meeting in Banff, bear experts, CP and Parks Canada met to wrestle with the problem of what to do. CP has anted up a million dollars for research and development of techniques to save the bears; the meeting revealed just how complex this is likely to be. For instance, clearing more vegetation around the tracks might help bears see approaching trains sooner, giving them a few more seconds to escape. But clearing land is equal to disturbing land, so new and quite possibly attractive vegetation like dandelions will likely settle in. Besides, we don't really know much about how bears react to approaching trains. Do they run down the tracks in a vain attempt to escape, as moose do? Or do they, as we'd hope, just step aside? Video cameras are now being fitted to locomotives to find out.

A further complication is that deaths are not uniformly distributed in time or place. Most bears are struck around dawn or dusk. A reasonable suggestion might be to schedule trains outside these times, or run trains in bunches so that the hazard is confined to relatively short periods. But there is a lot of pressure to deliver Prairie grain to the port of Vancouver on time, and trains are serviced in daylight for safety reasons, then run at night.

However you cut it, Banff's conflict between grizzly bears and trains presents an awkward situation. And public demands for some kind of action run counter to the scientific ideal, which would be to gather more data, understand the bears much better than we already do, and only then deploy tactics with the greatest chance of success. This is not a criticism: the situation is not ideal, and for better or worse, we will see the first attempts to make the rails safe put in place this coming spring. Our responsibility now is to ensure we ultimately come up with something we know will work.

Animal Trackers Take a Big Step

GPS tracking is an important tool for gathering data about how wild animals relate to their environment. The problem is, current methods don't always give researchers a complete picture of an animal's movements and behaviour: GPS may tell you where an animal goes, but what it is doing is a matter of interpretation.

This past November, a team of biologists and engineers at the University of Calgary unveiled a new tracking technology that will deliver a fuller picture. The devices integrate high-tech cameras with traditional GPS collars, taking pictures at regular intervals so that researchers can get a better view of how animals react to their surroundings. The trackers also monitor an animal's body movements, providing important data on how it is behaving.

So far, the device has been field tested on endangered grizzly populations in Alberta. Further applications are being developed under a technology licensing agreement with Lotek Wireless Inc., an Ontario-based firm that designs and manufactures fish and wildlife monitoring systems.

No frontiers

A physicist may imagine space as a refuge from our consumption of Earth's resources. A biologist might change his mind

By Alanna Mitchell Illustration by Pete Ryan

When the superstar astrophysicist Stephen Hawking starts saying that the only way for humankind to survive the next century is to colonize outer space, you've got to know our planet is in trouble.

In November, as his new television series, *Brave New World with Stephen Hawking*, was being launched in Canada and the United Kingdom, he gave an e-mail interview to the Canadian Press news service. Here's what he said: "We are entering an increasingly dangerous period of our history. Our population and our use of the finite resources of planet Earth are growing exponentially, along with our technical ability to change the environment for good or ill.... Our only chance of long-term survival is not to remain lurking on planet Earth, but to spread out into space."

Not much there to soothe the anxious brow. Put it together with a few other signs of the times, and the picture gets even worse. Specifically, there's the knotty issue of trends in global biodiversity, arguably the final word on the health of the planet. Back in 2002, world leaders pledged to reduce significantly the rate of biodiversity loss by 2010 through the Convention on Biological Diversity.

When you get past the rather unhelpful wording — is reducing the rate of loss really the best they could aim for? — they meant that they would keep species from going extinct quite so quickly. Or, if you put the best possible face on it, prevent so many species from nearing the brink.