

# PRI AWARE

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***Grizzly bears  
in spring:  
sedges & the  
Khutzeymateen***

By Peter Hudson



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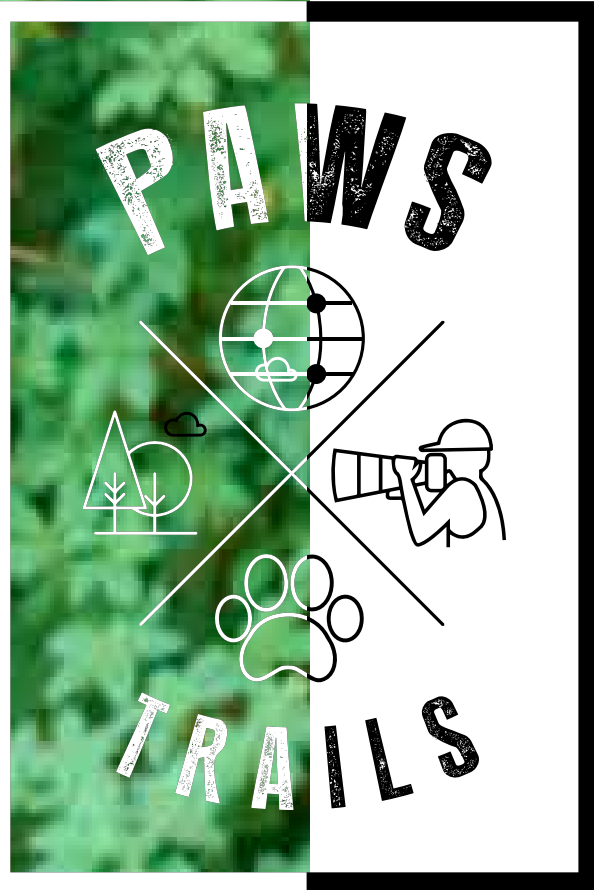
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Raghul Patteri  
Editor

## EDITOR'S DEN

It is difficult to imagine an imposing top predator like a Grizzly bear, grazing on grass along the river shore. Yes, it is the humble sedge grass that sustains the mighty bears in Yellowstone till the arrival of their favorite food, Salmon. Spring is the time Bears emerge from hibernation and till the Salmon run starts it is a lean period for food, and the bears have to depend on other sources

In this carefully researched article with firsthand observations, Dr. Peter Hudson explores the fascinating biology at play here. Biogeochemical cycle or the cyclic flow of nutrients in the bear country is a mastery of nature with the marine and riverine systems co-operating to ensure abundant supply of nutrients to nurture big salmon and really big bears.

Dr. Peter Hudson has spent quality time observing bears and another inspiring location he has explored is the Khutzeeymateen Provincial Park in British Colombia. This park is significant as the first to be specifically protected for Grizzly bears and also the first undisturbed estuary in this part of Canada. It is an important spring refuge for the bears.

At PT Aware we take pride in bringing you the best insights from conservation and research. We are thankful for the dedicated researchers and conservationists who toil in the hard environs to ensure a better future for our fellow beings. Our articles would be missing the punch with out the fabulous images that help to tell the story of the species that we chronicle. The global community of PawsTrails photographers never cease to amaze us with their brilliant contributions.

Our next edition will be on Lappet-faced vulture. Please be ready with your Lappet-faced vulture images.

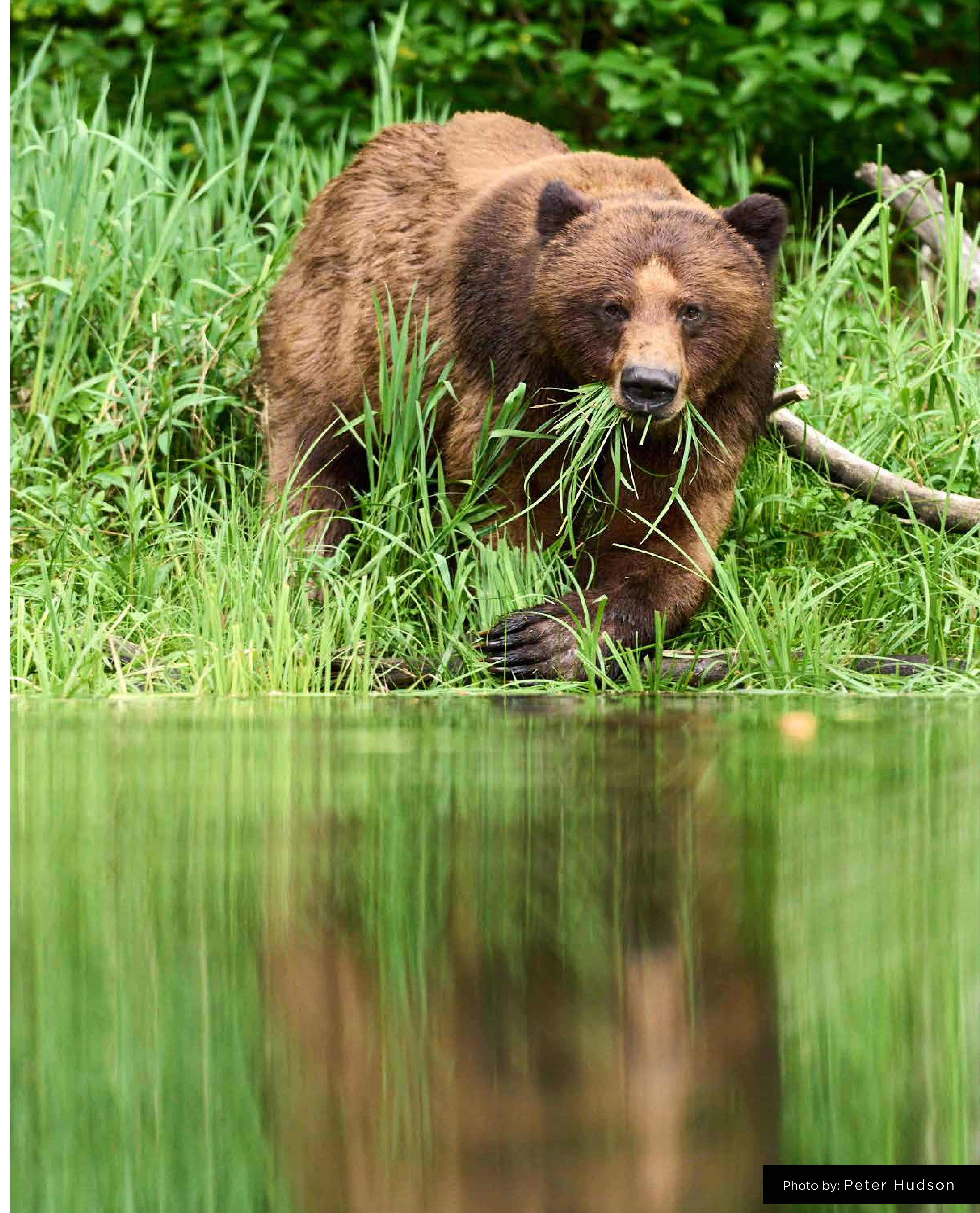


Photo by: Peter Hudson





# FOUNDERS' NOTE

Welcome to the latest edition of PT Aware.

In remembrance of the critical need to safeguard the rich variety of life on Earth, people come together on December 4 to commemorate World Wildlife Conservation Day. On this day, people all around the world are rallying to protect the priceless natural inheritance that keeps life on our planet going.

Wildlife protection is more important than ever before considering the world's most pressing problems, including as habitat loss, climate change, and poaching. We must remain steadfast in our dedication to preservation because of the imminent danger to the intricate web of life that links ecosystems, animals, and humans. Foresight in habitat protection has helped in the past as illustrated by the current article on grizzly bears in the Khutzymateen.

We celebrate this day in recognition of all the people, groups, and organizations around the world that are fighting tooth and nail to keep biodiversity alive and well. If we work together, we can protect the natural wonders of the globe so that it is there for generations to come.

On this, World Wildlife Conservation Day, let us pause to consider how all life is interconnected and how we are all responsible for maintaining our magnificent world. Together, we can make a difference for the planet and its inhabitants by standing up for conservation initiatives, promoting eco-friendly lifestyle choices, and fighting for legislation that puts these causes first.

Every living thing, from the largest elephant to the tiniest pollinator, has the potential to live in perfect harmony with the natural world if we all work together in this worldwide effort. In honor of World Wildlife Conservation Day, let us recommit ourselves to preserving the amazing diversity of life that provides for our present and future.

**Hermis Haridas &  
Nisha Purushothaman**

Founders - Paws Trails Explorers



THE STORY

# Grizzly bears in spring: sedges & the Khutzeymateen

By Peter Hudson

(Conservation Director, Paws Trails)







**Canon**  
IMAGING PARTNER

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**Peter Hudson is a scientist, photographer, and conservationist. He undertook his first scientific expedition to Africa at the age of 21 and has been a regular visitor ever since. Passionate about nature, he manages his own 36-hectare nature reserve in Pennsylvania which is home to bears, bobcats, and other animals.**

**In his professional career, Peter is the Willaman Professor of Biology at Penn State University. The focus of his research has been the infectious diseases of wildlife and in particular how new diseases emerge. For the past 11 years, he has been working on how and why viruses move from bats to humans in an attempt to predict when viral spillover occurs. He has also been studying the wolves in Yellowstone, tortoises in the Mojave Desert, and bighorn sheep in Idaho.**

**Peter is the Conservation Director at Paws Trails and uses his skills as a scientist and educator to increase awareness about conservation issues. He is supported by two interns at Paws Trails: Hayden Kissel and Shreya Menon. He is also heavily involved with the Random Good Foundation that undertakes storytelling for social change. He is an adjunct Professor at The Nelson Mandela African Institute of Science and Technology based in Arusha, Tanzania, and a Fellow of the Royal Society.**

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Grizzly bears (*Ursa arctos horribilis*) are not always easy to observe and yet there are special times of the year and specific locations where you can expect them to aggregate, so you can watch their natural behaviour and with some care, grab some good photographs. We all know about the grizzlies focusing on the salmon before hibernation, so here we focus on where the grizzlies go when they emerge from hibernation.

As a biologist, one of the things that truly astonishes me about grizzly bears, with the males weighing in at 700 pounds (315 kg) and the females at 350 pounds (160 kg), is that they can spend the majority of their lives in hibernation and some individuals spend more than 7 months a year in a state of torpor. During this time, they not only live off the stored fat reserves they have collected the previous year, but also the females will nurture the growth of the embryo, it's birth and then sustain the cubs with milk, while still in the winter den. To achieve this, they must fuel-up with fat reserves before entering hibernation. While bears are the ultimate omnivores and will consume almost anything with some food value, they need to seek out rich food sources to put on fat, such as the pulse of protein made available by the late summer salmon run. Here is another marvel; the salmon can't obtain the food they need in our freshwater systems to grow big and productive, so they migrate to the

marine system for their nutrients and body size, so when they return to spawn, they produce many eggs and increase their chances of producing successful offspring. Ecologically, I am fascinated by the way they bring nutrients from the marine environment back up the river systems to spawn in the remote head waters of our rivers and then get eaten by the bears, in effect enriching the terrestrial system with marine nutrients. Without this pulse of nutrients, I find it difficult to imagine how the bears could ever obtain sufficient nutrients to survive their period of hibernation.

### Spring fueling for grizzlies

Fueling-up and surviving hibernation is one thing, but then the bears must retain sufficient reserves to emerge the following spring and be able to recuperate ready to tackle the day to day needs of finding food and mates. There are no salmon runs, no caterpillar flushes and no berries available in spring and the high mountain tops are usually covered in snow, so spring is the lean period for bears, and they must seek food at lower altitude. The bears lose about 30% of their body weight during hibernation and are hungry and in desperate need of food to stop their weight loss and give them the energy for mating.

In Yellowstone, the males emerge some time before the females and cubs and then head-off along the Lamar River in search of bison carcasses that have fallen through

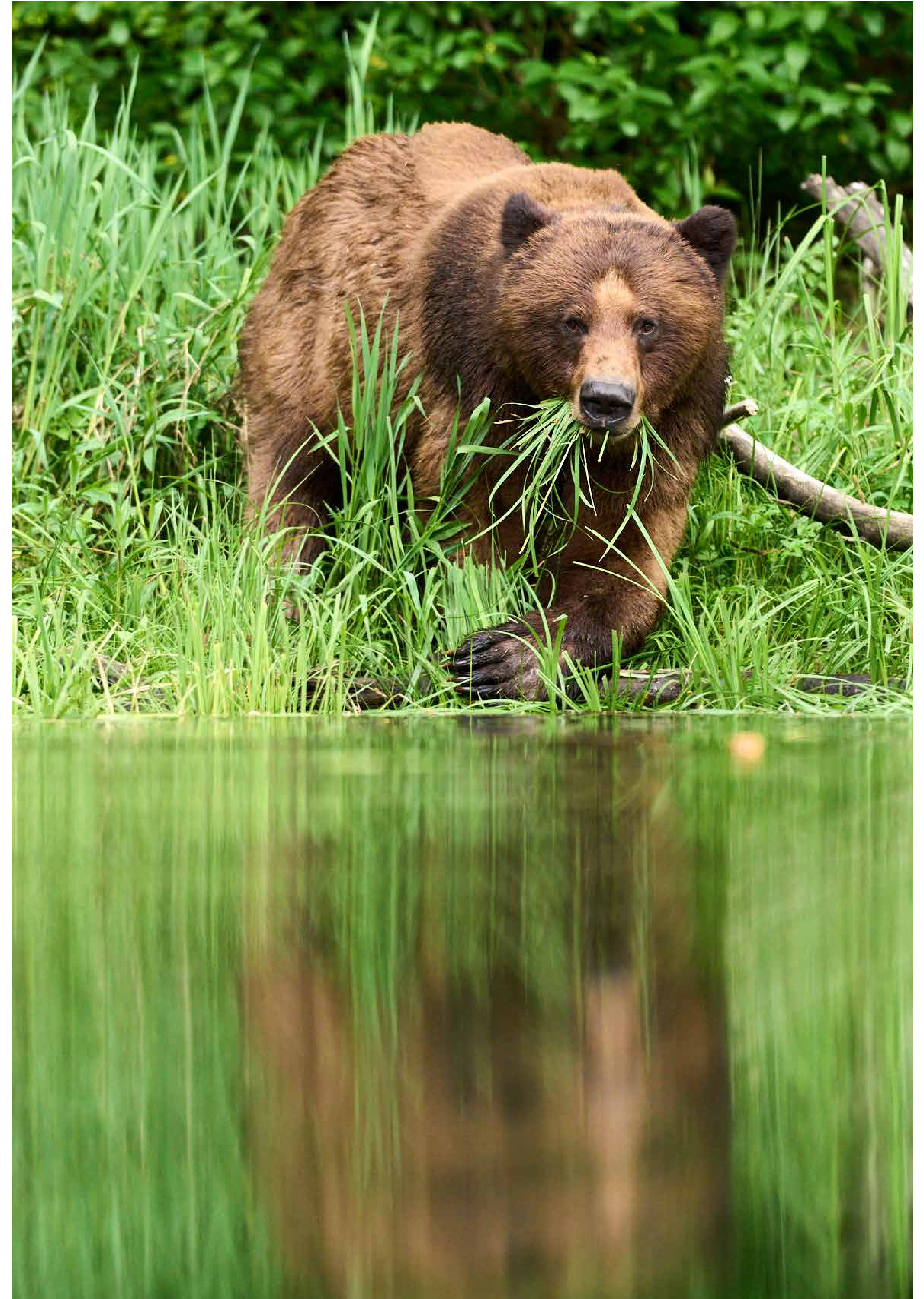


Photo by: Peter Hudson

















Photo by: Peter Hudson

the winter ice and got trapped or washed down by the snow melt. In some parts of their distribution, such as in NW British Columbia, they will head-off towards the salt marshes along the estuaries where there is fresh flush of Lyngbye's sedge (*Carex lynbyei*), growing on the tidal flats so the sedges are covered at high tide, but available for grazing at low tide. This early flush is an important protein source with low fiber and is relatively abundant and easy to digest. By their very nature, these salt flats sit at the interface of the river system and the sea, where the flats receive nutrients from the dead salmon that have washed down the river system during the previous fall migration. Experimental work, where researchers have added salmon carcasses to areas, indicates that the salmon carcasses greatly increase the availability of protein for the bears when they are eating grasses, the following spring. Fascinating – once again the salmon, made up of marine nutrients are driving the nutrient flow in the terrestrial system.

Bears are usually solitary and tend to avoid other bears but when food is abundant and available, they will tolerate each other. As soon as the tide drops and reveals the grass, the bears swim out to the flats and start grazing. This is bulk feeding for the bears, the food is sufficient to halt further weight loss and with supplements could allow them to recover some weight. You can see as many as eight bears on the saltmarshes munching away on the sedge at any one time, although they are always keeping an eye out, watching each other and checking that another bear does not sneak up on them when they are munching sedge. Some of the males are huge and there is a clear dominance hierarchy within













Photo by: Peter Hudson





Photo by: Peter Hudson

the community, the bears tolerate some and clearly avoid others, often the bad tempered and aggressive individuals. Indeed, the males seem to be more worried about other males than checking out where the females are, whereas the females are keeping a wary eye on the males. Female bears are receptive to mating soon after emerging from hibernation, so the males and females are looking for mates down on the flats and wearily approach each other before mating. They will spend several days consorting and mating before drifting apart. We had much fun watching females deciding on the male they wanted to mate with and trying to get their attention while avoiding the males that were pestering them.

Females are either young females looking for their first mating or older females that have separated from their last litter and now seeking a mating for their next litter that will be born during the following winter hibernation. The young females would have separated from their mother two years previously, maybe overwintered that first year with a sibling before becoming solitary and now at 4.5 years old have emerged from hibernation and ready for their first mating. Bears mate in June but the embryo does not become implanted within the wall of the uterus but remains in a state of dormancy until conditions allow for attachment, and this occurs after the bear has gone into hibernation. This is a clever insurance policy

since if the female bear is not in good condition, the embryo will not implant, and the bear can focus on just looking after herself during hibernation. If the mother is in good condition, the embryo will implant and grow and then she will give birth in the midst of winter and the baby cubs feed on her milk, so they are advanced and able to move to food when they emerge the following spring. In bears, singleton cubs can be 30% bigger than cubs from bigger litters but I have always wondered if the female has some control over the number of cubs that implant – there is no evidence that I know of that this does occur – just interesting.

Missing from this spring scene of food and bears are the mothers with young cubs, neither the mothers with the cubs just a few months old nor the mothers with the 1.5 year-old cubs. They are certainly in need of the nutrients that are available but they are scared by the presence of the large males who will chase and kill any cubs that they do not think are their own. Far too dangerous for them so they avoid the saltmarshes and must try and find less disturbed areas for food.

While on the salt marshes, the bears also feed on the mussels that burrow into the sand. Quietly stalking these bivalves along the sandy banks and then using a claw and sometimes a quick digging action to reveal their prey, breaking it open and eating the contents.













Photo by: Peter Hudson



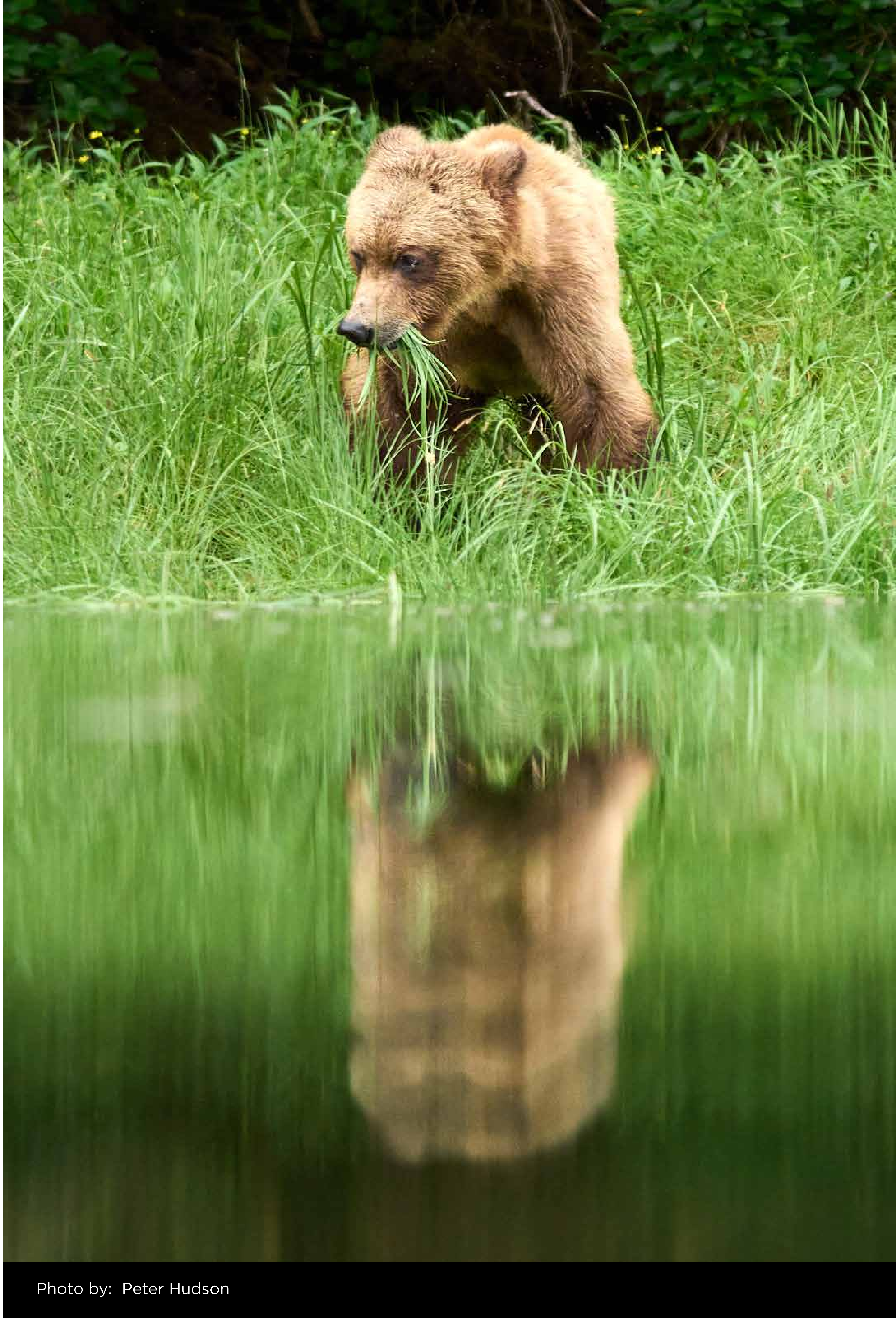


Photo by: Peter Hudson

Once the tide rises, the bears are pushed off the flats, swimming back towards the shoreline where they flip shoreline rocks to look for crabs.

**The Khutzeymateen: A spring refuge for bears:**

In northwest British Columbia, close to the border with Alaska, is a truly remarkable sanctuary for a population of about 50 grizzly bears. This is a deep estuary carved into the mountains of the remote parts of BC with steep sides with a large glacier overshadowing the inlet and at its head, a wide-open flat saltmarsh that reaches back into a salmon river system. This is the traditional territories of the Lax Kw'alaams Tribes and the Metlakatla Nation. The coastal Tsimshian people still depend upon this area for their social, economic and cultural prosperity.

There is no road access, so the only way to get there is by boat or float plane, 40km north of Prince George and almost to the Alaskan border. The sanctuary covers some 44,300 ha and is dominated by old growth sitka and spruce rain forests. The inlet has a population of the beautiful harlequin ducks, bald eagles and a good diversity of songbirds. There are mountain goats on the steep sides, mink along the shoreline and apparently wolverines and wolves can be seen here.

The area was originally designated for logging although a group of research ecologists had identified

it as a grizzly bear hot spot. In 1982, Wayne McCrory, a biologist and conservationist visited the area and persuaded the government to introduce a protection order that prevented bear hunting and would limit any logging. In 1994, the area was established as a provincial park and not only became the first to be specifically protected for Grizzly bears but also the first undisturbed estuary in this part of Canada. In 2008 further protection was given along the inlet to protect the foreshore habitats for the bears.

Visitor boats are allowed to visit the main Khutzeymateen inlet but access to the park and the flats with the grazing bears is strictly restricted to just two inflatable boats at any one time. One of the boat permits is held by the Ocean Light Adventures ([oceanlight.ca](http://oceanlight.ca)) and my son and I stayed on their excellent boat that was moored outside the park and we took regular trips into the park over a period of 6 days. I cannot praise enough the professionalism and superb guiding of the Ocean Light team. Chris has a remarkable bear sense, was sensitive about not disturbing the bears but at the same time understood the light and angle needed to capture what I hope you agree are acceptable photos of bears and their natural behaviour. We saw multiple matings, watched bears for hours every day and were just enthralled at the pleasure of being in such a wonderful habitat with a charming and delightful crew and guests; a very special experience.





Photo by: Peter Hudson









Photo by: Peter Hudson

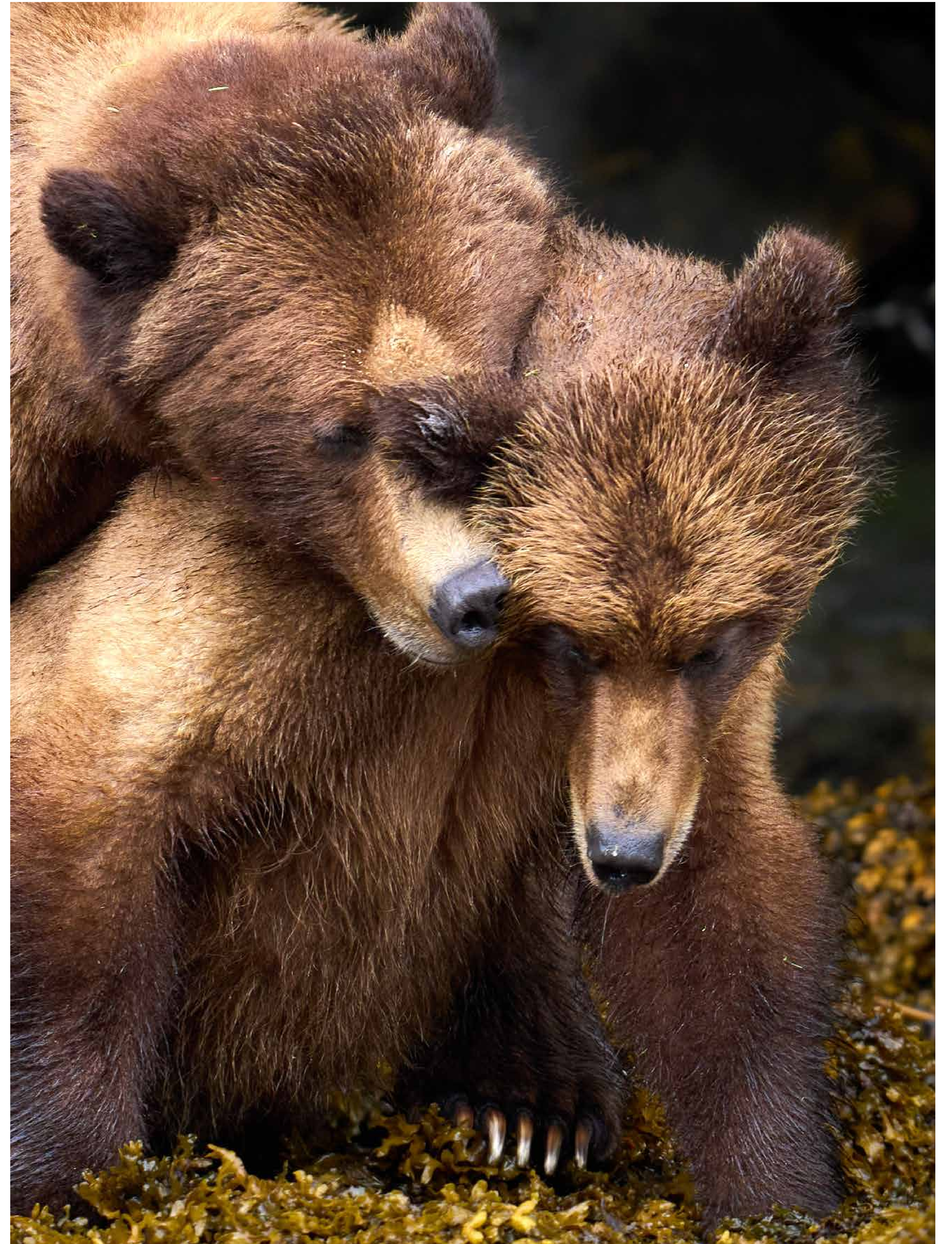


Photo by: Peter Hudson











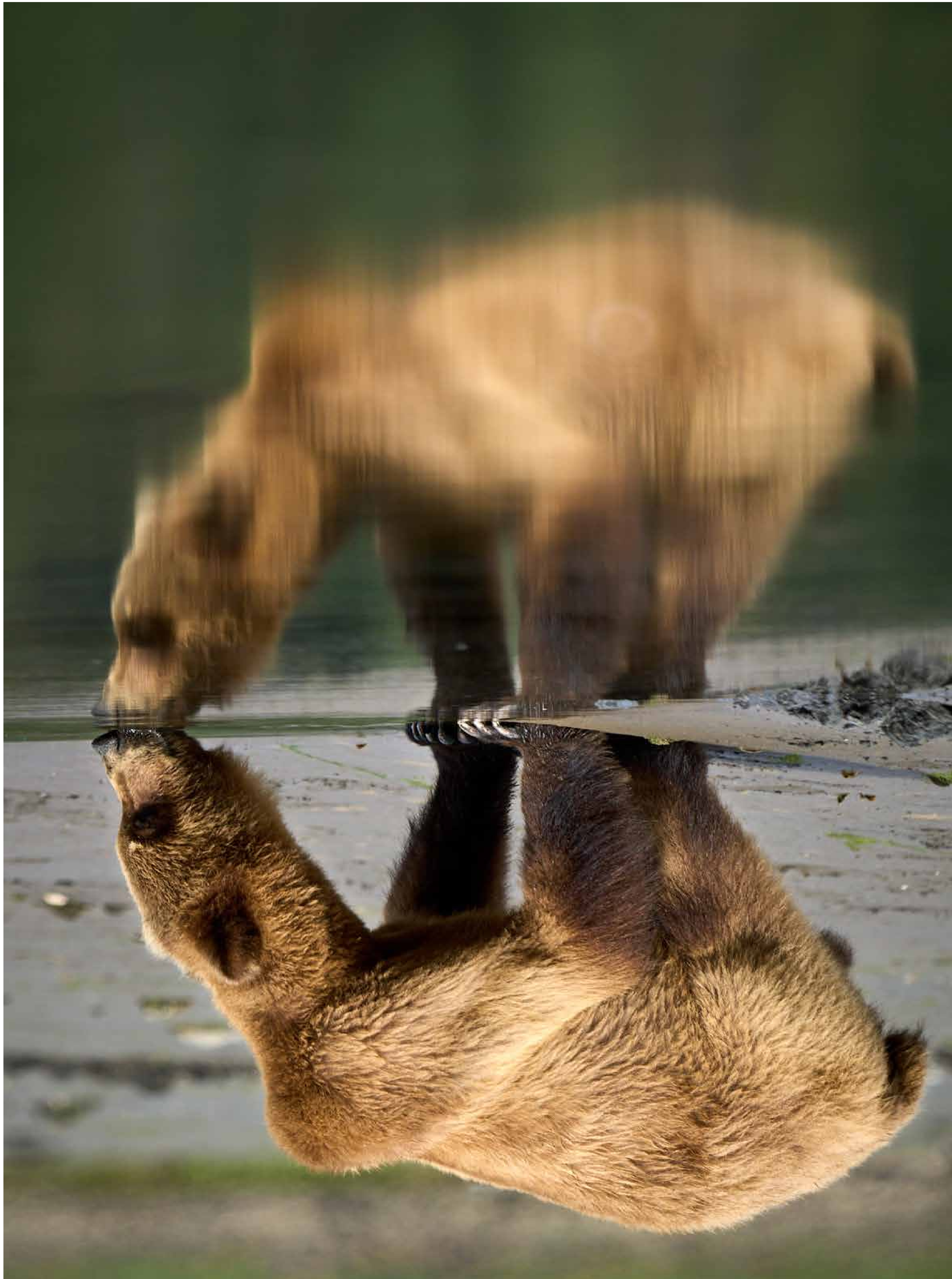


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Photo by: Peter Hudson





















































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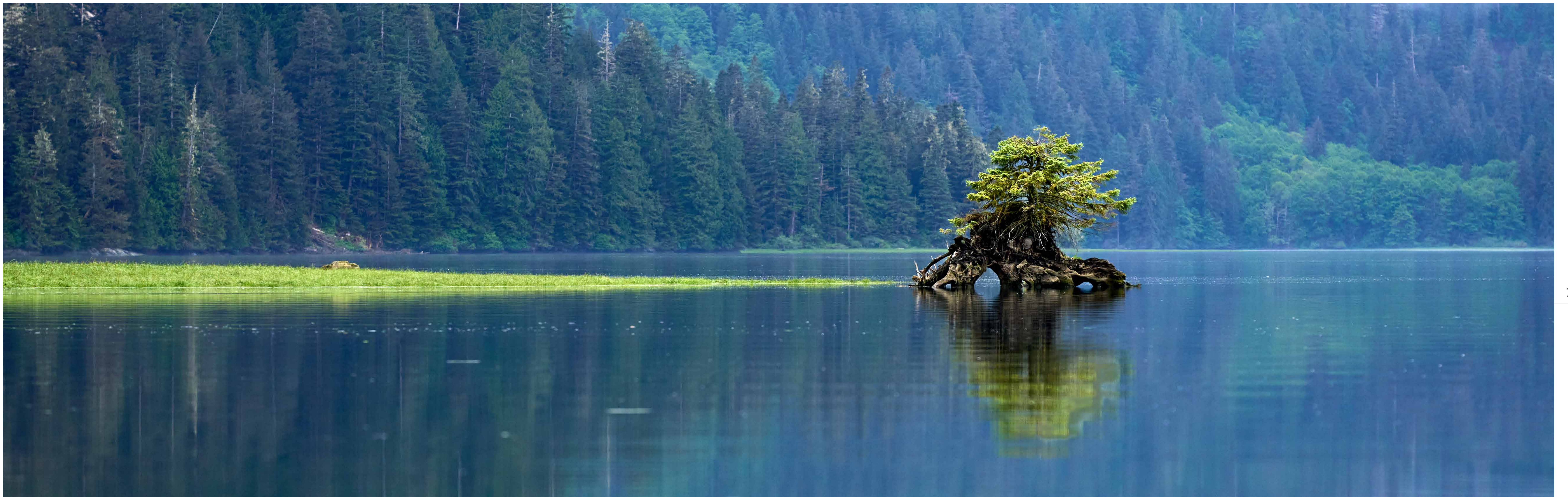


Photo by: Peter Hudson



UPCOMING EDITION

# LAPPET-FACED VULTURE

