ABOUT BEARS

Juneau bears, and their relationship with people

Discovery Southeast

For Dzantik'i Héeni Middle School

Text and illustrations

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Bear stories

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The woman who married the bear

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About Discovery Southeast

We are a non-profit educational organization founded in 1989 in Juneau, Alaska. *Discovery Southeast* teaches youth and adults about the nature of Southeast Alaska through experiential, field-based programs. Our naturalists work in all of Juneau's public schools and give teacher workshops in other communities throughout Southeast. Summer camps for children and public classes on many natural history topics are regularly offered.

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Introduction

Juneau's black bears appear in unexpected places. At first, the backyard bear is entertaining. It symbolizes all that attracts us about Alaska. We might even write our relatives 'down south' about it, as proof of the wildness that surrounds us.

But when the symbol of wildness flattens our garden fence, or breaks into the garage and spreads a week's worth of tin calls and banana peels on the driveway, we are less amused. The backyard bear is actually a better symbol of human ignorance and carelessness, and of the *collapse* of wildness. Unless our backyard has a salmon stream in it, that bear was almost certainly 'food conditioned,' or addicted (usually fatally) to human refuse.

In 1991, just before Dzantik'i Héeni Middle School was built, more than 20 Juneau bears died because of their attraction to garbage. Several of these came from DZ's surroundings. Local bear biologists felt that when students began attending the school, they should learn about proper disposal of garbage, to prevent bears from being attracted to the school area. They also wanted students to understand more about the food and habitat needs of bears, and how to act in the event of a bear encounter.

This booklet tries to answer these and other questions. Underlying them is one which the Tlingit people have perhaps best answered: How can we be better neighbors to the bear?

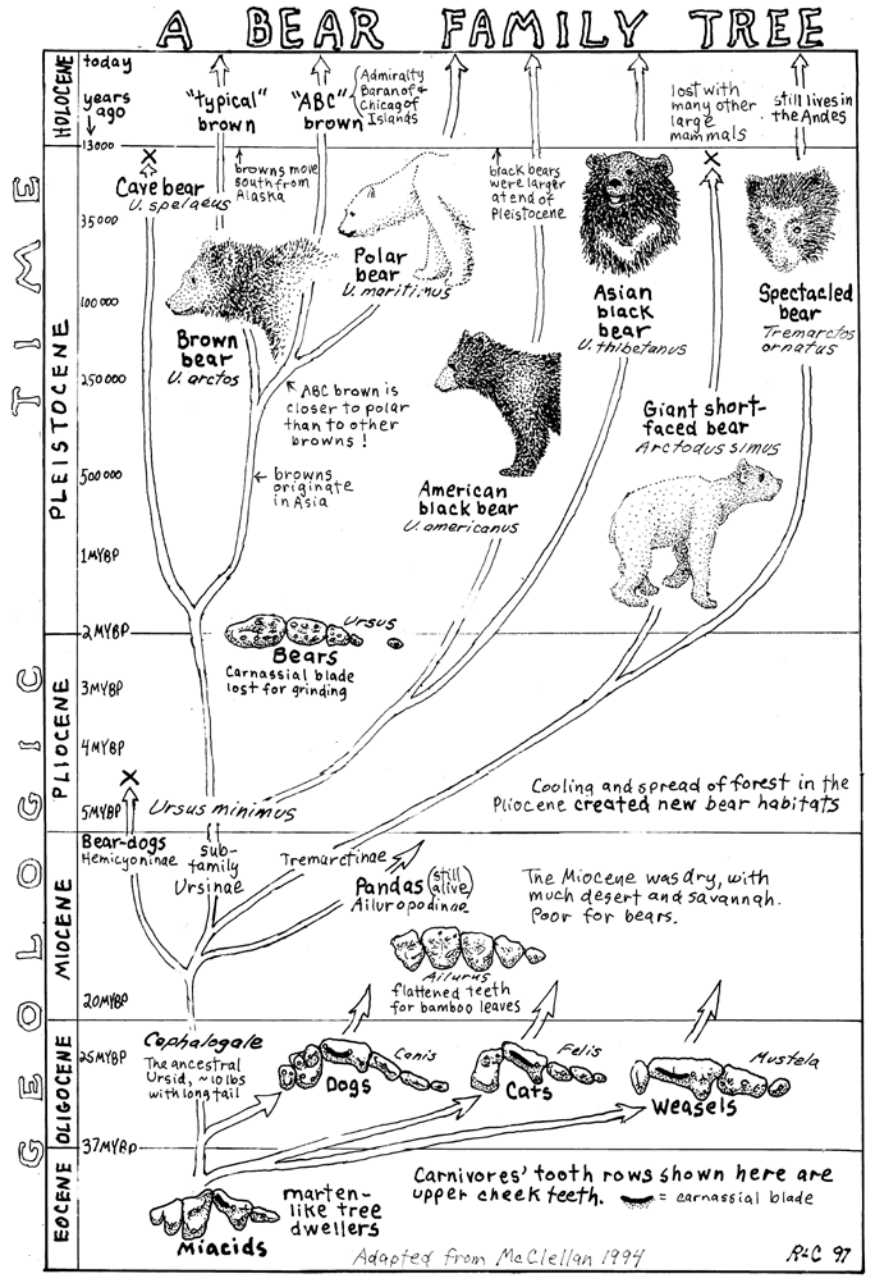
NATURAL HISTORY

Who are they?

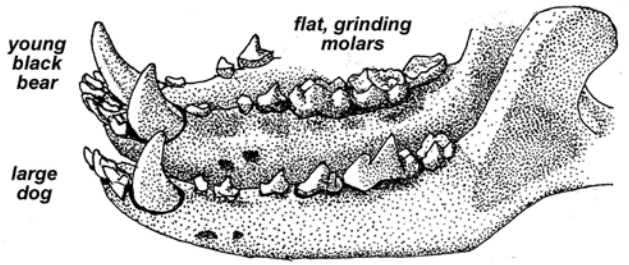
When dinosaurs went extinct about 65 million years ago, surviving mammals were quite small. None weighed more than about 20 pounds. The mammal line which later branched to become bears, dogs, cats, and weasels belonged to a group of **carnivores**[1] known as **miacids**. They lived in trees, had long tails, and resembled today's marten. Even as recently as 5 million years ago, the ancestor of both our brown and black bears was hardly a heavyweight. Its name was ***Ursus minimus***, or "little bear."

Bears have taken a different path from their predatory rela tives. If you compare the teeth of bears, dogs, cats, and weasels, many similarities can be found.The **canines** and **incisors** look much alike. But the **cheek teeth** of most carnivores have sharp **carnassial blades** which act

1 Words in bold are explained in the glossary.



like scissors to snip through gristle and bones. The bears have lost these blades, and instead have flattened cheek teeth much like those of people. While bears continue to eat meat, most of their diet is now plants.



Dog and bear jaws compared. Bears have flattened molars for grinding plants. Other carnivores have sharp molars for shearing and breaking.

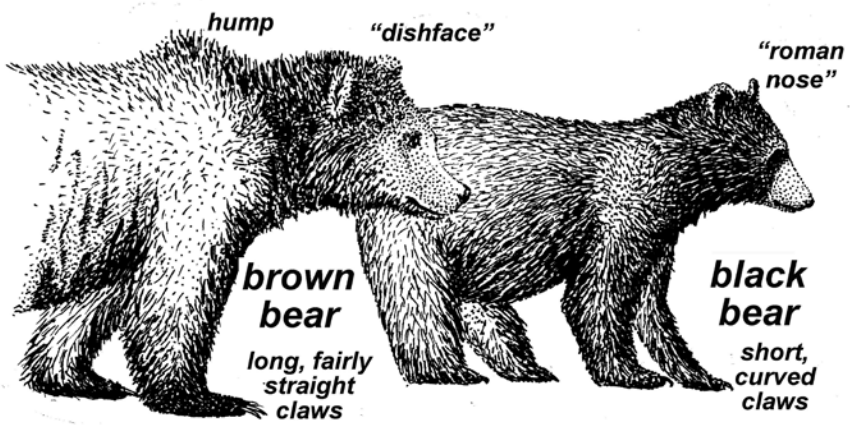
Juneau has 2 species of bears: the black bear (***Ursus americanus***) and the brown bear (***Ursus arctos)***. The brown bear is the same species as the grizzly bear, and to avoid confusion some biologists refer to them as brown/grizzlies. Usually, those near the coast who eat salmon are called brownies while inland bears without access to fish are called grizzlies.

The black bear is a much older species than the brown/grizzly. It left fossils throughout North America during the last 2 million years. The brown bear evolved in Asia only about a half million years ago. It first colonized Alaska 100,000 years ago, but surprisingly it seems not to have moved south through the rest of our continent until the end of the last great ice age, only about 13,000 years ago.

The evolution and ancient distributions of bears are much in the news today. By the time this booklet is a year old, whatever we say about bear evolution will be out-dated. The traditional way of learning about mammal evolution is by studying old bones and fossils. Since more of these are turning up every day, bone discoveries keep changing our picture of how bears evolved and how they got where they are today. For example, the 35,000 year-old skull of a brown bear was found in a cave on Prince of Wales Island, 200 miles south of Juneau, a place where only black bears occur today.

Gene studies tell biologists whether a pair of species or subspecies are closely or distantly related. The most surprising results come from bears of the 'ABC' islands (Admiralty, Baranof, and Chichagof). So far, it appears that these brown bears are closely related to polar bears! One way to explain this is the idea that a marine bear arrived on the outer islands during the great ice age, about 20,000 years ago. Interbreeding with brownies who swam out from the mainland, it evolved into the island bears we know today.

And what about people? What were we doing as the bears' family tree branched and evolved? Throughout the 2 million years of the Pleistocene, the ancestors of *Homo sapiens* moved in small bands through the open savannah habitats of Africa, a place with few bears. Eventually we



spread to Europe and Asia, where we must have competed closely with species such as the Asian black bear, cave bear, and brown bear. Like bears, we are omnivores, eating a huge diversity of plant and animal foods. Bears in general changed from a carnivorous past toward the life-style of herbivores. People, in contrast, moved from the herbivorous past of fruit-eating primates to the lifestyle of pack hunters like wolves.

One result is that neither bears nor people have stomachs that are especially well adapted to the foods we presently eat. Compared to a long-time vegetarian like the deer who can subsist through the winter

The Eix̲'gul'héen bear

It's late winter. A porcupine scratches her way up a husky young spruce growing at the base of an alder slide. The steady diet of spruce needles barely sustains this slow-moving creature. The forest ends suddenly here at 1600 feet where avalanches come to rest. Snow lies deep, and aside from the porcupine and the fleeting chips of crossbills, the land seems empty of animal life.

A large, downed tree is outlined beneath the snow, toppled in apre-vious year's storm. Soft wind murmurs through overhead branches, but the forest floor is still. Beneath the white silence, nestled into the down tree's wrenched-up roots, lies a black bear sow. Asleep since early November, she curls in the warmth and darkness of her moss-lined den, living off the fat she put on last fall. A few weeks ago, she gave birth to 2 cubs. Hairless and blind, they move along the sow's belly, finding nourishment at the life-sustaining nipples.

Weeks more will pass before their eyes open and their fur grows out. Slowly the daylight outside increases. Spring equinox passes, with afull moon on its heels, and the earth's pulse quickens. The snow pack thins daily, and the bear begins to stir. Her behavior mirrors the weather;

on blueberry twigs, bears are amateurs at digesting plants. They lack the deer's many-chambered stomach and its 'community' of fiber-munching microorganisms. And people are newcomers at meat-eating compared to wolves, who can 'wolf down' 15 pounds of moose at a sitting.

To survive as omnivores in cold climates, bears and people have become the craftiest land mammals on the planet. When early winter shrivels their salad and freezes their fruit, bears simply drift into a 6-month sleep. Meantime, people wear borrowed furs and huddle by warm fires. And as the seasons turn, through spring, summer, fall, both bears and hunting/gathering people range widely over all habitats within their home territories, selecting only the tenderest and most nutritious foods. This means we have learned from each other, foraging side by side with brown bears, for hundreds of thousands of years.

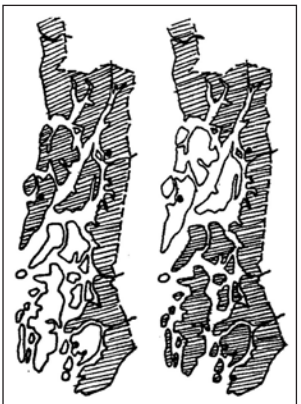
The brown bear co-existed with our human ancestors in Asia and Europe since it first appeared one half million years ago. But the American black bear evolved in a continent free of people. Not until the great ice melted 13,000 years ago did people and brownies spread beyond Alaska to the rest of North America. And now, strangely, we've exterminated our long-time partner the brown/grizzly in places where black bears are still doing fine, such as California, Arizona, and the woods behind Juneau.

But just because black bears didn't originally live with people or brown bears doesn't imply it was naive about more formidable predators. In fact, some biologists believe the reason people and brown/grizzlies couldn't spread into the Americas earlier than 10 to 13,000 years ago was the presence of huge competitors who mysteriously became extinct then: the American lion, the sabre-toothed tiger, the dire wolf, and the greatest mammal predator of all, the **giant short-faced bear**.

The short-faced bear lived on the plains, probably hunting bison, horses and camels. It was taller, leaner, faster and undoubtedly more aggressive than a grizzly. Like the polar bear, it was an exception to the rule that bears are mostly herbivorous. Small wonder that the American black bear kept to the woods!

Where are they (globally)?

The word "arctic" actually comes from the word for bear, the Greek arktos. We call the northern constellation "Big Dipper," but most native peoples called it the "Great Bear," or *Ursus major*. In the harsh northland, there are only 3 large omnivores; tundra grizzlies, forest black bears, and people.



Brown bear range on left; black bear on right.

Until the 20th Century, brown/ grizzlies ranged over the western half of North America, from Alaska well down into Mexico. Alaska is the brown bear's last great stronghold; we have 30,000 to 40,000 in the state, compared to only about 13,000 for all of Canada, and less than 900 for Wyoming, Montana, Idaho and Washington. Admiralty Island near Juneau has almost twice the population of the entire lower 48 states.

In Southeast Alaska, brownies occur alongside black bears throughout the mainland. They also live on Admiralty, Baranof, and Chichagof Islands (the ABCs), but not on the islands south of Frederick Sound, which today have only black bears. Until recently, biologists explained this by claiming that after the great ice age ended, brownies moved back into Southeast Alaska from the north, while black bears came back up from the south. Neither brown nor black bears could apparently swim across wide Frederick Sound. But as we have just learned, the real story may not be so simple. For one thing, brown bears did live on Prince of Wales Island south of Frederick Sound before the last ice age, 35,000 years ago. And for another, if the ABC brownies truly and closer relatives of polar bears than of the similar-looking brownies on the surrounding mainland, this means they've probably been there far longer than the 13,000 years since the great ice retreated.

Black bears inhabit all of Canada, and all but a few of the United States. They avoid open plains, deserts and tundra. The main difference between black and brown bears is in the way they face danger. Black bears generally flee into dense cover, and if necessary climb trees. The grizzlies of the treeless tundra can't do that. To deal with threats such as wolf packs and humans with spears, they grew larger and more aggressive.

But rifles made aggression by brown bears unwise. Humans of today rarely tolerate powerful animals who stand their ground. The brown bear survives only in true wilderness, while the more furtive black bear hangs on at the outskirts of civilization. People have sometimes actually benefitted 'underdogs' such as black bears by knocking off 'top dogs' such as brownies (The same has happened with coyotes, who often increase

when wolves are driven out). There may be more black bears around Juneau than in the days when brownies dominated the fish streams.

Estimates for black bear populations show a pattern opposite to that for brownies who concentrate in Alaska. About 160,000 black bears live in the southern 48 states, and a similar number in Canada. Alaska probably has 30,000 to 50,000. Brown bear density at Katmai National Park is probably the world's highest: about 1.2 to 1.8 per square mile. Admiralty has only slightly less. In the interior, tundra grizzlies are much scarcer. The Alaska Range example barely shows on this scale, at .03 to .05 per square mile.

For black bears, normal densities range from about .25 per square mile on Susitna River, to roughly 1.0 per square mile in the Rockies of Montana. Juneau estimates, by comparison, are 'off the chart.' In the early 1990s, biologists observing ear-tagged and unmarked bears estimated 3 to 7 black bears per square mile!

Where are they (watershed scale)?

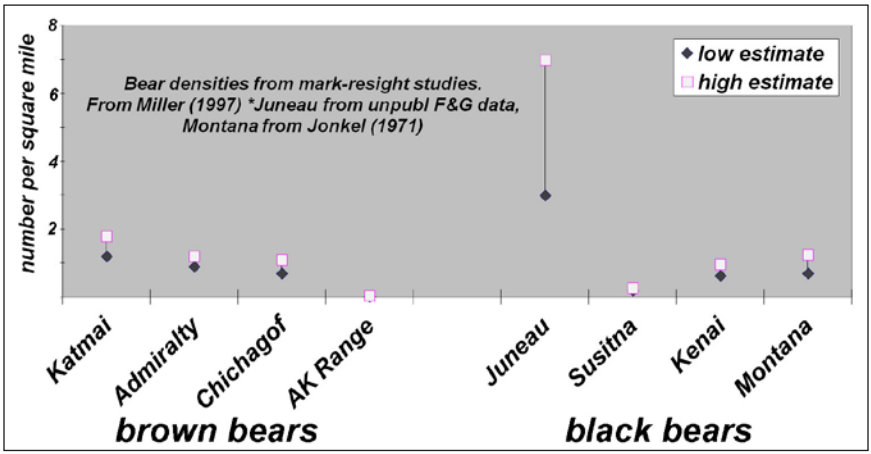
When a bear emerges from its den in the spring, snow is still deep in the high country. Only a few steep, south-facing slopes have bare ground with sedge sprouts and horsetails. Throughout most of Southeast Alaska, both brown and black bears therefore move immediately down to the beaches where green-up starts sooner. At least they do in watersheds

periods of warmth and coziness mixed with chills and cantankerous uncertainty.

By mid-April, the sow and her restless young are fully awake. Pushing up through the remaining old snow they emerge into a world of light and warm breezes. Now wide-eyed, furry and weighing 10 pounds, the cubs huddle close against their mom as she stands and takes in the scene through her nose. Nothing threatens. Snow is still deep, especially out from under the forest canopy. But far below, spring is in full progress.

After a few days, the sow's digestive system has awakened, and she leads her cubs down to the beach. They step out of the forest onto the tide flat. The upper salt marsh is a pasture of succulent sedges - acres of salad! The sow feeds hungrily, stopping frequently to nurse the cubs and to check the air for dangerous scents. The black bears graze close to the forest edge, always ready to flee to cover. Scents of other bears reach them but there is plenty of space and food. Thousands of birds are also using the flats. Some, like geese, clip these same sedges. Others, farther out, scurry about probing the mud with long bills.

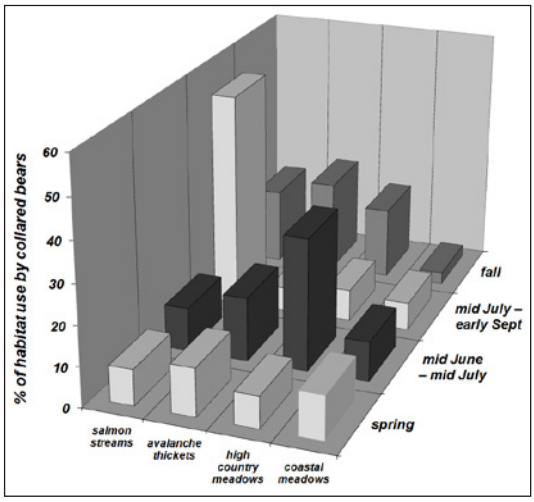
The cubs learn many things between nursing and napping sessions. One day they learn why it pays to practice tree climbing. While the sow is digging out a skunk cabbage root beside a small stream she smells a



where the shoreline hasn't been taken over by peoples' roads and houses. In the Switzer Creek watershed surrounding Dzantik'i Heeni Middle School there is scarcely a coastal meadow where bears can safely forage.

Very little study of black bear habitat use has been done in Alaska. To visualize how black bears use a watershed like Switzer, it helps to study the 3D chart for Admiralty which shows the movements of radio-collared brown bears. Brownies and black bears use habitat in much the same way. The taller the bar on the 3D chart, the more important that habitat is to bears at that season. Our chart doesn't have a row for forest habitats. Bears travel and hide in the forest a great deal, but find less food there than in open habitats.

In spring, bears concentrate in the coastal meadows and south-facing avalanche thickets. As spring progresses into early summer, bears and other grazers like deer tend to follow the receding snow line up the mountainside, selecting the tenderest and most nutritious plants. This is when the greatest use is made of the high country meadows. Late May to



Admiralty habitat use, based on Schoen (1994)

late June is also breeding time for bears, and much of this takes place high in the mountains.

In mid to late July, the first salmon runs begin. Admiralty browns come down to concentrate on the streams (tallest bar on the habitat chart). Juneau's black bears are less specialized on salmon, but make heavy use of them, especially now that people have driven away the brown bears. Hatchery fish are another civilized bonus for Switzer black bears. The big new summer runs of pink and chum salmon are mostly 'strays' from the local fish hatchery. August is also a time for blueberries and salmonberries, which are ripening in the lowlands.

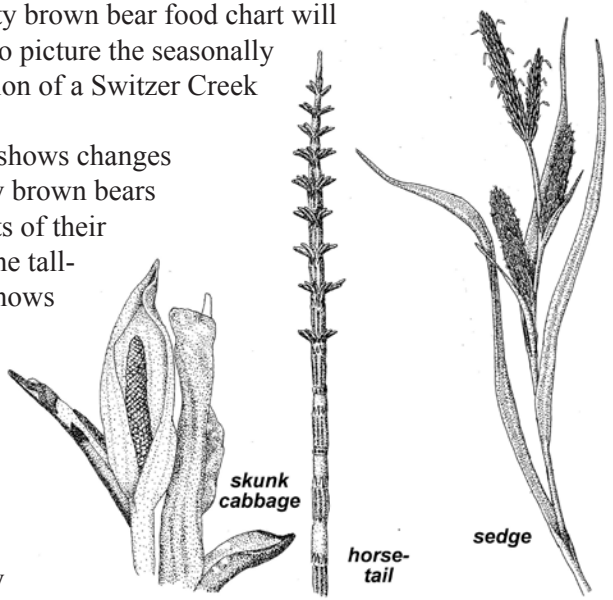
In the fall, Admiralty bears continue to use the salmon streams, but most of them move back into the high country meadows and avalanche thickets. This is true also of the black bears of Switzer. Most follow the late-ripening berries up the mountain just as they followed the spring greens up the slope in early summer. That's why, on the 3D chart, the habitat rows for avalanche chutes and high country meadows have a double peak, in early summer and again in fall.

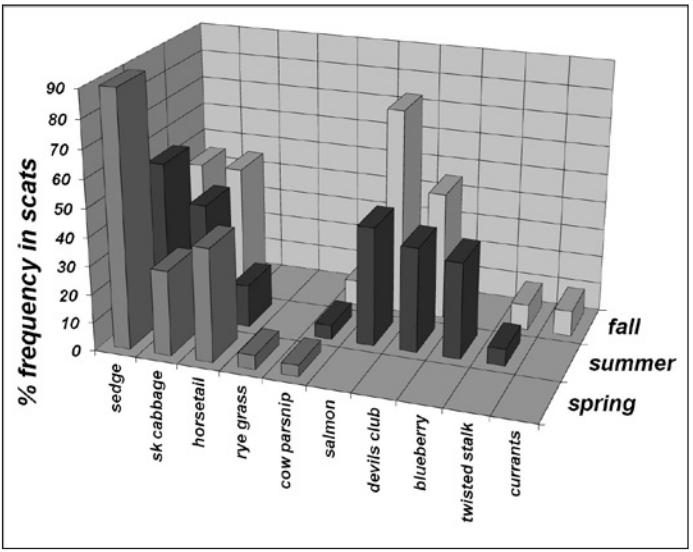
To understand why bears move between different habitats through the seasons, let's examine their most important foods.

What do they eat?

More study has been done on brown bear foods than for Juneau's black bears. But brown and black bear diets are usually very similar. The Admiralty brown bear food chart will be helpful as we try to picture the seasonally changing food selection of a Switzer Creek black bear.

The 3D bar chart shows changes in foods of Admiralty brown bears as seen in the contents of their scats. For example, the tallest bar on the chart shows that sedge was found in 90% of the scats collected in spring. Sedge dropped to 55% in summer, and 45%, in fall. Skunk cabbage and cow parsnip were the only





Brown bear food from scat analysis. Based on data from McCarthy (1989)

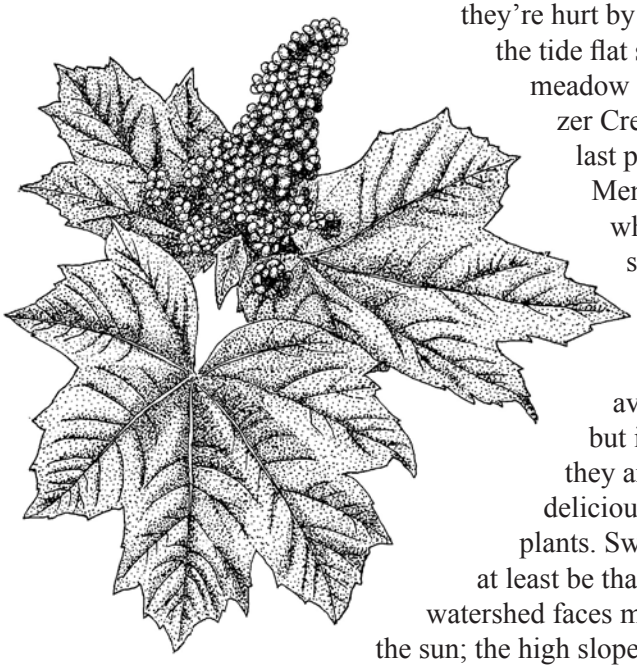
other foods important in all 3 seasons, but in contrast to sedges, their use increased from spring through fall.

Like brownies, the local black bears start their year with salad. The most important plant for bears throughout Southeast Alaska is sedge, which grows in wet places both along the coast and in the high country meadows. Sedge is still abundant on the Mendenhall Wetlands, but it's hard for bears to reach because of the unbroken network of roads and fences and houses. Spring is the leanest time of year for bears, and

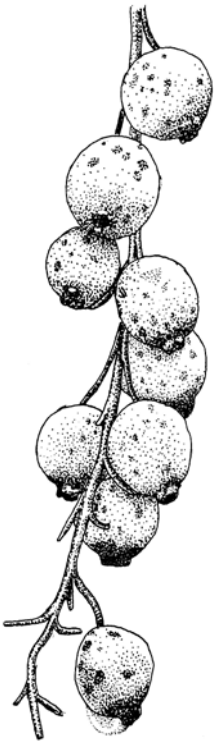
black bear boar close by. The whole family scampers up a hemlock tree and waits until he passes. The wind favors them and the boar wanders by unaware. Large bears eat smaller ones, especially cubs.

As spring days lengthen toward summer the sow and cubs abandon the tide flats. They follow a small stream uphill, feeding on skunk cabbage,fiddleheads of wood fern, and twisted stalk. The snow is leaving the upper sections of the mountainside. Brushy avalanche chutes and subalpine meadows are full of fresh sprouts, just as the tide flats were 6 weeks ago. The grazing sow follows this border between spring and summer ever higher. To the shrill alarm whistle of the marmot and the sharp eye of the goshawk, the cubs poke into alder tangles and wrestle in sunny mountain meadows.

The two young bears have grown a great deal. They still feed mostly from their mother but are starting to eat vegetation as well. The early days of August bring a new scent to the sow, and she begins to wander off the high ridge back towards the sea. Once there, the cubs learn the meaning of this scent; thousands of fish have filled a pond in the stream where it emerges from forest into meadow. The smell of the dying ones



they're hurt by loss of access to the tide flat sedges. The wet meadow on lower Switzer Creek is one of the last places along the Mendenhall Wetlands where bears can slip out to graze at night. Sedges and horsetails do grow on the high avalanche slopes, but in early spring they aren't yet as tall or delicious as the coastal plants. Switzer's bears can at least be thankful that the watershed faces mostly south into the sun; the high slopes green up sooner than most other meadows at that elevation. Down in the forested wetlands, skunk cabbage is a very important spring food.



From June through mid July, the black bears of Switzer are mostly packed into the broad belt of Sitka alder below the cliffs of Heintzleman Ridge. Alder survives the winter by flattening under the snowpack, and even in summer many of its branches point downslope. This habitat is a bushwhacker's nightmare and a bear's paradise, full of fiddleheads, ground cone and twisted stalk. A lucky bear might surprise a young marmot or grouse there. The earliest-ripening fruit in the avalanche thickets is salmonberry.

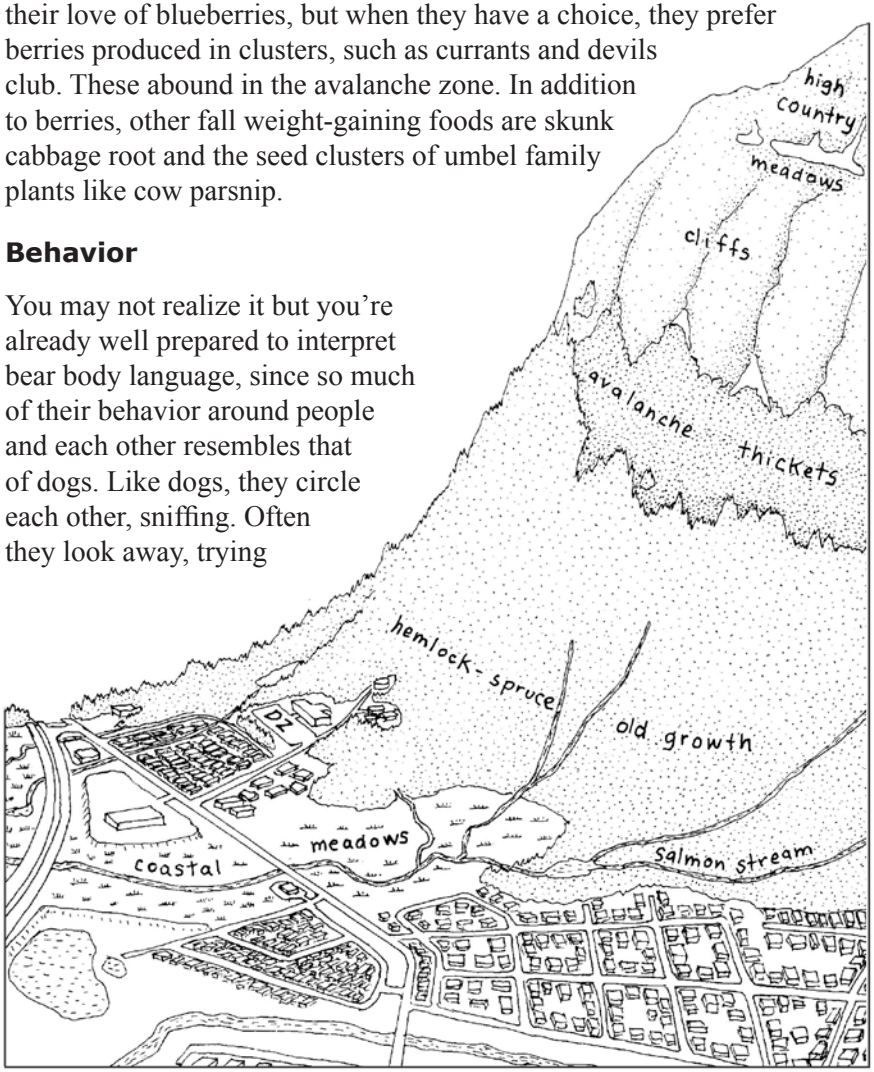
Switzer Creek resident Ken Mitchell says that in recent years "lost salmon" from the DIPAC hatchery (Douglas Island Pink and Chum) have started running up Switzer in large numbers. These runs

Above: Devil's club in fruit. • **Left**: Stink currant are probably most important of all autumn fruits for bears during hyperphagy.

begin in mid July. The hatchery strays draw many black bears to Switzer creek, especially at night.

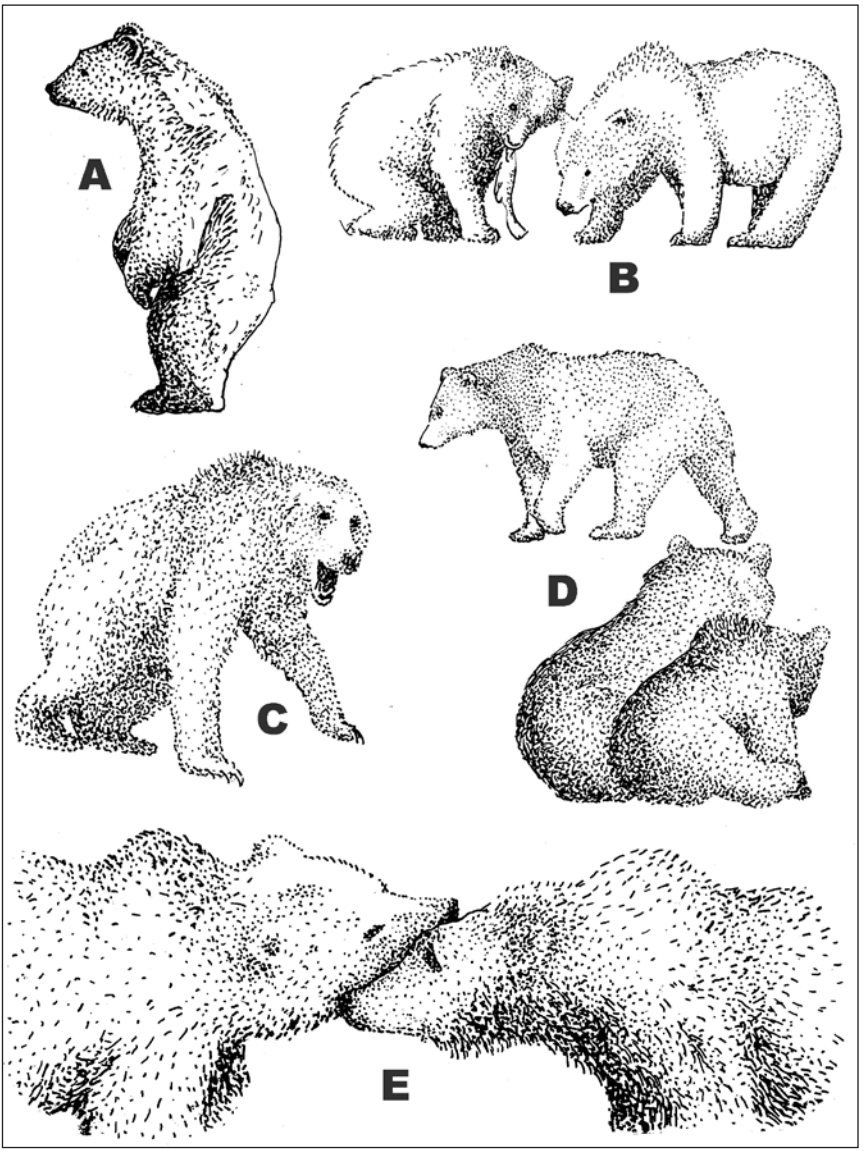
In late summer as fish runs are ending and berries are ripening in the high country, bears enter a phase known as **hyperphagy**, when they rapidly gain weight for denning. They switch from high protein to high energy foods. A few bears stay low on the creek to chase late cohos, but most return to the alder slide zone.

On Admiralty, the most important foods in the high country fall scats were the berries of stink currant and devils club. These are also major black bear foods in the slide zone above Switzer. Bears are famous for their love of blueberries, but when they have a choice, they prefer berries produced in clusters, such as currants and devils club. These abound in the avalanche zone. In addition to berries, other fall weight-gaining foods are skunk cabbage root and the seed clusters of umbel family plants like cow parsnip.



Behavior

You may not realize it but you're already well prepared to interpret bear body language, since so much of their behavior around people and each other resembles that of dogs. Like dogs, they circle each other, sniffing. Often they look away, trying



See Appendix for captions to these drawings. But first, try writing your own.

not to appear threatening; this is called "cut off behavior." As bears approach each other they may sway their heads from side to side. This is also a way of avoiding eye contact, which is threatening for bears as it is for dogs. A direct stare may be an attempt to make the other bear or person go away. A staring bear makes most people uncomfortable, for

'Sparring.' Ears up. Not really angry.

good reason. Likewise, if a bear stands in profile to you with head stretched out low, pretending to look into the distance, this is a subtle but firm way of saying you have worn out your welcome.

When movie directors or magazine illustrators need to show a scary or attacking bear, they usually have it stand up. That's unrealistic, but we've all seen so many of these movies and pictures that it alarms us when a bear rises on its hind legs. Standing bears are indeed impressive, but this is not an aggressive posture.

The bear is just trying to get a better view, or lift its nose into the air currents. Unless you are very close and afraid to startle it, this is a good time to politely wave hello and say something. Bears detect motion well. But if you freeze they may not recognise you as a person.

Ears are vivid indicators of a bear's emotions. Flattened ears can mean a seriously angered or frightened bear. Sometimes they show submission, as when a boar is courting a sow and trying not to get whopped. As with dogs, bears' hair will stand up straight on their shoulders when they are really mad. This helps to make them look larger.

hangs in the air. But other odors reach them as well, for the feast of salmon draws many bears. Several of these are huge brown bears, alien-smelling, and intolerant of intruders.

The black bear sow leaves the pond to the dominant brownies. She finds a good fishing spot on a smaller tributary stream deep in forest shade. There's plenty offish and she teaches her young ones the skills of catching and eating them. As fall approaches, devils club berries ripen, and rains swell the streams, bringing in cohos and flushing the pink and chum carcasses out to sea.

One day, while approaching the brownie pond, the cubs notice a new scent. They are by now used to the odors of forest and beaches, deer, mink, red squirrel, and other bears, each with its distinctive personality, But this scent is altogether new. Approaching from downwind, cautious yet curious, they encounter their first humans. Beside the brownie pond, several of these strange animals are slinging the bodies of fish over long branches arranged in rows. The smell of burning wood mixes with the human odors.

Who are these creatures who move about on their hind limbs only? A group of them assembles between the bears and the hanging fish. The

Angry! Ears flat, head low, shoulder hair raised.

A huffing noise shows alarm, and may precede flight. But a series of loud huffs by a bear standing its ground is cause for you to be alarmed. Even more assertive is loud tooth popping, with lips flared open in front. Bears don't snarl the way dogs do, by drawing the lips up alongside the canine teeth. Artists and taxidermists often mistakenly show them this way.

sow is attentive as one human speaks. The calm voice and the grouping together of the humans seems to be a display of some sort to inform the bears that this is the peoples' special territory for a short time. The voice also expresses gratitude that the bears are generous in sharing the fish stream.

The sow is satisfied and moves off. Her cubs have become so curious that she has to scold them away from the area.

When leaves of forest bushes are yellowing, the humans have gone. Fish are less plentiful. The bears again leave the valley floor and make their way up the slope, moving from one blueberry patch to the next. This is the time of year when hunger never seems to sleep. The blueberries are plentiful but tedious work. Up in the open slide zone, the branches of devils club, stink currant and highbush cranberry sag under the weight of berry clusters. Now this is easy feeding, whole mouthfuls at once! Weeks of this feeding put fat on the bears and give luster to their fur. Soon the outof- den season will end.

Late October brings clouds racing across the full moon, and snow dusts the mountain tops. The bears have gleaned most of the berries from the slopes, and their hunger is relaxing. The sow selects and prepares a new den site. When a storm comes, deepening the snow, she enters the den with her cubs. Outside the wind drives snow into their tracks and erases them completely. Nearby, a porcupine scrapes away the outer rind of a hemlock trunk and feeds on the inner bark. Darkness comes as the porky works on and the bears drift from this world to the next.

BEARS AND PEOPLE

History

For as long as we've been human, we've lived with bears. Caves in Europe contain the skulls of long-extinct cave bears arranged in ways that suggest religious ceremonies, held thousands of years before people even entered North America. Only for the past few millennia have most of the world's people made their living by farming and herding tame animals. Before that, and even today in wild parts of the world like rural Alaska, people and bears lived off the land in pretty much the same way.

Tlingit stories and art show deep understanding of bears, who are woven through every part of culture. Nobody enters the woods in Southeast Alaska without thinking about bears, and wise people think of bears with respect. One nickname for the bear is Big Ears, because the bear hears, or even "sees" our thoughts. In the stories, thoughts appear to Bear as beams of light.

Black and sometimes brown bears were hunted for food and hides with spears and arrows, or trapped with baited deadfalls using heavy, delicately balanced logs. The killed bear was honored as an important guest in the village.

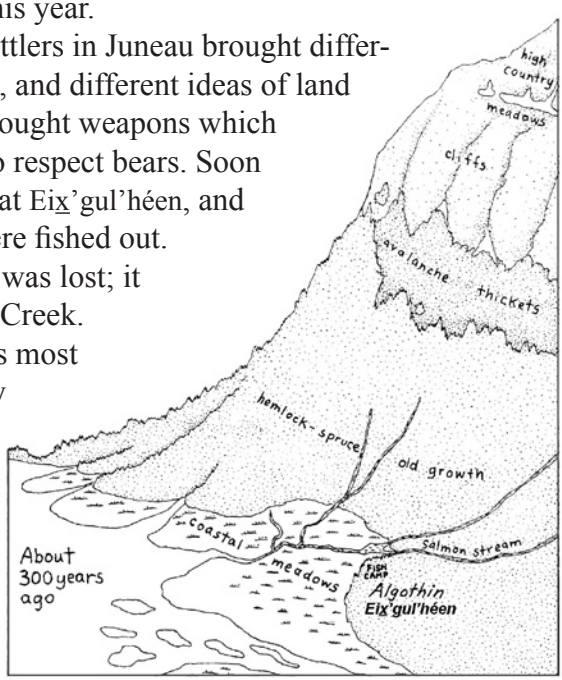
Imagine camping at Eix̲'gul'héen 300 years ago, where Marriott Pond is today. It's September and you're tending smoke fires beneath 3 large racks covered with drying chum salmon. Bears fish beside you every day onthe stream. The best riffles are taken by brown bears because this is a very productive little stream. A few black bears slip in when the brownies are sleeping.

For the most part, bears seem more interested in the stream's juicy live fish than in the dessicated ones on the racks. That's lucky, because a major part of your winter's food

hangs there. Sometimes bears, especially young ones, wander by, pretending not to smell your 300 smokey fillets. You call to your friends, and in a group you acknowledge the bear, trying not to embarrass it, letting it amble off with dignity. Eix̲'gul'héen has enough for everybody this year.

The first European settlers in Juneau brought different attitudes about bears, and different ideas of land ownership. They also brought weapons which made it less necessary to respect bears. Soon there were fox ranchers at Eix̲'gul'héen, and the chums and cohos were fished out. Even the stream's name was lost; it was now called Switzer Creek.

Allen Hasselborg was most famous of Alaska's early bear hunters. He came north in 1900. There were no game laws, and brown bears were so scarce that it was hard to even find

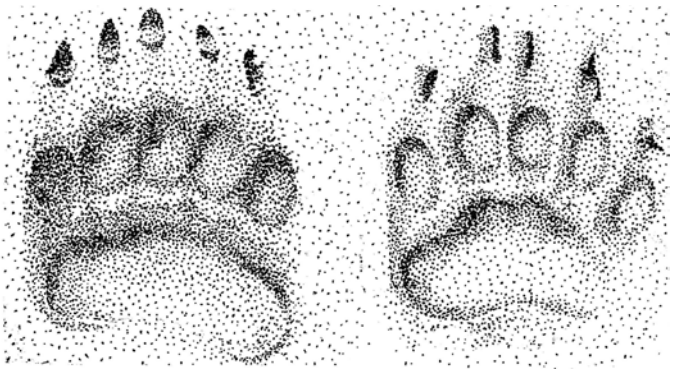


The Switzer Bear

Snow tumbles off the high cliffs of Heintzleman 's Ridge as the early spring sun begins to melt the winter snowpack. Mountain goats graze on the open slopes among steep rock walls. Down in the K-Mart parking lot a naturalist with a spotting scope counts these goats and enters the number in the annual log book. Evening rush hour brings a steady flow of traffic along Egan Drive and the naturalist notes the sharp contrast between this reality and the one seen through the scope.

Within this scene but undetected, somewhere just below the avalanche slope, a subadult black bear emerges from his den - a mosslined hollow under a pile of wind thrown logs. Facing upwind, he detects a faint scent of rotting flesh. At the toe of a slide lie ragged bits of white fur. A few paw swipes into the snow uncover the remains of a mountain goat, preserved since mid-winter, when it fell from the icy ledges above.

The bear's previous out-of-den season was difficult. His mother suddenly rejected him, and without her guidance it took months to trust his own instincts and judgement about habitat and food selection. He entered the den underweight.



Brownie track on left, black bear on right. Researchers measure width across forefoot for census. Black bears have shorter claws and more widespread toes, in a stronger arch around the pad.

tracks of them on the beaches. Hasselborg had to climb high into the mountains to kill bears, skinning and packing down the heavy hides to sell for $50 in Juneau. Unlike Governor Thomas Riggs who campaigned in 1918 promising to completely eliminate brown bears from Alaska, Hasselborg admired and appreciated them, in his own crusty way. By the end of his life he had done as much to help bears as he had to harm them, by guiding photographers and conservationists who helped bring their plight to the world's attention.

Research

One of the first questions biologists had to answer about bears was simply how many there were. Two experienced woodsmenvisited salmon streams on northern Admiralty Island in the 1930s and measured the widths of bear tracks. Tracks of different widths were made by different bears. From these counts came an estimate of 149 bears for the study area. In 1987, biologists used more modem techniques in the same area and came up with a very similar count of 136 bears.

The newer method uses tagged and radio-collared bears. For example, say that biologists put ear-tags on 10 wild bears. Soon afterward, observers count 20 bears in the area, and 5 of these have ear tags. Half of the released bears were seen; they have a "50% observability." If the 20 bears seen were 50% of the total population, then there are about 40 bears in the study area.

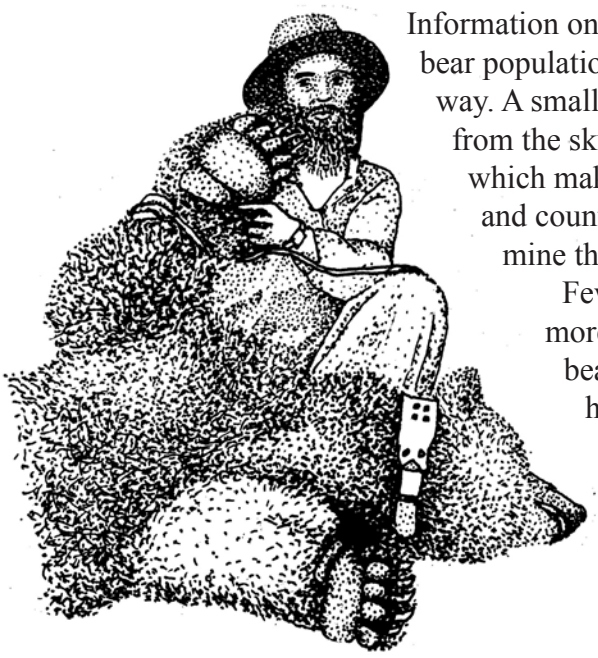
Can you think of anything that would throw off that estimate? What if some of the ear-tagged bears were simply leaving the area

entirely? That's where radio collars come in handy. Any bears that leave will be detected.

To put a collar on a bear, you first have to catch it! Juneau bear researcher LaVern Beier captures bears in cable foot snares, or by firing a drug-filled dart from a helicopter. The rugged collar has a waterproof radio transmitter. For several years until the battery dies, the bear is periodically relocated by planes flying over northern Admiralty with receivers mounted on the wings.

One result of this **radiotelemetry** work is a series of maps showing how each bear moves from habitat to habitat through the seasons. Population estimates allow game managers to set hunting limits, and predict the effects of logging and mining. In the fall, collared bears are followed to the den using hand-held radio receivers. Certainly, it's not fun for a bear to be drugged, tattooed, collared, or to have a tooth pulled and blood sampled, or to be buzzed by search planes throughout the summer. But what we learn from these bears may be essential to their survival in a world increasingly hostile to wildness.

The hides and skulls of bears killed by hunters must be brought to Fish and Game for "sealing." Information on age and sex of bear populations is obtained this way. A small tooth is pulled from the skull and sent to labs which make a cross section and count rings to determine the bear's age.



Few animals are more secretive than bears. When they are hunted they can be extremely hard to observe. But most bears also quickly learn to relax around people when they

are protected in wildlife sanctuaries like Pack Creek on Admiralty Island. Researchers Johanna and Robert Fagan have spent hours and years in a tree platform at Pack Creek, studying bear behavior. They carefully recorded each bear's movements, fishing success, and human interactions.

Feeding studies have to be less direct. It's impossible to follow a bear all over the mountainside, watching each plant it snips off. Fortunately however, bears leave big, easily located scats. Bears' stomachs are inefficient as herbivores go, and the food remains in their scats are more recognizable than the material in, say, deer pellets. Bear biologist Tom McCarthy collected scats on Admiralty Island. The scats were dried, and all food contents were identified. The table in the food chapter was created from this information.

We know more about the globally rare brown bear than we do about the more common black bear, for several reasons. The grizzly is threatened with extinction in the lower 48 states, so millions of dollars have been spent on its study. Even in Alaska where populations are relatively high, it is clear that poorly managed garbage dumps and logging roads left open to hunters are threats to the future of brown bears. For now, state biologists are therefore more anxious to learn about brownies than about black bears.

But the mountain goat is nearly intact! Only a lower hind quarter has been pecked by ravens. For three days the bear feeds on the carcass. The nearby forest is reassuring; he can quickly dash to cover should a larger bear come by. Occasionally he smells distant wolves, when the wind blows down from the icefield toward Gastineau Channel.

Mostly the wind rises from the land of humans. From far below comes a rich mix of scents and sounds. Often the smell of burning fills the air. Mainly this comes from a thin vertical cloud drifting from the middle of the valley floor in what used to be tide flats. The sounds of the valley are numerous: children at play, cars, trucks, construction noises, whistles, sirens, and horns all mix with the nearer sounds of wind in the branches and the beating of raven wings. Humans even have a noisemaker that flies. Some of these buzz along over the ocean channel; others zoom suddenly overhead and vanish beyond the ridge. He crouches in the forest as the ground itself vibrates to their throbbing thunder.

Now with the goat mostly eaten, he leaves the remains to the awaiting immature eagle and several ravens, and heads off down the mountainside in search of more food. On his descent, old winter transforms into young spring. Plants flourish at the foot of the mountain.

His instincts, gathered by all of his ancestors, tell him that the

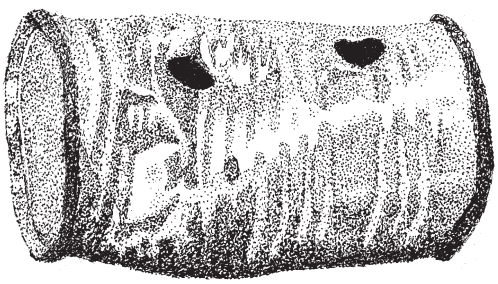
Juneau, as we will see, has a serious garbage problem. Often, bear biologists have had no choice but to trap bears and relocate them. This was done especially in 1987 and 1991. Each trapped bear was ear tagged, and data were collected on age and sex and weight, just as for bears submitted by hunters. In another study for a proposed dam at Sheep Creek, black bears were radio collared to learn how widely they ranged and where they denned.

But compared to the longterm efforts on brown bears, these studies were minor.

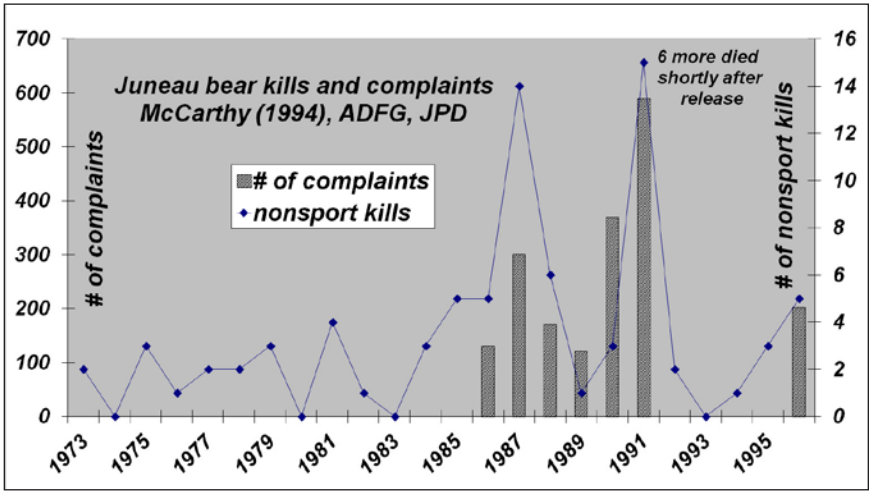
In the backyard

Wild bears that seem relaxed around people are said to be **habituated**. But many people use this term improperly. For example, it's not exactly correct to say that a bear is "habituated to garbage." Habituated animals could almost be described as "bored," and of course garbage is far from boring to the bear sniffing at a dumpster. Habituation happens when bears regularly encounter nonthreatening people. After awhile the bear decides that people are no big deal. Humans can also become habituated to bears if we see enough of them. Habituation isn't necessarily bad. Almost all humans in Juneau are habituated to high speed travel. This would be terrifying to a person who's never been in a car, but habituation allows us to go about important and somewhat risky business without too much stress.

The correct term for a bear who's become obsessed with garbage is **food-conditioned**. While habituation is a gradually relaxing response, food conditioning is an increasingly pushy response to a tasty reward. One success opening a garbage can may put a bear on the road of no return. Soon it pretends not to hear banging pots or yelling, frightened people. When police arrive and bop it with a rubber bullet, it may run off, but a few hours later it's on someone else's porch. The life expectancy of food-conditioned bears is very poor.



Pack Creek on Admiralty Island is a place where thousands of



tourists come to view wild brown bears catching salmon, nursing cubs, and interacting with other bears and people. Some of the bear behavior sketches in this booklet were made from photos taken at Pack Creek. Most of those bears are habituated and comfortable around people, but only a few are food conditioned.

Bear watching at Pack Creek is closely supervised. People aren't allowed to bring food onto the viewing spit, or to wander out

out-of-den season begins down here. And this is where his mother took him in the first 2 springs of his life.

Tracing a stream, he recalls his mother's lessons, especially her caution around humans. He remembers from his first year how they came upon a dead bear near the forest edge. It had been dead quite awhile and the body lay on top of a pile of stuff that was covered with human scent. Perhaps this association is what made his mother uneasy.

By evening, he emerges from the forest along Switzer Creek. The evening sky is clear and in the chill air he can smell the tide marsh and the sedges growing there. These aromas draw him downstream for a bit but he quickly comes to Old Glacier Highway. Cars and trucks pass frequently. He is hungry and fearful. There is no way to safely cross this road so he turns and heads back upstream, clipping a few sedges from the banks. At the soggy edge of the forest he makes a meal of fat skunk cabbage sprouts. Afterwards he settles down for a nap in a cluster of young spruce trees.

Unable to reach the beckoning tide fiats, the bear can only feed in the upper meadows, at the forest fringe, and sometimes even in sight of houses. Early shoots of twisted stalk and fiddleheads add to the meager diet of sedge and skunk cabbage. Their scarcity forces him to travel

onto the creek with the bears. Bears have learned that people are predictable and harmless, and that it's not worth trying to intimidate them.

Juneau of course cannot be managed like Pack Creek. Almost every bear reported to the police is already a hardened garbage addict. It's difficult to prevent food conditioning from happening in the first place. But it's almost impossible to convince a conditioned bear that garbage is a dumb idea. There are too many backyards, and too few police, bear biologists, and litter enforcement officers.

One way to examine Juneau's garbage problem is to count the number of complaints received by the Police Department. Another is counting the number of "non-sport" bear kills—that is, bears that were not shot legally by hunters, but killed in "defense of life or property" (DLP) by an official or homeowner. Unfortunately, still more bears die from human causes but are not reported. The chart of bear kills and complaints from 1973 to 1996 shows that the 2 worst years were in 1987 and 1991. The problem seems to come in cycles, and we may now be heading toward another bad year. The bears that most often get in trouble are young male 'hoodlums' on their own for the first time and unable to compete with older

widely. Spring is late this year, with ice just below the muddy surfaces in the forest. Little puddles and ponds are still frozen. It's fortunate that this area faces the sun or the thaw would come even later.

One morning in mid May, the bear's curiosity gets the best of him. In the still and darkness he ambles onto the road at the upper end of a housing development, his nose full of food smells. He follows one scent to to a garden where rich earth is exposed to the air. In the far corner is a pile of vegetable and fruit scraps mixed with dirt and straw. It smells delicious. He approaches but can't get through the fencing that completely surrounds it. He fusses with the fence, and then gives up.

The wind brings another scent and he follows behind a nearby house to a small shed. He circles the shed hopefully. Suddenly a light blinks on from the house and the door opens. Before the human steps out for its early morning walk, the bear bolts into the forest and races away. Moments later, with heart pounding, he stops to see if anything is threatening.

Relieved, he decides to quit this nervewracking neighborhood. By sunrise the bear is up in the high meadows where tender sprouts are just appearing. He spends many weeks here grazing on the lush early summer plants. Several times he is aware of hikers on the ridgetop trail.

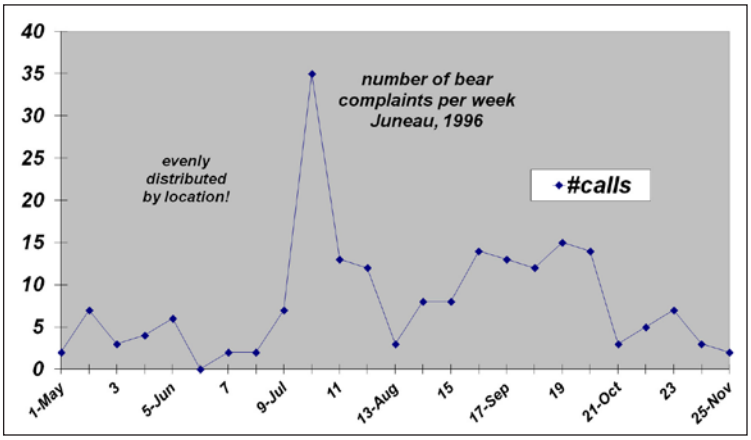
bears for natural foods. Some learned a taste for garbage from their mothers.

You might guess that a bear seeking garbage would pick an isolated house far from barking dogs or vigilant neighbors. But it turns out that Juneau's worst problems are in its densest neighborhoods such as mobile home parks. In 1996 the highest portion of garbage problems (34%) came from the upper Mendenhall Valley, from Egan Drive to about the Glacier Spur Road. Once a bear is addicted, it often seems to throw caution to the winds, walking right into downtown Juneau or the Valley malls. The least offending subdistricts are actually the largest areas with the fewest people, like Douglas Island (4%) and "out the road" (2%).

The last really bad year in Juneau was 1991. At least 15 non-sport bears were shot, and many others were trapped and released near Echo Cove. Of these, at least 6 more died soon after release. Deported bears often return from great distances, and must be killed.

After 1991 the number of non-sport kills dropped dramatically. Partly this was from improved awareness of the importance of careful garbage handling. But mostly it was because the worst offenders were dead.

Since the "great shootout year" of 1991, the Department of Fish and Game has decided only to trap and relocate bears in exceptional cases. Now, Area Biologist Matt Robus spends more time counseling people by phone, or inspecting problem sites to give



advice on better garbage disposal. The busiest time of year for Matt is when bears enter **hyperphagy**—from mid-August to late September. Bears must eat voraciously to gain weight for denning. High energy human foods become especially attractive as salmon runs end, and plants wilt. The "hyperphagy garbage spree" shows well on the chart of complaints per week for 1996.

The even more dramatic spike in the 2nd week in July was caused mostly by reports of small solo bears. Some had just been chased off by their mothers who had joined boars for the June mating season. Others came down the mountain in hopes of salmon.

Since Dzantik'i Heeni school was built in 1992, bear complaints have dropped at nearby Switzer Village. Perhaps the presence of the school forces bears farther up onto the mountainside. In 1996, only 5 out of 200 reports came from within a half mile of DZ. Students can help to maintain this good record by keeping the grounds litter-free, and by encouraging careful garbage handling in nearby neighborhoods.

In one sense, the solution to Juneau's garbage problem is obvious; make garbage completely unavailable to bears. Some people think that high density neighborhoods like mobile home parks

Usually the mountain air currents bring him warning, and he finds cover before they come close. He's also grown wise to the noisy machines that fly close overhead. Usually they come in 4s or 5s and pass quickly by. Occasionally they circle his area a few times, and then continue on. What strange, loud birds they are.

In mid summer a new scent comes up from the valley. Spawning fish are entering Switzer Creek. The bear snips off the tops of a few plants and then heads down the mountainside. Along the way, he stops to savour the sweetness of ripening salmonberries.

By nightfall he approaches little Marriott Pond where the salmon are collecting. Wild thrashing in the pond and feeder tribs indicate there are more than just a few fish here. Lurking at the riffle where West trib flows into the pond, the bear catches his first fish, a big male chum. Over the next few weeks, hundreds of these fish come through the area. A few other bears have also been attracted. One is an older male, and after a few sideways glances from him the young bear knows to keep his distance.

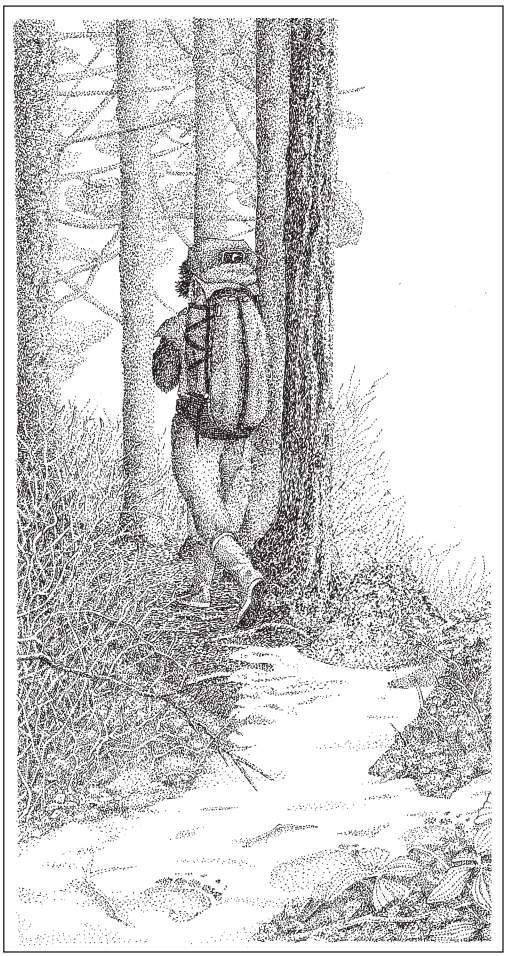
Humans are often about during the day, so the young bear mostly fishes at night. By day he sleeps or picks berries in the sheltering forest. One day in late August he wanders down Switzer Creek below the pond

should install bear-proof community dumpsters, or have mandatory garbage pickup. But the question is who should pay for this. And who wants the dumpster in their front yard? It takes a disaster year like 1991 before many will consider these ideas. We may not have long to wait.

In the woods: precautions

Bears are *out there*. Juneauites live with some of the densest black bear populations in the world. When we step onto a backwoods trail, our senses are sharpened. Alaskans can be thankful to bears for keeping us on our toes. Think of all the birds and wildlife we wouldn't notice if we weren't scanning for bears!

The presence of a large powerful animal reminds us that we are animals ourselves. It's exciting to get into the mindset of wild creatures. We notice which way the wind is blowing, for example. If it's at our back, and blowing steadily, there is almost no chance we'll surprise a bear around the next bend, because bears have fantastic noses. If the wind is in our face, and we're hiking through brush where we can't see far ahead, we might sing or whistle, or call out something friendly. We stop and listen, like the wild animals do. If

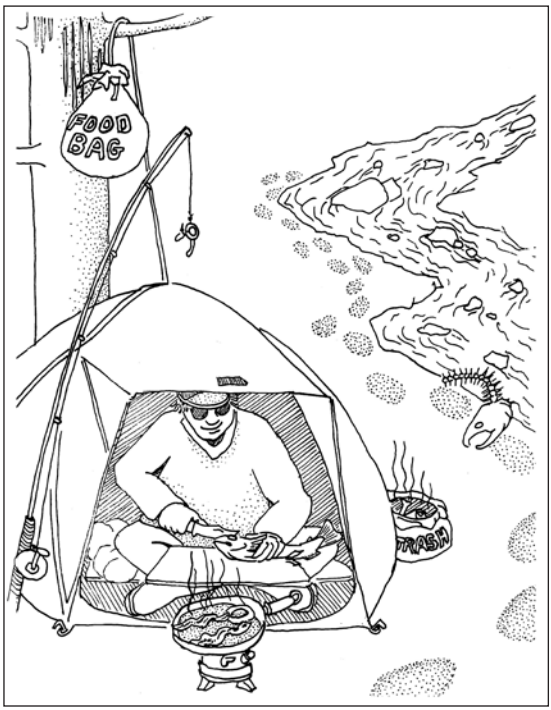


Tracks of an early brown bear in lingering April snow.

we smell carrion or see ravens gathered on an unidentified object, we make a wide detour; this could be a carcass with a bear resting nearby.

Consider the habitat and the season and the time of day. Is dusk approaching? Bears are more active then, and you may want to be finishing your hike or setting up camp. Is this a salmon stream in August? You're 25 times more likely to see a bear here than along a coastal meadow in October; check this on the 3D chart in the *Watershed* section. What about the **topography**, or the lay of the land? Are you in a saddle on a ridge top? It's probably a "bear intersection!"

Have you seen much bear sign? How big are the tracks? Black or brown? Sow with cubs? What's in the scats? How old are they? These are eloquent messages from the bears, letting you know what they're up to. Avoiding places where you expect bears are concentrating is as much a matter of courtesy to them as safety for you. After all, bears are extraordinarily alert animals. For every bear you notice on your hikes, about 20 bears notice you. These bears wouldn't think of doing anything to startle you; it's only fair to return the favor. Black bears in the woods are extremely unlikely to hurt a person. The bear on your porch is more apt to be pushy.



What advice would you give this camper? Make your own list and then compare to Appendix.

Camping adds several layers of excitement to the bear-country experience. Bears are much more

comfortable than we are in the dark. We jump whenever deer mice rustle under the tent fly. But bears are quieter than mice. For some reason that isn't comforting. We wonder if we should have hoisted the cook stove into the tree with the food bag. Did we spill any grease on it when we were cooking? How far are we from town? Do the garbage-conditioned "town bears" range this far into the back woods? Have inexperienced campers stayed here recently? Did they make mistakes that we might have to pay for, like burying their garbage instead of burning it and packing out the remaining metal?

People who camp a lot in bear country become 'habituated.' They learn to put useless worries out of mind. Not that bears aren't "out there," but if everything odorous is strung high in a tree, an unpleasant encounter is improbable. An experienced camper is like a good driver, alert but not frightened. Camping is safer than driving. Choose a campsite which avoids the most important bear feeding places and travel routes. To test your common sense, make a list of tips for the cartoon camper. This guy is foolhardy! He's making at least 8 mistakes (See Appendix).

Encounters

So, let's say that after taking all of the common sense precautions, you meet a bear anyway. Woops! What should you do? Helpful brochures are available from the Department of Fish and Game, the Forest Service and the Park Service that give advice on bear etiquette and safety. It's hard to read them during a bear encounter, and we recommend you study them beforehand.

Every encounter is unique, and every bear has a different personality. There is no simple list of ABCs to follow in a bear encounter. Your behavior depends on the bear. Has it seen you yet? Maybe if it's far away across a mountain bowl, peacefully grazing, you'll chose to watch awhile with binoculars, then slip away without disturbing it. Many Alaskans consider this kind of bear encounter the highlight of their year.

Sometimes a closer encounter is unavoidable. Is the bear pretending you're not there? Staring or defering? Ears up or down? It helps to understand bear body language, which we discussed in

the chapter on *Behavior*. You can use these postures yourself to signal peaceful intentions. If you stare, the bear may take this as a challenge. Look away slightly, with arms outstretched to show your size. This is bear language for ”Hey, let’s not get excited.” Above all, don’t run! Anyone familiar with dogs understands that running invites a chase. It’s okay to back away from a bear that stands its ground or approaches, but do it slowly and don’t turn around.

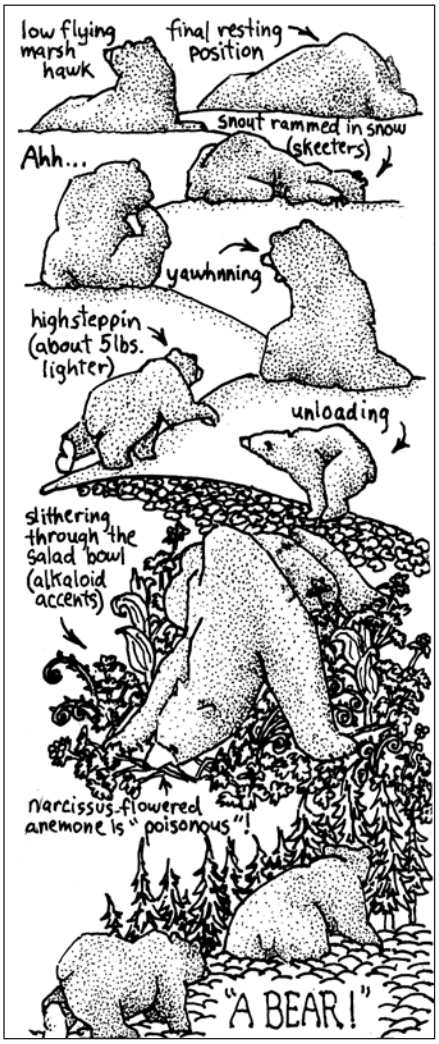
Probably for the same reason we enjoy horror movies, all of us want to hear about the more threatening bear encounters. We refer you to the above-mentioned agency brochures for advice on actual assaults. But please realize that knowing what to do in the case of a bear attack is about as likely to prove useful as knowing how to behave after being struck by lightning; knowing about prevention is way more important.

To put bear attacks in perspective, we asked biologist Matt Robus how many records existed of people hurt by a bear in

to some houses by the creek. The scent of ripe berries comes from one of the houses. He approaches with much caution, remembering the last time he was came near these human structures. There along the edge of trees above the stream bank hang plump, juicy red raspberries. These look much like salmonberries and smell even sweeter. But as he nears the house a human appears from beside a shed and sprays him with water from a hose. Again the bear bolts, crashing through the thickets on the other side of the stream. Approaching these humans is just too scary, and there seems to be no reward for investigating their spaces and scents. After calming down, the bear continues uphill. There are still some fish in the stream but not in their former abundance. And besides, the mountain slopes are sending down new smells. Blueberries are ripening in the forest clearings, and devils club berry clusters lean over streams. Avalanche thickets offer stink currant and ground cone, and in a few weeks the alpine blueberries will ripen on the ridge tops.

For the remainder of the fall, the bear gorges on berries in the high-lands below Heintzleman ‘s Ridge. This out-of den season he has done well finding enough food. He has gained enough weight and experience to enter the den season comfortably.

Inside K-mart, a mother picks out a Halloween Pooh Bear costume for her pre-schooler. Down the aisle, a teenager tries on the mask of a demon grizzly bear with satonic eyes and blood-dripping fangs. Meanwhile, out in the parking lot, the naturalist records a sighting of a smallish black bear moving down off Heintzleman Ridge into the forest below. The wind sweeps snowflakes across the pavement as evening approaches. Rush hour is just beginning, with heavy snow in the forecast.



Young black bear foraging in a mountain meadow. Sequence reads from bottom to top.

Juneau in the last 20 years. Answer: one. In 1991 a woman was knocked over by a running bear. The bear may simply have been trying to get away.

Next, we asked the Gastineau Humane Society how many people had been reported bitten by dogs in Juneau in 1996. Answer: 79. And finally, we asked the Juneau Police Department how many records they had of assaults on people by people in 1996. Answer: 577.

Bears are capable of doing great harm. They're powerful, intelligent and stealthy. If (as the above statistics show) they almost never hurt people, then we can only say that bears are amazingly generous to a species that has taken their favorite habitats, and forgotten how to speak to wild animals. We hope that the students of Dzantik'i Héeni will help Juneau remember that neighborliness extends beyond people. We may learn a lot about manners from the bear.

THE WOMAN WHO MARRIED THE BEAR

Commentary by Ronalda Cadiente

One of the most well-known stories of the brown bear among the Tlingit people is of a young woman who lives among the brown bear after speaking inappropriately about them. The power of the story is in the multitude of lessons for life today. The story hinges greatly on transformation between the animal world and human world, on loyalty, and on losing fear and embracing the unknown natural world. The story challenges the learner to cast off conventional ways of knowing. There are lessons beyond the familiar. Subtleties become significant when one understands the interconnectedness of all living things. This awareness may only exist when one accepts the reponsibility to honor and respect oneself and others.

This important lesson comes to life throughout all stories in the Tlingit tradition of oral history. In the story, *The Woman Who Married the Bear,* bear represents our responsibility toward life. We must be reponsible for what comes out of our mouth, and for our actions. Our words and actions take on a life and spirit. The learned and wise take caution in all they say and do.

The *Woman Who Married the Bear*, told by Tom Peters (excerpted from *Haa Shuká: Our Ancestors*)

The story begins ...

Dáx̲náx̲ sháa áwé woosh kik'iyán ...

There were two women, sisters ...

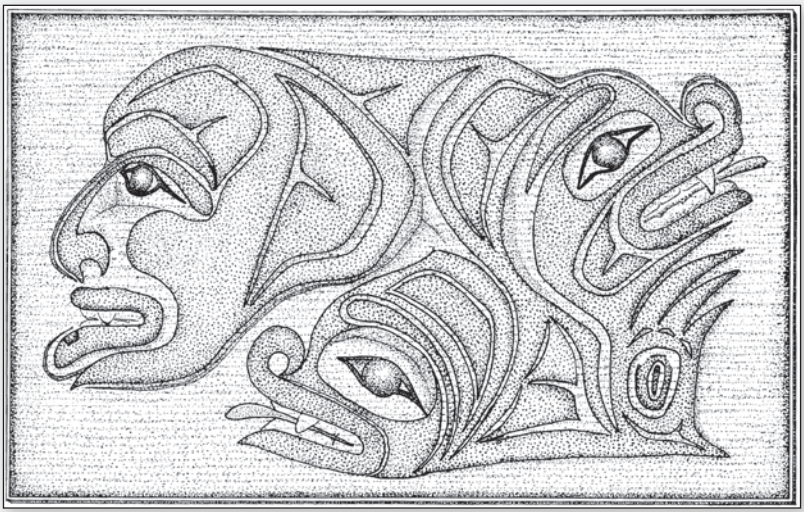
A group of women were hiking back to their village and stopped to gather berries. Their baskets were soon full of ripe, juicy berries. As they resumed their walk, a young woman stepped in bear dung and slipped, spilling her berries. She cursed at her misfortune, blamed the bear and threw insults. The women helped gather her berries and again started along their way. A second time the woman

fell because she was not watching the steps she was taking. Again her berries spilled on the path. This time, the other women became exasperated with the young woman and left her, to gather the spilled berries. When she was blaming the bears for her inconvenience, a handsome man appeared and invited her to go with him to his village. The young woman was immediately taken by the man, and agreed to follow him. Together they traveled through the forest, stepping over fallen trees and brush, moving further and further away from the woman's own village. When they arrived at the man's village she received instruction about proper behavior. She was accepted by his clansmen and lived there for years, learning their rules for living and instruction on survival.

"At dawn,
don't look among the people."
But then
at what point was it?
"I wonder why he's saying this to me," she thought.
Then, when she woke up
at dawn
that's when
she pushed the blanket-like thing down from her face.
so many animals were asleep inside there,
brown bears.

She was with the man long enough to have two children. She and her husband moved to a new place. This time, the woman did not follow her husband's instructions when gathering branches for their new home. Bear husband understood the violation of rules and knew the carelessness of the wife marked their home. Her husband saw into the minds of her brothers and knew they were preparing to come for their sister. Bear husband told his wife that soon her brothers would be coming for her. He told her the spear of the youngest brother-in-law would take his life. Bear husband prepared to sacrifice his life for his wife and children, teaching his wife the proper way of caring for his remains.

Bear Mother *From a wood carving by Ronalda Cadiente*



"Be brave.
When I fall into their hands, be brave,
when I fall into your brothers' hands."
At that time the woman would beg the animal with all she could.
"Have pity on my brothers.
Don't do anything to them."

Bear husband knew his wife and understood and accepted her loyalty to her family. He saw into her thoughts and heart and knew she would secretly lead her brothers to their den. Bear husband allowed his wife to act on her desires. He took steps to render himself harmless by removing his sharp teeth. When the brother approached their den bear husband said, "I will play with your brother." Before leaving the den he instructed his wife:

"When your brother finishes with me
don't be careless with my skin.
You tell them right away.
You tell him.
Drape my skin with the head toward the setting sun."
That's why it's still done now.
From this very story.
It is never tossed away carelessly.
A pole is placed under it thus.
It is hung and pointed
towards the sunset,
from his words.

The story does not end here, but continues ...

I encourage readers to investigate the versions of this story as shared in *Haa Shuká: Our Ancestors*, by Nora and Richard Dauenhauer. It is important to read the footnotes which accompany the oral histories. The reader, in doing so, will discover the oral stories reflect the underlying instruction in Tlingit Din Tu Tanee - Tlingit ways of knowing.

This story is a complex story of a woman who chooses to cross over from the human world to the world of the brown bear. She learns to love and respect that which she, in her earlier existence, misunderstood. In her new life she moves unquestioningly into the ritualistic, powerful world. The bear children create forever a link with the bear and mankind. Her loyalty to her loved ones is challenged by her own clansmen and family. Her brother tracks her down believing he is rescuing her from her fate. The story celebrates the strength of the bear husband. He relinquishes his hold on his wife and sacrifices himself to the brother-in-law. In this act he strikes a covenant with man, ('stablishing the ritual which allows man and bear to coexist. In doing so, the relationship between man and bear is established ... one of mutual respect and honor. The grieving widow and bear children remind us of our responsibility to honor those who have gone before us.

The bear symbolizes our spirit world - that only by the constraints of our beliefs do we remain separate from the natural world. The bear continues to honor the covenant, coexisting, but never again crossing the boundary between mankind and bear. What repercussions occur when we, in the modern world, do not respect this covenant, or the natural order of our environment?

What connection do we have to the bear? As a woman whose Tlingit clan crest is the brown bear, my connection to this powerful creature is one of inherited expectations. I grew up with an understanding that I was Teqweidí ... a member of the brown bear clan of Angoon. As a young child, I was nurtured by my mother to understand I was not only a child with responsibilities toward my family, but that I also have a responsibility toward my people. This early training provided me with a sense of place and of belonging. I found, as an adult, that this is not something to take for granted.

Knowing my place in the world creates a sense of time and place as boundless as that of my ancestors who existed in a world totally Tlingit, a world much different than what you and I know today. The result, as I see it, is that my connections to my family and to our history are as alive in me as they were to my relatives who have gone before me. Today the weight of responsibility as an individual in a rapidly changing world is supported by knowing who I am, my place in society, and among my people. My mother, a Bear mother, taught me to endure all things, respect all things, and to listen with my heart and eyes. She taught us to do honor to the crest we represent. The Brown Bear.

APPENDICES

Behavior captions (p 16)

A *"Hunh? Who's that?"* Standing for a better view.
B *"I'm not gonna be pushy about this but I'd sure appreciate if you'd drop that fish."* Approaching bear avoids staring. Bear with fish is in a submissive crouch.
C *"Go ahead. Make my day."* Note flattened ears and raised shoulder hair.
D *"That's right buddy, just keep on movin."* Mother bear's direct stare is aggressive.
E *"Hmmm, nice perfume!"* Boar and sow courting.

Camper advice (p 32)

Here are some problems with the bear-country camping scene:

- camping on bear trail
- camping on fish stream
- cooking especially attractive smelling foods
- cooking right beside the tent
- cleaning fish inside tent
- hook with smelly bait by tent
- food strung too low in the tree (claw marks reach higher!)
- food tree is too close to the tent
- smelly trash should be burned, not accumulated
- camping alone is more dangerous than in groups

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Glossary

canines Curving, cone-shaped teeth of mammals, used to grab and hold prey Especially prominent among carnivores.

carnassial blades High, sharp ridges on the largest cheek tooth of most carnivores.

carnivore Can be used in two ways. One definition is simply any animal that eats meat. But the order of carnivores refers to a branch of the mammal family tree. Bears belong to this branch because of their ancestry, not their diet, which is mostly herbivorous.

cheek teeth A less technical name for molars and premolars, found behind the canine teeth.

food conditioning An increasing response to a tasty reward. Most of Juneau's backyard bears are food-conditioned.

giant short-faced bear An extinct bear (luckily for us) who dominated the North American plains until the end of the last great ice age. A meat-eating, running bear.

habituation A gradually lessening response to repeated nonthreatening contact. Most Pack Creek brownies are habituated to people but not food-conditioned.

herbivore An animal that eats mostly plants. hyperphagy For bears, the period from late August through September when they eat voraciously to put on weight for denning.

incisors A mammal's front teeth, found between the canines. Usually small in carnivores.

miacids Ancient ancestors of most of the modern carnivores. Lived in Eocene times. Small tree climbing mammals who looked like today's marten.

omnivore An animal that eats a wide variety of foods including both plants and animals.

Pleistocene The last 2 million years or so of geologic time. This is the period of repeated great ice ages.

radiotelemetry The study of radio-collared wild animals.

refugium (plural; refugia) An area that wasn't ice covered during the great ice age, and served as a refuge for plants and animals.

topography The shape of the land. A topographic map shows this with elevation contours. Topography affects bear habitats and influences their movements.

Ursus americanus Scientific name of the black bear. Scientific names are usually in italic. The first name, in caps, is the genus. The second name, lower case, is the species. Means "bear of the Americas."

Ursus arctos Scientific name of the brown/ grizzly bear. Means "bear of the north."

Ursus maritimus Scientific name of the polar bear. Means "bear of the sea."

Recommended readings

ADFG, *Wildlife notebook series*. Fact sheets for Alaskan game includes summaries for brown and black bears.

Larry Aumiller and Colleen Matt, 1994, *Management of McNeil River State Game Sanctuary for viewing of brown bears*. in; Bears - Their Biology and management.

Richard Carstensen, Bob Armstrong, and Rita O'Clair. 2014, *The Nature of Southeast Alaska*, Alaska Northwest Books, Bothel, WA. Overview of our

region's natural history, with a chapter on bears.

Nora and Richard Dauenhauer, 1987, *Haa Shuka: Our Ancestors*. U. of Washington Press. Has 2 Tlingit versions of The Woman Who Married the Bear story, and notes explaining interior versus coastal differences.

Johanna and Robert Fagan, 1996, Individual distinctiveness in brown bears, *Ursus arctos*. *Ecology* 102 212-226. Bear personalities, learned from 10 years of observations at Pack Creek.

Dave Hardy and Dave Kellyhouse The bears and you ADFG excellent brochure on bear etiquette and safety.

Stephen Herrero, 1985, *Bear attacks, their causes and avoidance*. Winchester Press, Piscataway, NJ. Highest ranked publication in a poll of 52 bear biologists.

John Howe, 1996, *Bear Man of Admiralty Island*. U. of Alaska Press, Fairbanks. Good history of Alan Hasselborg, with insights into the era of brown bear persecution.

Tom McCarthy, 1989, *Food habits of brown bears on northern Admiralty Island, Southeast Alaska*. MS thesis, UAF. Most detailed feeding study available for our area. Done from scat analysis.

Tom McCarthy, 1994, *Reducing nonsport losses attributable to food conditioning*. in Bears - Their Biology and management. Claar and Schullery, eds. Port City Press, Washington DC

Bruce McClellan and David Reiner, 1994. *A review of bear evolution*. in Bears, their Biology and management. Claar and Schullery, eds. Port City Press, Washington DC

Rick McIntyre, 1990, *Grizzly cub, five years in the life of a bear*. Alaska Northwest Books. Bothel, WA. Readable and poignant account of how a bear becomes food conditioned.

Sterling Miller et al, 1997. Brown and black bear density estimation in Alasb using radiotelimetry and replicated vuzrk-resighttechniques. Wildlife Monographs, vo161.

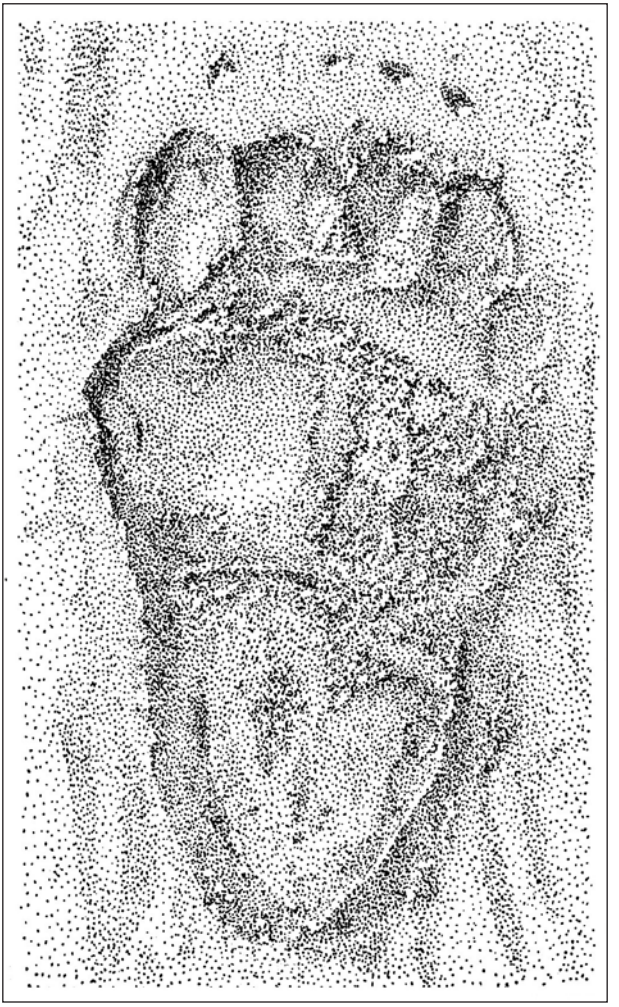
Doug Peacock 1996 *The Grizzly Years*. Henry Holt and Co. An iconoclast, good for dissenting views on almost every dogma about bears, especially those of government.

John Schoen *et al*, 1994, *Habitat capability model for brown bear in Southeast Alaska*. in Bears - Their Biology and management. Claar and Schullery, eds. Port City Press, Washington. Results of radio telemetry on Admiralty and Chichagof.

Paul Shepard & Barry Saunders, 1985, *The Sacred Paw*. Viking Penguin Why we are so entranced by bears ..

Gary Snyder, 1990, *The Practise of the Wild*. North Point Press, San Francisco. Chapter on the "Woman who married the Bear" has excellent commentary.

Sandra Talbot and Gerald Shields, 1997, Phylogeography of brown bears (*Ursus arctos*) of Alaska and paraphyly within the Ursidae. in Molecular phylogenetics and evolution, vol. 5, no. 3,477-494. Genetics suggest ABC brownies are related to polar bears.



Left hind footprint of brown bear in mud. Unlike humans, bear's big toe is on the outside.