Discoveries

News and Views from Discovery Southeast

Spring 2000

River Relations

Richard Carstensen

On a springtime journey up Taku River, Alaskan canoeist Ben Kirkpatrick pushed far beyond the steady, low hooting of blue grouse. For days he was puzzled by accelerating thumps sounding like a generator starting up back in the woods. Finally a ruffed grouse flew to a nearby branch, rose to his full 17 inches and proudly beat his wings, solving the generator mystery. The coastal rain forest had been officially left behind.

Cross-border rivers are exciting passageways for a rain country naturalist. Here flows the commerce of bioregions. Here the rarities of one region become the ubiquities of another. Along these edges, our concept of "home turf" takes on crisper definition.

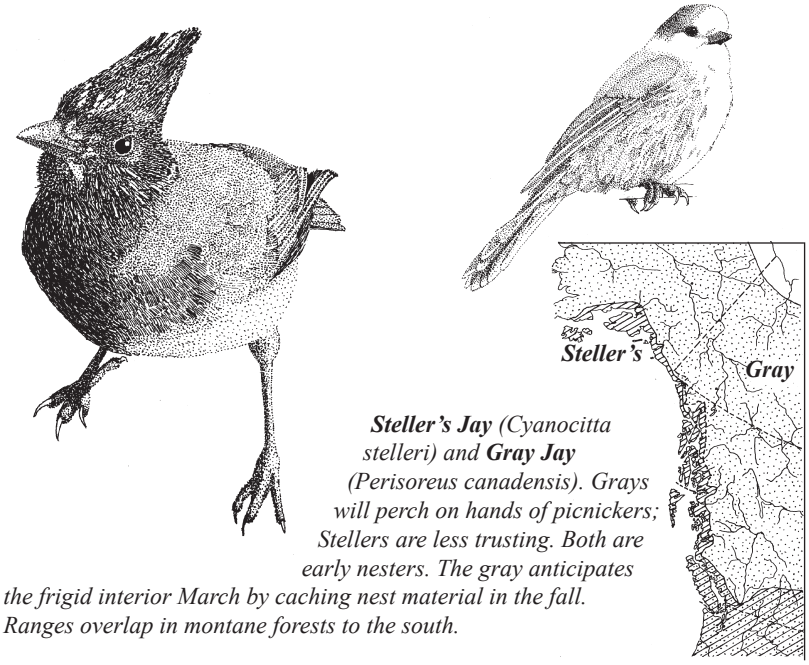
At Juneau's latitude, temperate rain forest with 150-foot-tall conifers is an ecological miracle. To appreciate the gift, rotate a globe, letting your finger trace a line around the earth at 58° north. You stroke frigid seas, arctic tundra and thousands of miles of stunted boreal forest. Our bioregion is an exotic accident, of warm ocean currents colliding with tall, moisture-wringing mountains.

The narrow strip of rain country meets its vast boreal neighbor on big rivers like the Taku. What do the two ecosystems hold in common, and what is unique to each? What do the plants, animals and cultures of Telegraph Creek and Atlin have to teach us about Wrangell and Juneau?

Coastal and boreal forests have almost no overlap in tree species. In the wet, maritime forest are hemlocks and cedars and Sitka spruce. On the dry, interior side are white and black spruces, with aspen, birch, poplar and tamarack. These most cold-hardy of the world's trees survive temperatures to -50° F by moving their sap into intercellular spaces where ice crystals won't rupture cell walls. Rain forest trees can't do this.

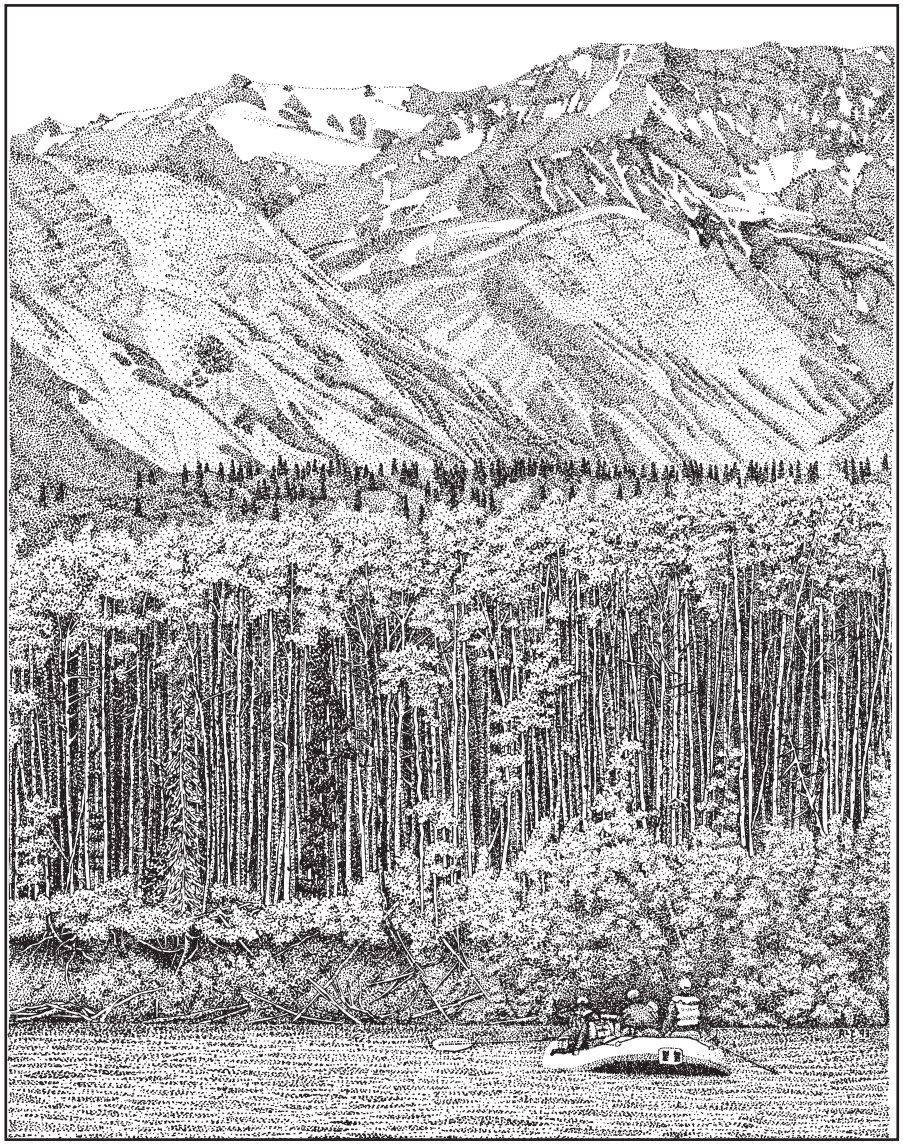
The majority of Southeast Alaska's mammals, however, are shared with the interior. They originated in boreal forests and some still interbreed with their upriver relatives. A smaller contingent including Sitka deer did come the way of our rain-forest plants–via the fiorded coast from refugia in Washington. For large herbivores, coastal and boreal environments are very different, but for many predators and omnivores they're tolerably similar. Deer and goat dominate the coast, while moose, caribou and sheep monopolize the interior. Wolves, bears and the weasel family, however, do fine in both bioregions.

People are equally resourceful. Tlingit migration stories describe courage-testing journeys down the Nass, Stikine, Taku and Tatshenshini Rivers. The sea peoples' ancestors were boreal hunters.



Steller's Jay *(Cyanocitta stelleri) and* ***Gray Jay*** *(Perisoreus canadensis). Grays will perch on hands of picnickers; Stellers are less trusting. Both are early nesters. The gray anticipates the frigid interior March by caching nest material in the fall. Ranges overlap in montane forests to the south.*

In this issue



Tatshenshini River, Day 5. *Dense clone of aspen resprouts from roots after fire. In middle distance the dark spires of white spruce protrude from alder thicket. Dall sheep and mountain goats graze the mountains beyond.*

Control of trade routes on the Chilkat and Stikine Rivers eventually made the *Kwans* at their estuaries the richest among the Tlingit. Coastal people traded seal oil, strawberry cakes and spruce root baskets for Tutchone coppers or Tahltan caribou skins. When Europeans arrived, furs of cold country beaver, fox and lynx became more lucrative. In exchange for these, Tlingit entrepreneurs carried needles, knives and gun powder on the inland journey. These more compact and fairly odorless loads must have been a welcome relief from packing seasoned grease through bear country!

In July of 1993 and 94, I served as naturalist on raft trips down the Tatshenshini and Alsek Rivers. My job consisted of reclining on a 6-person air mattress and delivering ecological profundities while muscular oarsmen and women spun the rafts through eddies and horsed them past shoaling point bars. It was exhausting work, but I persevered.

Tatshenshini means "Raven's Beak River." Rising in dry Yukon fire-forests along Haines Highway, the "Tat" gathers meltwater from immense valley glaciers spilling off the northern boundary of Glacier Bay into British Columbia. Each silty trib nearly doubles the Tat's volume, until it joins the Alsek River just above the Alaskan border. Here the ponderous flow briefly deflects around spectacularly sheer Miocene upthrust ranges, then shoulders through a weak point and snakes over the Yakutat Forelands to the sea.

For most float trip guests, excitement builds daily as terrain grows more flamboyant and glacial. For me, however, the most educational part of the trip is the first half, when even a 10-minute stroll from camp requires a plant ID book, and every day brings unfamiliar tracks and feeding sign. The following draws from my 1993 and 94 journals and from an April 1996 visit to the Alsek estuary.

Day 1: Dalton Post put-in *(Neskataheen)* – elevation 2000 feet While guides pack rafts and guests apply sunscreen, I eagerly botanize. Fireweed and meadow horsetail – disturbance colonizers – are the only plants here which are common back on the coast. More widespread beneath these white spruces and poplars are soapberry, twinflower, toadflax, and tall larkspur. Breeding Bohemian waxwings hawk stoneflies over the river. I've never watched them in insectivore mode; at Juneau they're winter berry eaters.

The forest seems very young. The most mature-looking spruce groves on higher terraces could scarcely be older than 100 years. Fire is this country's merciless rejuvenator.

Day 2 Silver Creek *(Tinxkayani = "kinnickinnick leaves")* First of many camps on delightful treeless alluvial fans carpeted with yellow dryas and bearberry. The *L'uknax̲.ádi* Tlingit of Dry Bay came all the way up river to camp

here and to gather soapberries and dry king salmon in the summer breezes. In the river mud we find Dall sheep tracks, mixed with much larger moose prints. Sheep occupy the hills throughout the inland half of this trip.

A wolf scat on the bar contains beaver hair and leg bone shards of a deer-sized animal. Grizzly diggings for peavine are extensive. The thick-rooted legume appears to be their major carbo source. Its abundance must partially compensate for scarcity of salmon in most of the boreal bioregion.

Day 3 Sediment Creek. Climb from 1350 to 4800 feet. We pass through three elevational zones: aspen forest, lush subalpine meadow, and alpine tundra. Each has a different ratio of distinctively boreal plants to those shared with the coastal bioregion. In the aspen community and the adjacent windswept grassy openings only 5 of the commonest 20 species are shared: eg. bunchberry and highbush cranberry. The majority, like northern bedstraw, prickly rose, and death camas, are plants I never see in Southeast Alaska.

In contrast, the subalpine belt makes me feel like I'm back in the verdant forest-limit meadows above Juneau. Shared plants like false hellebore, cow parsnip and geranium make up almost 90% of the common flora. Perhaps some combination of long-lasting protective winter snowpack and greater hillslope-induced summer rains keep this middle elevational community moister than the sandwiching forest and alpine zones. These succulent mid-slope meadows must be a mecca for grazers, but I doubt they extend much farther into the interior.

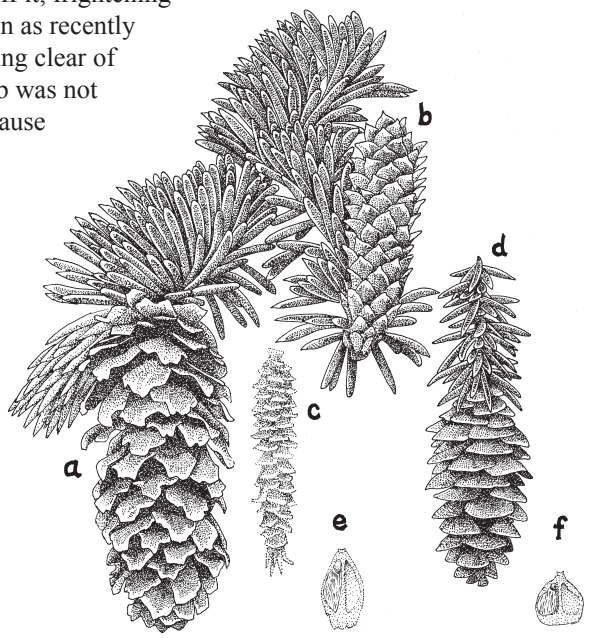
The alpine tundra has a majority of shared species like arctic willow and partridgefoot, but the three dominant plants – red bearberry, diverse-leaved cinquefoil and white mountain avens – are distinctively interior. Low grassy turf on the plateau makes for pleasurable strolling. Pikas whistle from rock outcrops. Hay dryers, they shun the wet ranges closer to the coast. We find mountain goats on vertiginous cliffs, a red fox den, and grizzly-churned burrows of arctic ground squirrel. (In the coastal mountains, burrowing mammals other than marmots are rare.)

Days 4 – 6 middle river. Grasshoppers are common in the dryas and peavine; I've never seen one on the coast. Examining the cache of a least chipmunk under white spruces, I can't find the candle-shaped central cone cores that result when our rain forest red squirrels dismember Sitka spruce cones. Pulling the scales away from a white spruce cone, I'm left with . . . nothing! Where ranges of Sitka and white spruce overlap they hybridize. I wonder if hybrid cones have half-length central cores?

But here on the Tat/Alsek, the coastal hemlock/spruce community doesn't penetrate as far inland as it does on big rivers to the south. In fact, there's a "conifer no-man's-land" near the Alaska/BC border. After leaving the last white spruce behind, we float for several days before sighting a few scattered spruces–presumably Sitkas–on brushy slopes above Alsek Lake. Gradually the patchy fire mosaic –different aged stands of aspen and spruce–is replaced by endless thickets of Sitka alder with overtopping cottonwoods, resembling the "poplar line" successional stage of upper Glacier Bay. On steep slopes this youthful alder can be explained by avalanche, and on the bottomlands by flooding, but the remaining sites free of these disturbances are equally devoid of spruce. Why are conifers absent even on high gentle slopes near the international border?

On a flood-killed willow in the outwash hangs a headless deer mouse, left by a northern shrike. Juneau gets "butcher birds" as winter wanderers but I've never seen the impaling behavior there. Male shrikes are thought to leave hanging prey partly as advertisements to females. This dessicated mouse may be evidence of local shrike breeding, unknown in Southeast Alaska. Of course, you don't even hang advertisements out to dry on the moldy coast.

Day 10 Alsek Lake – elevation 80 feet. Gateway Knob is a steep, till-blanketed island in the river where the Alsek makes a 300-degree turn around the nose of the Brabazon Range. It's called *Kit ca* in Athabascan and *Ya dagwai* in Tlingit, for the stones which continually plunked off it, frightening canoeists. Even as recently as 1910, steering clear of Gateway Knob was not an option, because



Sitka and white spruce compared. ***a)*** *year-old cone of Sitka spruce (Picea sitchensis) in May;* ***b)*** *erect seed conelet (pendulous after pollination);* ***c)*** *central cone core, scales removed by squirrel;* ***d)*** *mature cone of white spruce (P. glauca) 2/3 size of Sitka cones, lacking central core, smooth-edged scales;* ***e)*** *scale and seed of Sitka spruce;* ***f)*** *same for white.*

the 200-foot face of an expanded Alsek Glacier crowded tight against the Brabazons, and 20-square-mile Alsek Lake did not exist. Travellers preferred to run this reach in winter with the river frozen over and the glacier more quiescent.

Although the Alsek escaped valley-burying glaciation in the Little Ice Age, it was by no means immune from glacier-spawned catastrophes. Old stories tell of people who drowned in floods that swept through Dry Bay. Some of the floods were likely caused by epic breachings of Lowell Glacier, about 100 miles up the Alsek. Periodically throughout the Little Ice Age, the Lowell advanced to block the river, forming a 600-foot-deep lake that backed up all the way to Haines Junction.

Day 12 Dry Bay Airstrip – elevation 30 feet. Out on the bars, fuzzy young glaucous-winged gulls blend cryptically with the gray river cobbles. Parasitic jaegers – a pair and a threesome – are terrorizing the adult gulls with falconlike dives, and must be claiming a pirate's share of the half-grown chicks.

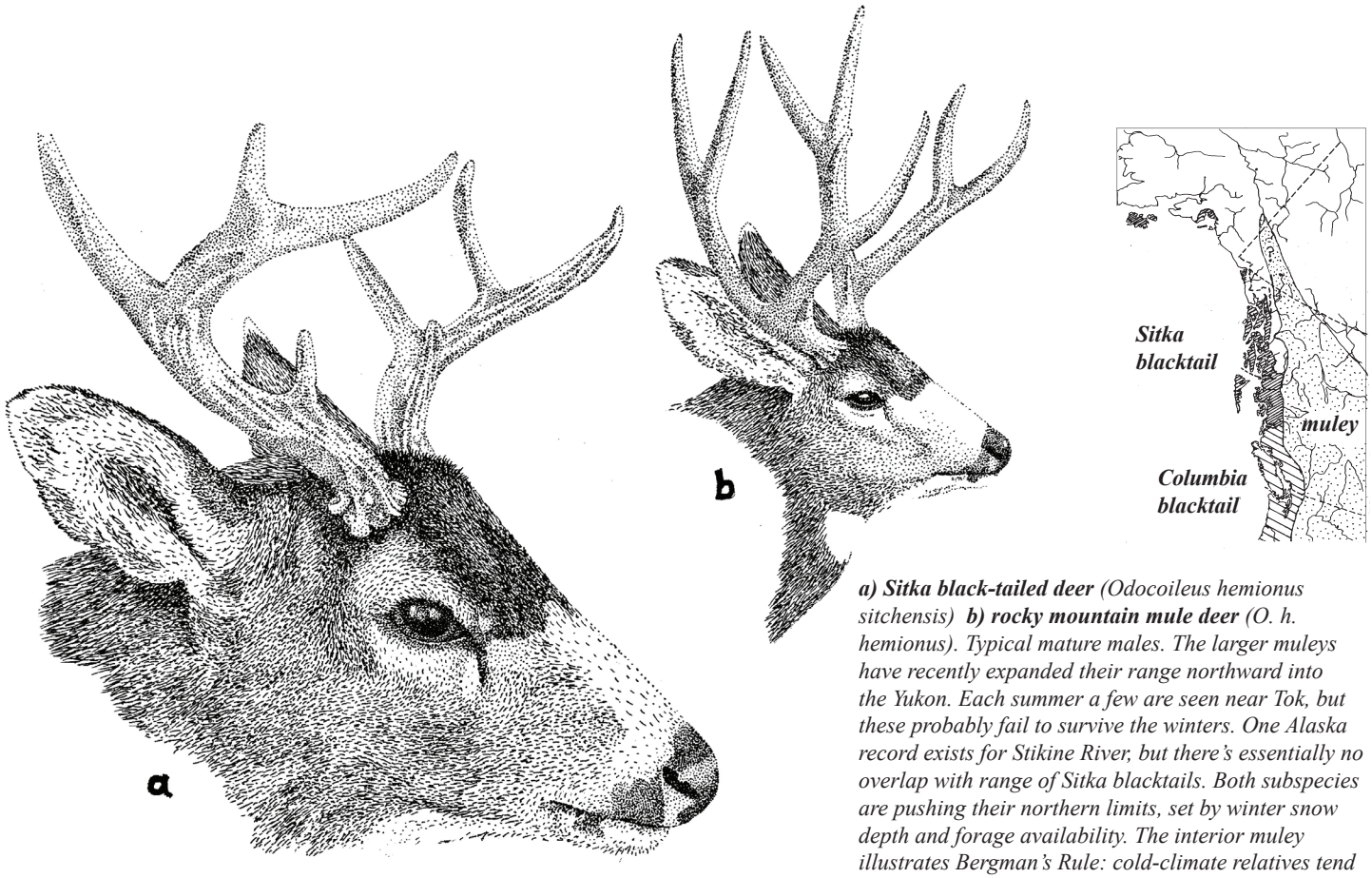
In April at low flow you can almost ford the Alsek here. Millions of eulachon swarm over the sandy bottom, luring sea lions upriver. Giant coastal brown bears break their winter fast along these reaches, and the river is white with gulls and eagles, choking down the oily "salvation fish." The forest is eerily juvenile: spindly Sitka spruces stand among cottonwood and felt-leaved willow.

The parting of Taku Glacier

from **Gágiwdul.at; Brought forth to reconfirm: the legacy of a Taku River Tlingit clan.** Elizabeth Nyman, 1993.

"Nada.êya . . . *dragged across the glacier the [body of the slave]. . . There was a trail of blood, the slave's blood. It was as if hot water had been pouring out; . . . the glacier kept collapsing inward. Then the Taku People's Glacier – this is what we used to call it – was cleft open all the way up [to the mountainsides]; it crumbled apart in a straight line, creating a way for them [interior and coastal peoples] to travel among one another."*

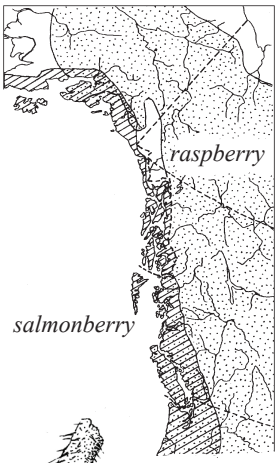
Dry Bay is where Raven opened the box of daylight he'd stolen. The burst of light blew all the rocks away, which explains why there are no large boulders on the lower river. Great rivers linking bioregions have an electric kind of power. My father, who studies biological effects of electromagnetic fields, says that if you park a



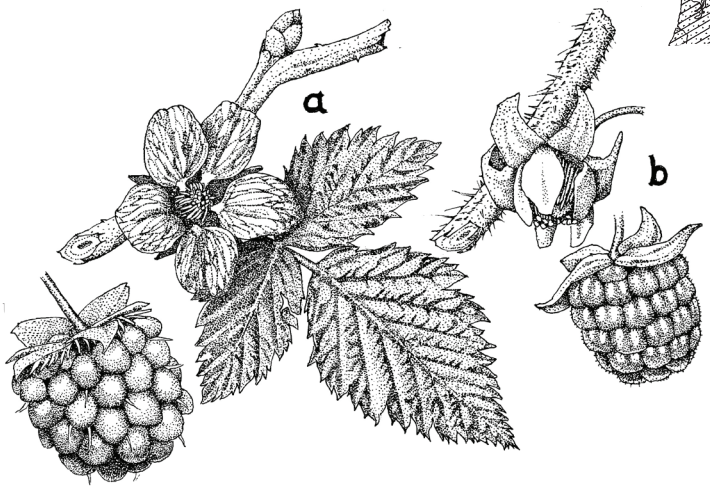
a) Sitka black-tailed deer *(Odocoileus hemionus sitchensis)* ***b) rocky mountain mule deer*** *(O. h. hemionus). Typical mature males. The larger muleys have recently expanded their range northward into the Yukon. Each summer a few are seen near Tok, but these probably fail to survive the winters. One Alaska record exists for Stikine River, but there's essentially no overlap with range of Sitka blacktails. Both subspecies are pushing their northern limits, set by winter snow depth and forage availability. The interior muley illustrates Bergman's Rule: cold-climate relatives tend to be larger because greater mass-to-body-surface ratio conserves heat better.*

semi trailer under a high-voltage power line, you should never touch the side panels while standing in a puddle in bare feet.

That's the unshod sensation I have sometimes on Raven's Beak River, where genes of Griz and Browny mingle, and where hand-carved Tutchone oars are discovered in the outburst flotsam 60 feet above river level. On an exceptionally dry day at Dalton Post, when a Yakutat gale is sneezing on Gateway Knob, the humidity differential on the middle river could give a Scandinavian a serious bad hair day. I definitely would discourage timid people from floating the big border-busting rivers. There's stuff going on back there that should only be messed with by naturalists.



a) Salmonberry *(Rubus spectabilis) and* ***b) red raspberry*** *(R. idaeus). Raspberries have more densely bristled stems, erect to slightly spreading white petals, and puckered, finely hairy drupelets (leaves are similar). Salmonberry, as befits the environmentally pampered relative, is more robust in flower, leaf, fruit, and shrub stature. Only the flavor is smaller. Both are disturbance plants, flourishing on slide paths, stream edges and roadsides.*



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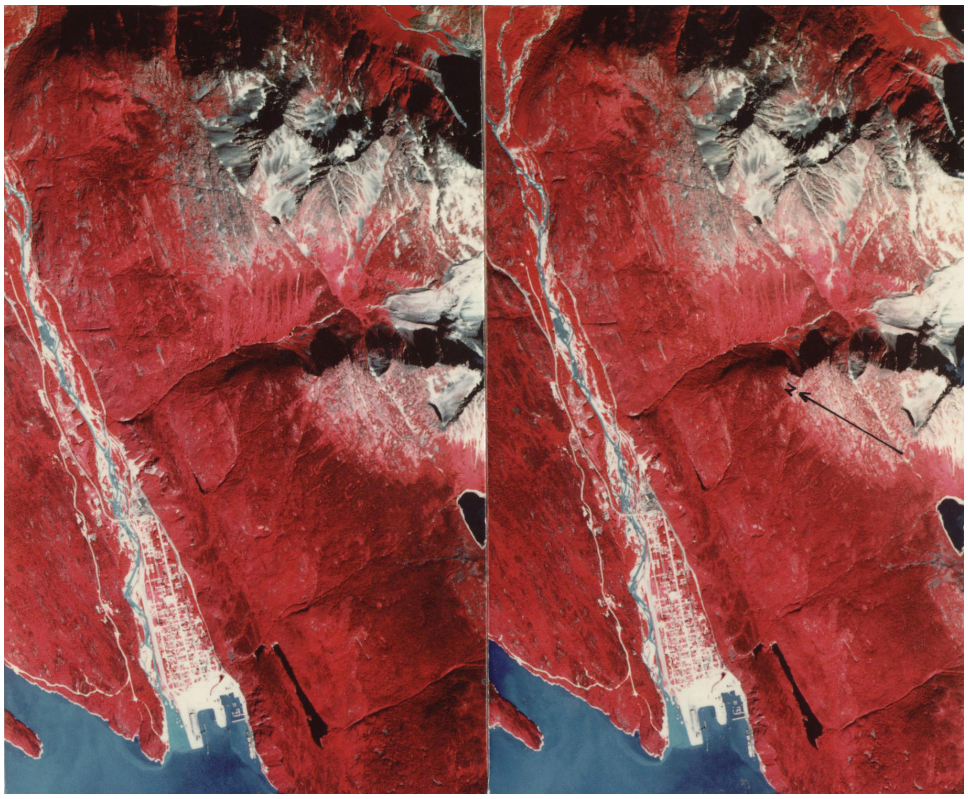
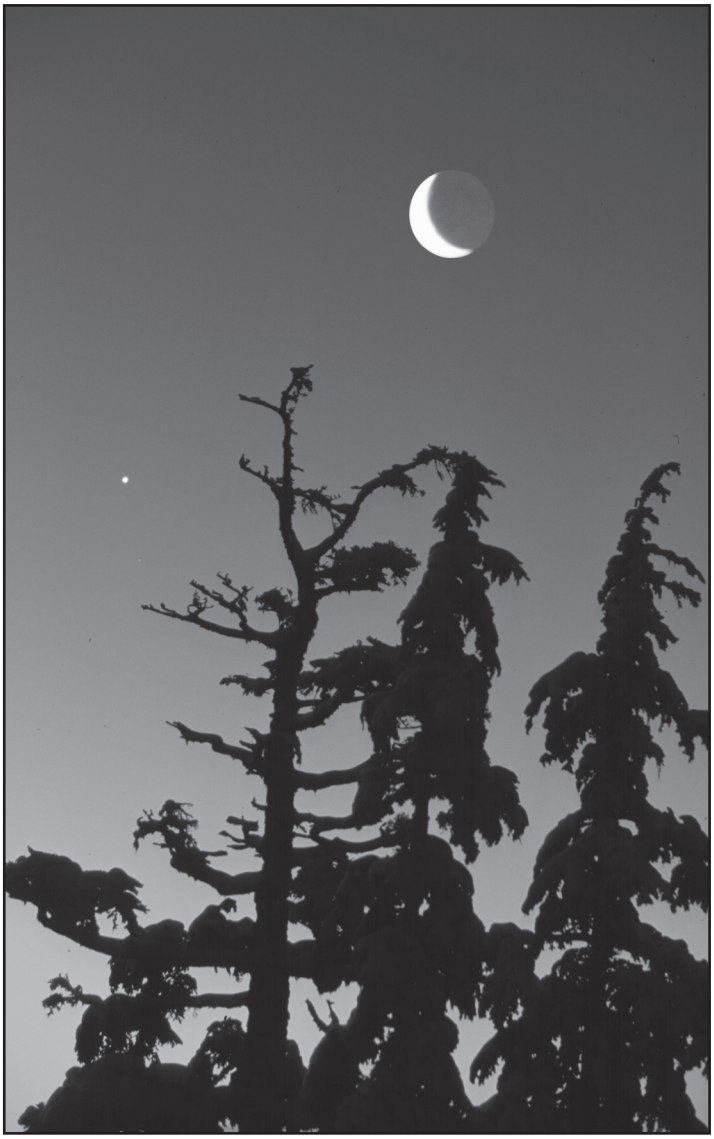


Stereogram of Skagway and Klondike Highway, NASA 1979 *(Use the 3D viewer you got with the Summer 2000 issue)*

Skagway, Haines and Hyder are Southeast Alaska's automotive gateways to the great boreal bioregion, a more civilized alternative to river running. The dark red tints on the slopes above Skagway show conifers – the northern limit of the coastal rain forest. Paler pink-tinted forest is deciduous.Driving up the Klondike Highway, you rapidly leave the rain forest for young birch and poplar stands. Conifers –including Sitka spruce and subalpine fir–are a dwindling component of this forest. Here at the head of Lynn Canal, precipitation is a third of Juneau's, and fire becomes a factor in forest succession. Soil and duff thinly blanket the light-colored granitic bedrock, which occupies more and more of the

Night walk

Steve Merli



David Job photo illustration

Last fall I chaperoned an overnight camp at Echo Ranch for my daughter's middle school class. The hike in was really wet. Arriving just before dinner, I found my assigned cabin and dropped my stuff on an open bunk.

Mr. Mercer is the only male of the three teachers on this overnight. He has wisely put some of the more shall we say "energetic" boys in his cabin. You know – the ones who need a bit more supervision. Dads will chaperone the other cabins.

By the time dinner is over, I've met all the boys and understand why Mr. Mercer has selected as he has. A pretty wild group! They're wound up and just itching to make some mischief. The preference is to raid other cabins before theirs gets hit. There's even talk about a foray into the forbidden zone to raid the girls' cabins.

An hour of free time does little to burn off the energy that intensifies as darkness sets in. The rain has slacked off to a few sprinkles. Cabin groups gather in the lodge to present skits, followed by a bubblegum blowing contest where contestants chew on three pieces - a sufficient amount of sugar to push more than a few of these preteens over the edge.

Darkness has completely descended as the boys come boiling out of the lodge. This is the moment they've been waiting for. Flashlight beams slice the dark in a frenzy, seeking something just outside vision. Already heightened senses are further excited by something primordial lying in wait in the darkness. If flashlights were drums, it would be obvious to the ear that things are nearing a climax.

The most challenging time at camp is the hour or so preceding lights out. These are not elementary aged boys, with whom I'm familiar, but sophisticated middle-schoolers whose job it is at some levels to test boundaries and the adults poised to enforce them. Their developing brains are afire with all the possibilities of life, seeking and pushing the edges of their known world.

How do I meet this energy with respect? I could step in, using my intimidating weight as an adult, and lay down the law, which is exactly the challenge these youngsters expect from adults. We say here are the rules, don't cross them or else, blah, blah, blah. But these bodies are going to *move,* appropriately or not.

Staying off the path I take to the meadow and leave my flashlight off. I realize that I'm playing a game here, trying to stealth around and not get caught by the unsuspecting boys. Then it occurs to me. This is just what we need to do – a night walk.

By the time they reach our cabin, I'm standing in the far corner, deep in shadows. They are loud, boisterous and somewhat frantic with adrenaline. I step into their lights saying, "Hey guys, come outside, I want to show you something." Luckily the invitation is accepted and we take 10 steps to a bench sitting at the fringe of the upper beach meadow. I tell them that in order to see *it,* they must turn off their lights. A few comply, but others protest. They won't be able to see! I'm crazy for suggesting it.

The outbursts signal that most of these boys have never been very far away from lights at night. We and our children are increasingly urban, demanding exactness, fixed points and accountability. We're intolerant of fuzzy edges. When vision dominates, other senses atrophy. Our night skills never develop.

The boys try to keep the lights off. Some impulsively flick them on. I describe to them the physiology of the eye and the functions of pupil, rods and cones. Experience supports this every time a light turns on and the dark gets darker. Soon, the boys admonish each other for the setback the light brings.

We manage 3 minutes without a flash and

the darkness begins to transform and take shape. Someone blurts "what's that?" Heads turn to and fro, fingers itching to throw the switch. "That white thing over there." I answer with a question. "What do you think it is?" "It's a white horse." "A white duck." One says it's a cloud, and indeed it turns out to be a cloud banked up against the mountains to our right. "No way," says one boy, struggling with this new depth of field.

Slowly the boys realize that the dark isn't so dark. We can make out the water in the cove now and the silhouettes of trees nearby. Before us in the beach meadow a large dark object protrudes a few feet above the seed-heads of fireweed. Not being able to see what it is, I suggest we walk to it. Protests arise but quickly subside as I assure them they are capable if they're willing to slow down and pay close attention to their feet. We slowly step our way to the object, discovering it to be a drift log with a young spruce tree growing on it. The bear-like object has gifted us with focussed attention toward a subject that in another more mundane setting would seem uninteresting.

We continue down the slope of the meadow to a slough. The boys have "found their feet" and chatter excitedly as we move to the salt marsh. The tide is flooding, directing us to the right, in parallel with the active beach berm that separates us from the ocean. Our feet find a small trace of gravel that appears light gray to our eyes. When walking in the dark, one tends to not pick up the feet as much as in a daylight gait. Shuffling along, I notice this gravel holds a wonderful surprise. Dropping to my knees, clawing the gravel, I call, "Wow, check this out!" My hands light up with speckles of iridescent green. A chorus of excitement pulls our group into a tight knot huddling over this magic spot. The boys scramble for a spot of their own and begin digging in the muds and gravel. Bioluminescence bedazzles them and fear is momentarily swept away in wonderment.

We set off for the open water to see what might be going on in the intertidal. Surprisingly there isn't much bioluminescence in the wash zone. The expanse of the beach soon pulls us along the water's edge toward the camp entrance. The boys are becoming more accustomed to travelling without full vision. I hear remarks like: "I never knew you could be like this in the dark." "I've got to try this at home." and "It's not really that dark out here." At the same time a camaraderie is building. They're looking out for one another now, mindful of where the other members are. With the loosening of fear comes deeper understanding of self and world. In the containment of the dark we have discovered the brightness of sensation.

Our feet tell us we've hit packed sand, indicating the entrance road. We group together, needing to make a decision about our course. I suggest we follow the road all the way back to our cabin, which will lead us past most of the occupied ones. I further suggest that from here on we no longer use our voices. We must now move with the stealthiness of the night hunter. What we hunt is silence. These suggestions meet no opposition. Gone are the notions of night raids. Travelling as we have for the last hour we've slipped into an altered state of consciousness.

A new surge of excitement greets the added challenge of not being found out. Is it possible to keep silent for such a long time? We set off, with the boys out in front. One of them takes the point, striding forth with newly earned confidence. Following behind, I can see three of the boys are holding hands. I chuckle to myself, remembering how just before this adventure these same boys were loudly advertising their bravado. The hand clasping reminds me of the age of these middleschoolers.

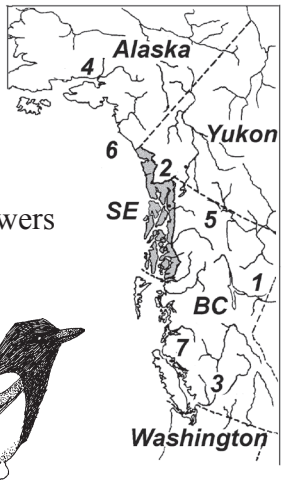
The road, pale in the darkness, pulls us past the cabins. Silence heightens our awareness of sound. For a time, our feet shuffling along the sand is all that we hear. Then a vibration. Our ears and feet detect it. We all instinctively slow down and bunch up together. To our left towards the large playing fields, a low rumble breaks into a thunderous sound as the camp's horses bolt off at our silent approach. The boys, intent on not panicking, look to me for an explanation. "It's the horses," I whisper, "They're nervous about things they're not sure of." There's a palpable sigh of relief as the horses move away from us, heading for the opposite shore of Cowee Creek. The sound of their pounding hooves diminishes and then fades completely into the silence of the night. There's a spate of whispering, but these boys are determined to keep their silence, especially approaching the girls' cabins.

We pass those cabins with ease, so focussed now are the stealthy night hikers. Arriving back at our cabin, we regroup at our starting point. I tell them to wait while I light a few candles inside. Our last goal is allowing Mr. Mercer to sleep on until morning. Coming back I ask them how they feel. "Sleepy." says one, "Calm." says another, and of course a few say they're hungry. We slip into the cabin, quietly arrange our bedding, and in 10 minutes all are asleep.

Before blowing out the last candle, I look upon these boys as perhaps was possible 400 generations ago when fire was the only light source. There is a subtle yet strong pulse of life in their faces and a glimpse of the wild within all of us.

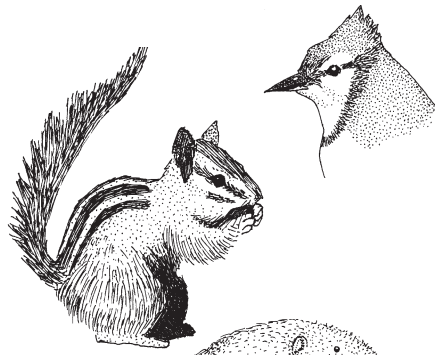
Nearby relatives

Richard Carstensen



Here are 7 pairs of related animals. One animal of each pair lives in Southeast Alaska. The other one comes close–in British Columbia or farther north in Alaska–but hasn't yet been seen in Southeast. Numbers on the map show how close they get.

For each pair, circle the animal that lives in Southeast Alaska. Then check your answers below. None of these are easy, so don't worry how many you get right.



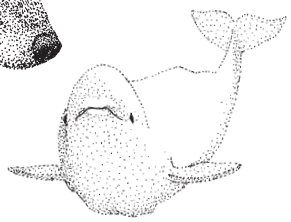
1 blue jay • black-billed magpie

2 least chipmunk • flying squirrel

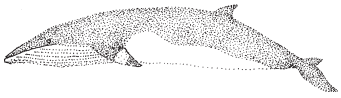
3 northern pocket gopher • long-tailed vole

4 coyote • arctic fox

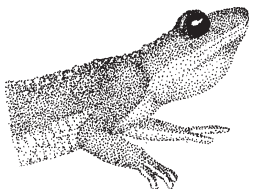
5 marten • striped skunk



6 beluga whale • minke whale

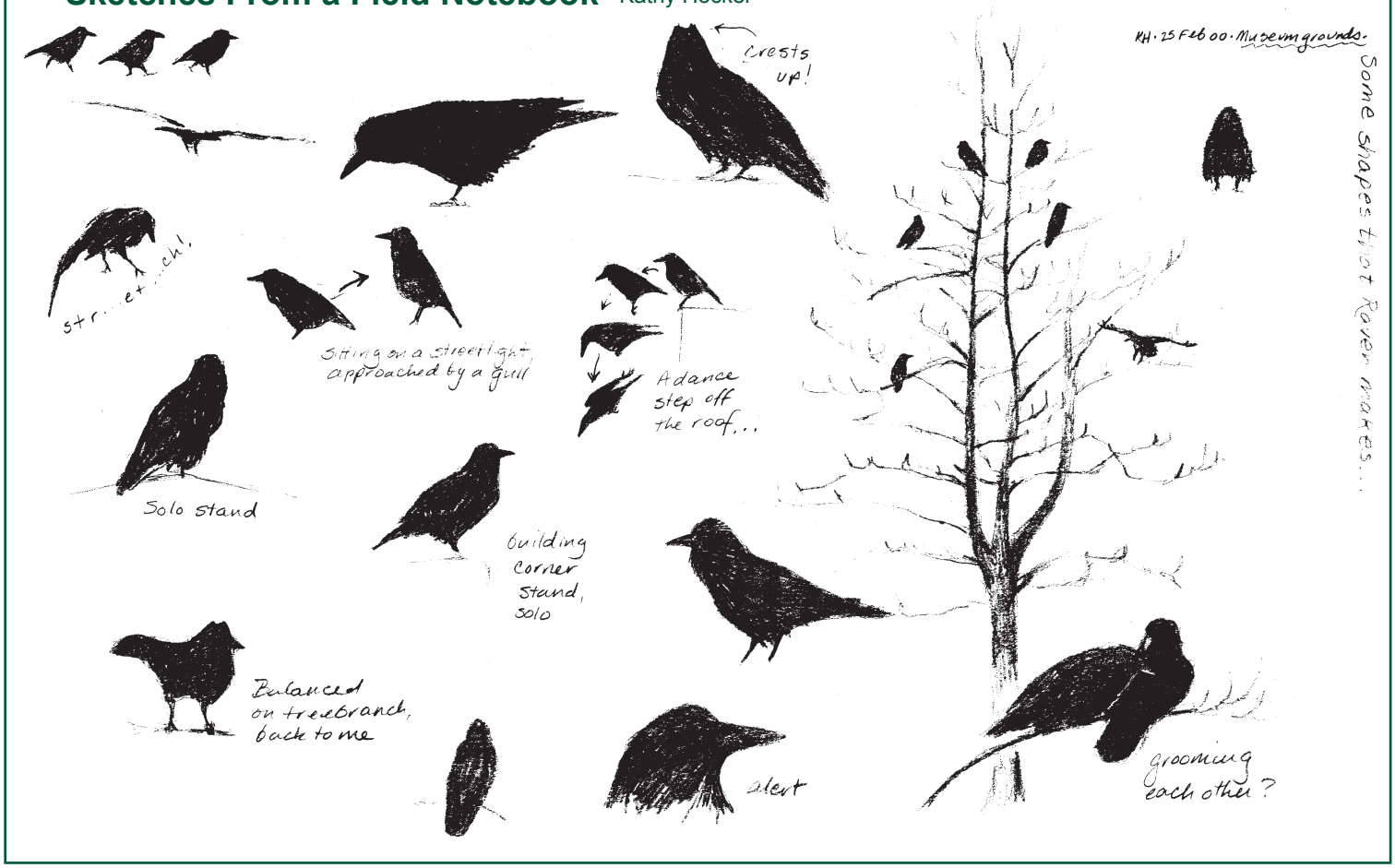


7 bullfrog • rough-skinned newt



Answers **1** Black-billed magpies winter in Juneau. Our Steller's jays are often mistakenly called blue jays. **2** Long-tailed voles live in the beach meadows around Juneau. Underground mammals like northern pocket gopher are absent from Southeast. **3** Northern flying squirrels are common around Juneau, but are only active at night. Least chipmunks live just over the mountains in BC. (Red squirrels are mistakenly called chipmunks. **4** A coyote has been seen in Mendenhall Valley this winter. The arctic fox lives to the north and west of us. **5** Martens are common around Juneau. The striped skunk survives in BC, but hasn't made it to the rainy coast. **6** Minke whales are fairly common in Southeast. The beluga comes south to Yakutat in the summer. **7** Rough-skinned newts are present but rare here. The huge bullfrog occurs in southern BC. (Juneau has toads but few actual frogs.)

Sketches From a Field Notebook Kathy Hocker



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