Discoveries

News and views from Discovery Southeast Spring 2011

Giant Sitka spruce rooted in limestone, Kosciusko Island.

Geology and life:

Connections between the living and non-living world

Richard Carstensen

Thorne Bay geologist and caver Jim Baichtal looks for especially large spruce trees when seeking openings into the mysterious underground labyrinth. Ponderous spruces often turn out to be anchored on the lip of limestone sinkholes, where rainfall has filtered down into the caves for millennia. Not only does limestone weather into more buffered soils, richer in nutrients than that of typical acidic Southeast forests, it's also riddled with tunnels and crevices that provide secure holdfasts for roots of trees that may rise more than 200 feet into the unforgiving wind. Elsewhere, the root systems of our rain-forest conifers usually form shallow plates, confined within a few feet of the surface by high water tables, thus easily uprooted. On limestone, Jim has found the rootlets of spruces 30 feet below the forest floor, ramifying through the slushy cave-wall calcite icing known as moon milk.

Juneau geologist Roman Motyka once held the enviable assignment of mapping Southeast Alaska's thermal springs. Almost all of them arise through kilometer-deep fractures in granitic rocks. Large spruces are unusual on granitics, which lie at the opposite end of the forest-productivity spectrum from limestone. Instead, when hunting hot springs, Roman keeps an eye out for yellow monkey-flower. This delicate herb needs permanently damp sites, but is easily dislodged from the banks of vigorous streams. It's therefore restricted to headwater springs, sunny roadside ditches and gently flowing creeks. When I first visited Chichagof Island's White Sulfur Hot Springs in June of 1992, sure enough, a small patch of nodding monkey-flowers graced the bank of the outer pool.

In densely vegetated Southeast, a geologist or soil scientist must know enough about plants to use them as indicators of underlying landforms and rock types and soil composition. Conversely, botanists and foresters do well to gain a lay-understanding of bedrock and surficial geology, to make sense of the otherwise puzzling distributions of plant species and communities. To a naturalist, it's all fair game; we dabble at the intersection of these diverse sciences, and connections between them are the most intriguing of discoveries.

Abiotic connections extend beyond vegetation to include fauna. In its middle reaches, the bed of Juneau's Jordan Creek is composed largely of slate and phyllite that weather into smooth, flat chips. I once searched for invertebrates in this section of the creek with Mark Wipfli, a freshwater ecologist. Although there was nothing obviously wrong with the water quality, we found surprisingly low diversity of aquatic insects.

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In this issue

Note: Discovery Southeast is converting to a digital newsletter. Traditional features of our past newsletters–Supporters and Honor-roll pages–will ultimately be restored, but are not included in this issue, so that we may get it out in time for our spring auction.

Banner: Within Southeast, sweet-flowered androsace (*Androsace lehmanniana*) has only been found on the summits of limestone peaks. Purple mountain saxifrage (*Saxifraga oppositifolia*, bottom of photo) is not restricted to limestone but grows well there.

From the Director

Beth Weigel

Dear Discovery Southeast members and friends,

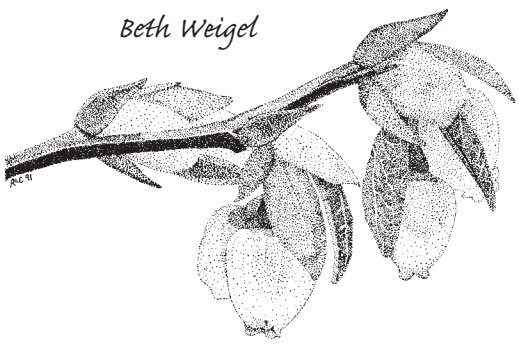
It's hard for me to accept that some days are just too cold and windy to be outside. Winter is a great time to get out and make fresh tracks skiing, or ponder over critter tracks in the snow. Indeed, both my mental and physical health seems bolstered by the time I spend outside.

In an effort to reduce our carbon footprint, we are publishing this issue of our newsletter, Discoveries, in digital format on our growing website. We hope you enjoy the return of the feature articles and we want your feedback on how to make future newsletters available. The website also includes new podcasts and will soon be home to archived newsletters and more publications. Please visit: *discoverysoutheast.org/newsletter*.

In this issue, Richard Carstensen probes his curiosity about place to reveal intriguing and often unseen connections between the living and non-living world. His question of, "How do living things respond to geologic landforms and rock types?" is pointed, and his observations about this connection are both revealing and ripe for further exploration. The living world seeks the most productive bedrock types upon which to flourish and I dare say that the foundation upon which Discovery Southeast settled over twenty years ago has certainly generated a productive community.

Our skilled professional naturalists and staff connect with a diverse group of youth and adults through our ongoing nature education programs and exciting special projects provide new ways for us to grow in breadth and depth. For example, through a new project with Linda Kruger at the US Forest Service Pacific Northwest Research Station, we are working to promote the health benefits of spending time in nature. We continue to build connections through the recently formed Juneau Children Outdoors Community Coalition and offer programs in collaboration with SAGA, the US Forest Service and other agencies that get kids outside exploring their backyards and building connections with nature. We are also thankful for a dedicated board, and a renewing membership.

The bedrock upon which DSE settled has provided numerous productive connections, but like Richard, my wish list of areas to explore is growing. As we work to carry out our mission of connecting Southeast Alaskans to nature, I encourage you to examine your connection with Discovery Southeast. Plan to attend our 22nd annual dinner and auction on April 1st at Centennial Hall, enroll your child in the next Discovery Day on March 25th, or check out the tracking series of articles in the Juneau Empire written by DSE naturalists. But most importantly, ***help us ensure that future generations will have the same opportunities we've had by renewing your membership and making a financial contribution today***. You can renew your membership on our website, by telephone or by dropping by our downtown office at 416 Harris, Suite 208. Thank you for your continued support of hands-on nature education.



Discoveries is published by *Discovery Southeast.* Founded in 1989 in Juneau and serving communities throughout Southeast Alaska, *Discovery* is a nonprofit organization that promotes direct, hands-on learning from nature through natural science and outdoor education programs for youth, adults, and teachers. *Discovery Southeast* naturalists deepen the connections between the people and nature.

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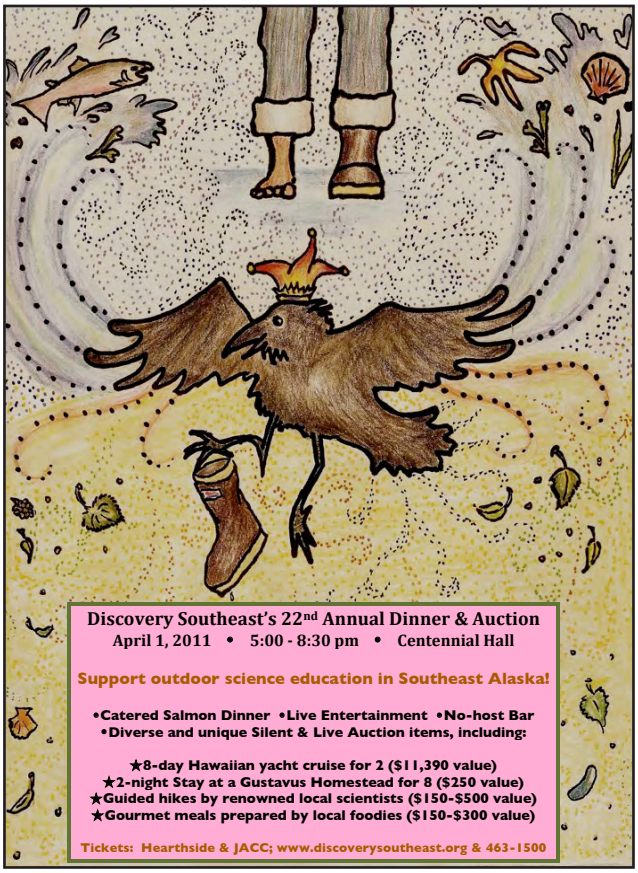
Discovery news

Save the Date: Discovery Southeast's 22nd Annual Dinner and Auction on April 1, 2011!

It's time to have some fun while supporting nature education this upcoming April Fool's Day! From 5:00 to 8:30 p.m. on Friday, April 1st, Discovery Southeast (DSE) will host our 22nd annual dinner and auction at Centennial Hall. This lively event, by far our biggest fundraiser of the year, is a great opportunity for our friends and supporters to help us raise vitally important funds for DSE programs—and celebrate our community and wild backyard in the process.

Many of you know we made some big changes to our annual fundraiser last year. Moving the event to Centennial Hall, offering a catered dinner and providing a wide variety of entertainment was so successful that we plan to replicate the experience this year. Abby's Kitchen will prepare a scrumptious dinner featuring Taku coho salmon, The Rendezvous will provide a no-host bar and Aurora Strings, Alaska Youth Choir and others will perform. Ishmael Hope will also treat us to a traditional Tlingit story focused on the trickster Raven in honor of April Fool's Day.

And, of course, one of the highlights of the evening promises to be the silent and live auctions. DSE's auctions have become legendary for their diverse offering of treasures and experiences, and this year's auctions will be no exception. Some famous donations of years past, including the "Alaskan Fish, Fowl & Beast Feast," hikes led by local scientists, getaways to Gustavus, glacier trekking, fantastic artwork by local artists and delectable desserts, return in 2011. A first-ever donation this year that will likely garner a lot of interest is an 8-day yacht cruise for two from Maui to the Big Island with renown eco-tour company, American Safari Cruises (value: $11,390)!



DSE's dinner and auction SOLD OUT last year. Thus, plan to purchase tickets for you and your family early this year. To buy tickets in the next few weeks, contact a DSE board member, call the DSE office (463-1500), stop by the JACC or Hearthside Books or go to *www.jahc.org*. We look forward to a memorable, successful evening spent with you—and the trickster Raven—on April 1st!

Fall and winter Discovery field trips

Here's a sampler of our recent activities. Clockwise from right: Kevin O'Malley snowshoeing with IDEA students, Feb, 2011. • Scott Burton (right) on a Discovery Days outing to Eagle Valley Center, Oct, 2010. • Tom Schwartz with Nature Studies students, Nov, 2010.

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Landforming properties of bedrock
Based on Kruckeburg 2002

	landform	erosion resistance
intrusives		
granite & granodiorite	domes, steep faces, pinnacles when vertically jointed	highly resistant
syenite & diorite	same as granite	highly resistant
gabbro	irregular rounded ridges	readily erodes
ultramafics	often jagged, steep faces	variable
extrusives		
rhyolite	angular, steep faces	resistant, yields quartzitic sand
andesite	staircases, plateaus	intermediate
basalt	well-defined boundaries, stepped plateaus, steep faces	friable, yields rich clayey soils
metamorphics		
gneiss	high relief, minimal talus	fairly resistant
schist	moderate relief	foliates easily
phyllite	intermediate	intermediate
slate	steep-sided hills,	highly friable
marble	massive, rounded, smooth ridge crests	weathers by solution
sedimentaries		
conglomerate & breccia	high and irregular relief, abundant talus	matrix dissolves leaving clasts
sandstone	layered, massive hills	frost & sollution
siltstone, mudstone, shale	high relief	friable
limestone	high relief, angular jagged ridges, spires, sinkholes, lattice of deep fissures	resistant to mechanical erosion but dissolves forming karst

Mark speculated it was because of the relatively simple structure of the creek bed, which resembled a spilled sack of coins. The smooth-surfaced, tightly stacked phyllite chips left few nooks and crannies for mayflies, stoneflies and caddisflies that abound in rocks with rougher texture and more complex shapes.

Except for such intuitively obvious patterns, connections between rocks and critters often go unnoticed. There are myriad important bio-geo-relationships, generally overlooked due to growing specialization in the sciences. Few individual researchers can straddle the chasm between geology and biology, and neither do specialists often hold hands across that divide. Connections are therefore rarely quantified, especially here in wild Southeast, where field work has only scratched the surface of our biogeodiversity.

In 1995 I got a letter from Art Kruckeburg, professor emeritus of botany at the University of Washington. He was soliciting Southeast Alaskan examples of the geobotanical interface, to include in a book on the subject. Kruckeberg is probably the most eclectic naturalist of the Pacific Northwest. The product of his research–*Geology and plant life: The effects of landforms and rock types on plants*, 2002, University of Washington Press–reaches beyond his personal stomping grounds to describe rock-plant connections from Turkey to Venezuela. Although Alaska gets short shrift, Kruckeburg's authoritative compilation is the best place to go for a conceptual grounding in geobotany, for clues to what we might find up here in the northern rain forest:

- "Where [plants] find a home is first fixed by the lay of the land: mountains, valleys, plains. All such surface heterogeneities are mainly the products of geology. Then particular habitats become even more finely divided by differences in rock types and their derived soils . . .
- Mineral nutrition, water relations, rates and types of photosynthesis and respiration, tropisms, growth rates–all such physiological processes are conditioned by substrates and topography. . . The richness of regional floras is often a measure of geological diversity. . .
- Changes in the past wrought by successive geological events–mountain building, continental drift, exposures to new and distinct parent materials–brought about change in the composition and location of floras. . .
- Climate [another control on vegetation] is often *fashioned by* physiographic features . . . Mountainous terrain exerts decisive influences on climate, by virtue of leeward/windward effects (rainshadow phenomena), by elevation, and by the nature of the mountains' topography. . .
- Discontinuities in landforms and lithologies [rock types] promote insular patterns of plant and animal distribution."

A plant's environment may be hot or cold, wet or dry, bright or shady, seasonally dynamic or monotonous, stable or precarious. Every terrestrial square foot of Southeast has a unique combination of these attributes that collectively dictate which plants can survive or thrive there.

How does geobotany play out in our island-studded corner of the world? Let's first look at the geological environment from the point of view of an individual plant species (or in this case pair of species). Afterward, we'll consider how Kruckeberg's "landforms and lithologies" dictate plant and animal communities.

Species response

We have two common species of alder in Southeast: red (*Alnus rubra*) and Sitka (*A. crispa*). Both are north-temperate deciduous species with ranges centering on western British Columbia. Both are shade-intolerant. Both need bare mineral soil to germinate. Both require perennially moist soils and can be killed by drought. Both are mature at 50 years. Both species are therefore best suited to frequently disturbed landforms. Otherwise they're eventually overtopped by conifers and die in the shade, failing to recruit new seedlings on the duff-covered soil.

But red and Sitka alders differ in growth form, and these differences appear to be adaptations to a range of dynamic Southeast landforms. Red alder is a small tree, generally 30 to 50 feet in maturity. Before the arrival of Europeans, this species was restricted mainly to stream banks and marine shorelines. On larger, highly active rivers, it can grow throughout the flood plain, but depends upon frequent overbank deposits of sand and

***Left to right**: Bob Christensen and Craig Bueller coring a mature red alder on a Chichagof Island flood plain. It turned out to be at least 160 years old, which is "off the charts" compared to ages of red alders studied in Washington and Oregon. Apparently, our Alaskan alders can live much longer than their southern counterparts–not surprising, since our Sitka spruce also can live twice as long. • Joey Bosworth measuring stems of shrubby Sitka alder near the receding Mendenhall Glacier. Dense growth and leaning branches make this one of the more difficult communities to bush-wack through. • Typical habitats and growth forms of red and Sitka alder.*

silt (alluvium) for seedlings to become established. Those same floods may prevent complete canopy closure by conifers, leaving room for the shorter red alders.

Like gulls and ravens, red alder seems to appreciate civilization. It got a real boost when people began building roads and cutting down the big alluvial forests, beginning in earnest in the 1950s. Bare road shoulders and ditch margins provided much the same germinating conditions as streamside alluvium; today, many of our logging roads are framed by senescing red alders. Even more acreage was colonized on the stripped fans and flood plains, where tractor-yarding left raw, eroding alluvium, perfect alder seed beds. By the 1970s, loggers had switched to less erosive high-lead yarding, and the heyday of red alder colonization was over.

Sitka alder is not a tree but a multi-stemmed super-bush that reaches 10 to 15 feet in height. Its stems are so flexible they're hard to break. When snow piles deep, Sitka alder simply lays over. In British Columbia, this species is sometimes called "slide alder," recognizing its predilection for avalanche chutes. If you live in downtown Juneau, this is not a plant you want to see lots of above your house.

Another landform where alders frequently need to lie down in winter is on the morainal debris near the snouts of receding glaciers. Sitka alder is the dominant plant in the snowy, upper Mendenhall Valley, from about 25 to 50 years after ice retreat. Red alders are quite unusual in the Mendenhall Recreation area and other recently deglaciated valleys. Is this because deep snow in the early decades of establishment gives the edge to more flexible Sitka alders?

Summing up the alders, both species–red and Sitka–gravitate to disturbed, well-watered landforms, whether human or natural. Red alder does better on sites with an initial, soil-exposing disturbance, followed by relative calm. Shorter Sitka alders could not compete for long on such sites, and ultimately do better on more frequently disturbed landforms such as slide paths, deep-snow glacial forelands and exceptionally dynamic riverbanks.

Community response

Every plant species has a suite of such environmental needs and tolerances. Toss the seeds of a hundred Southeast species onto a landscape like the upper Mendenhall Valley, and recognizable communities will soon emerge. Those communities will of course change over time (succession), but they're also constrained by initial soil conditions.

In the following scene from the upper Mendenhall Valley, there are 3 basic substrates, indicated with capital letters:

A) Moderately drained glacial till is *unsorted* debris that melted directly out of the receding ice, from about 50 to 100 years ago. The low, undulating hills of till contain a mix of everything from boulders down to invisibly small clay particles. The coarse particles pass water easily, but the fines hold it. This is the substrate underlying the successional profile drawings you commonly see that show vigorous post-glacial community development. Type A1 is a young, scrubby mix of spruce and alder. A2 is more mature, with considerable overtopping cottonwood. A3 is older still, where spruces have begun to edge out the cottonwoods.

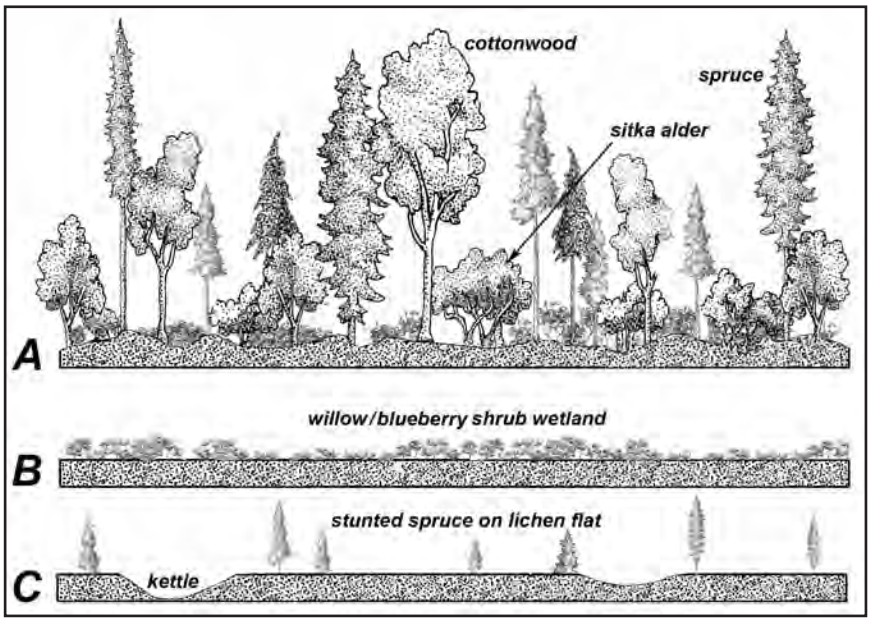
But a glance at the aerial photo indicates considerable

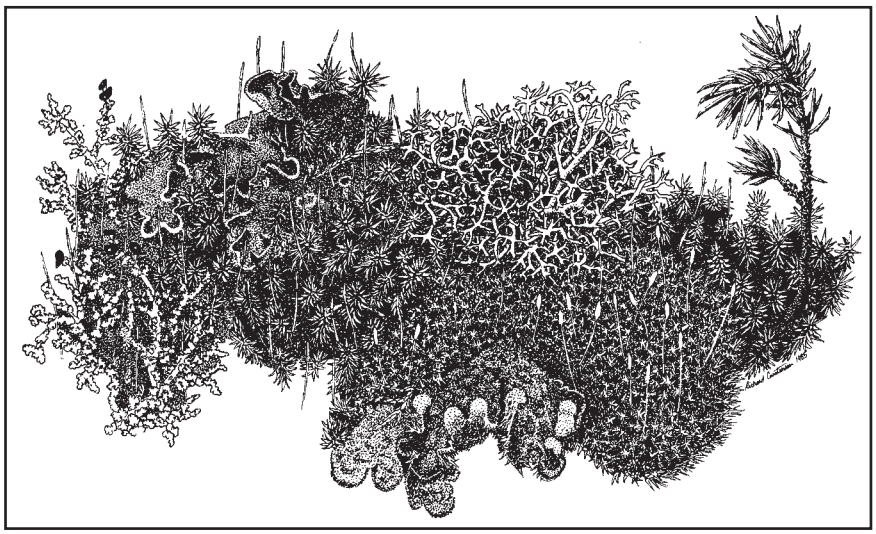
***Top to bottom**: View east to Mendenhall Visitor Center, April, 2002. Dotted lines show positions of the retreating glacier in 1910, 1930 and 1940.*

Vegetation is generally taller on the older surfaces to the right. But there's also great variability along lines of equivalent age, responding primarily to soil moisture.

Block diagrams below show community development after about 70 years on 3 different surfaces: A) undulating glacial till; B) poorly drained lake bed; C) excessively drained pitted outwash, with "kettles" formed by melting ice blocks.

A fascinating microcommunity of lichens and mosses grows upon the coarse, excessively drained outwash flats near receding glaciers (type C in preceding illustrations). From left to right: Stereocaulon, Peltigera, Cladina, Racomitrium, Polytrichum, *and a spruce seedling. Not only do summer dry spells weaken the struggling vascular plants; some of the lichens are also thought to conduct chemical warfare, postponing succession to shrub and forest stages that will eventually shade and kill them.*





variation in community types along the dotted lines of equivalent surface age. Some surfaces are much more scantily vegetated. The remaining, more level substrates in the upper Mendenhall valley were laid down by water. In some places it flowed rapidly (C) and elsewhere was more calm (B).

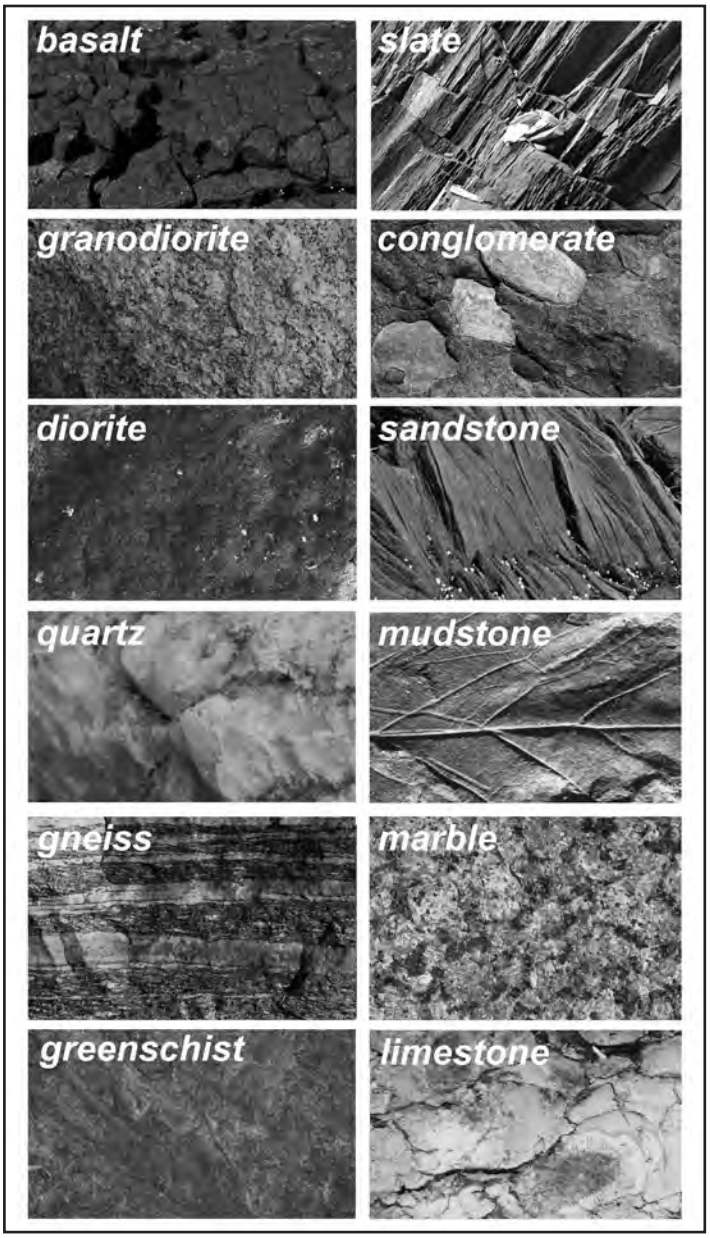
B) Poorly drained raised lake bed. These are damp shrub-wetland communities. In the 1930s, when the present Visitor Center site was still buried under ice, Steep Creek (so-named because of its plunge down Thunder Mountain) swung laterally across this scene to meet Mendenhall River in center-valley. By 1940, it had curved northward to meet the enlarging Mendenhall Lake in the foreground of this photo, forming a silty delta. Although the lake level receded from these flats over 60 years ago, they're too poorly drained to support tall trees. In late summer, high lake levels elevate the water table here. Scrubby willows predominate.

C) Excessively drained outwash Similar-appearing to the shrub wetlands on the photo but actually at the opposite extreme in terms of drainage are outwash flats. Whereas the Steep Creek delta was deposited in still lake water, these more confined areas once conducted rapidly flowing glacial outwash. The more vigorous current swept away the finer particles, leaving only coarse sand, gravel and cobbles. Today, these excessively drained surfaces support extremely unique communities of ground lichens and mosses, with no alder (because of its

Rich fen has colonized an ancient, gently sloping marine terrace on northern Admiralty. Compacted sand and silt is too wet for most trees. Over millennia, deep sedge peat accumulated here. Through recent centuries, beaver shaped this peat into arching, cross-slope dams, now so firmly anchored with roots and runners that no storm can breach them. These ponds are good places to hunt for rough-skinned newts.

So even newts are connected to landforms, albeit several steps removed: glacial rebound=raised marine silt=sedges=deep peat=beaver=newt.

Common bedrock types in Southeast Alaska. Each weathers into differently shaped landforms (table, page 2), and, as soil, provides different drainage characteristics, pH balance, and nutrient availability, leading in turn to differing plant and arthropod communities.



drought intolerance) and only scraggly, dispersed spruce trees.

Natural communities of course include animals as well as plants. I've already given one example of animal response to the abiotic environment: that of aquatic invertebrates to phyllite-chip stream beds. But most animal-rock connections are mediated by the plant community. Here in the upper Mendenhall, the easiest connections to see and hear are those of songbirds. For example, in the mixed spruce-cottonwood stands on glacial till (type A), you might expect to hear myrtle warbler or ruby-crowned kinglet. In the shrub wetlands on former lake bed (type B) you might flush a snipe. Probably the most common ground nester on the dryer lichen flats (type C) is Oregon junco.

Plant community responses to geologic landforms tend to be most obvious on young surfaces, as we see near the Mendenhall Visitor Center. Over time, as soils deepen, the crisp distinctions may become muted.

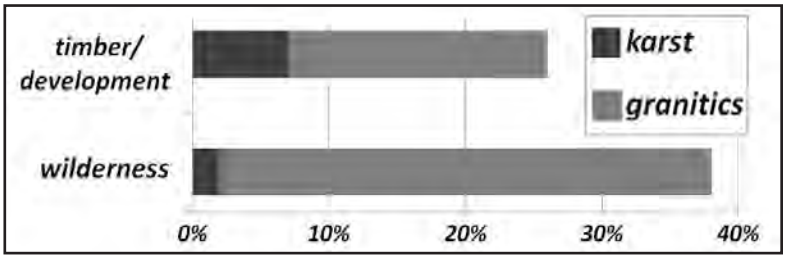
But in some cases the influence of substrate persists for millennia. An example is the mosaic of soggy bogs and fens that occupies the gently sloping benches surrounding much of Douglas Island and northern Admiralty. These landforms are raised marine terraces roughly 9,000 to 12,000 years old. They rose several hundred feet out of the sea as the Great Ice Age ended, bringing with them fine, compacted marine sediments bearing shells of mussels, clams and barnacles. Builders call these deposits "blue clay." Auke Bay School was constructed on such a site. It promptly began to sink, and students were moved to Glacier Valley during the repairs.

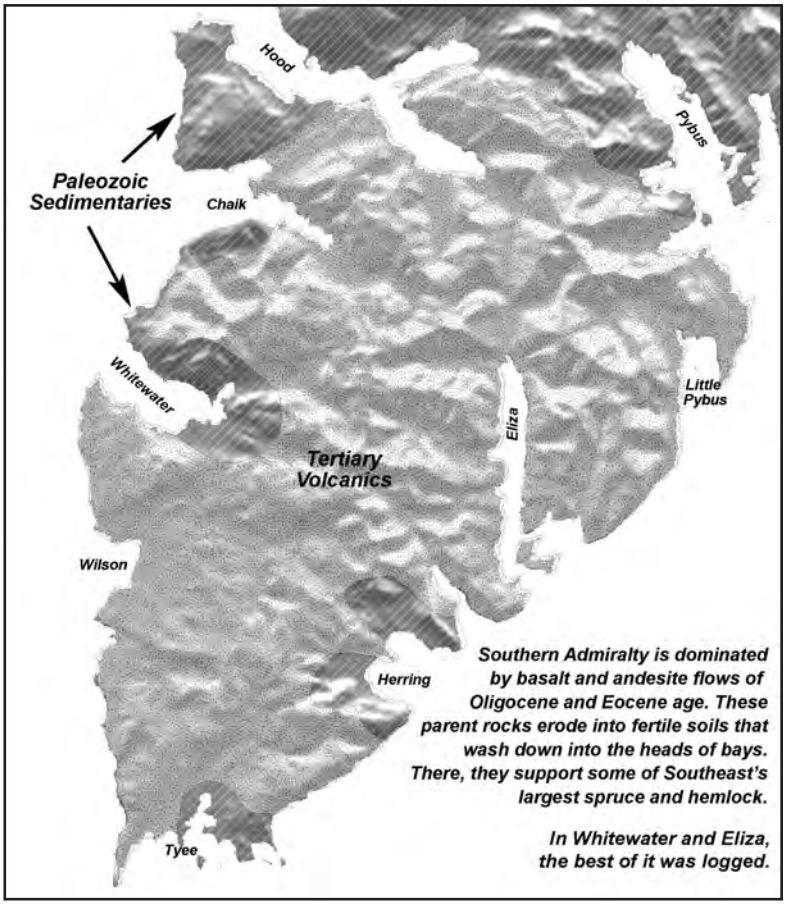
Perhaps, as wetland ecologists keep reminding us, its best to leave these impermeable landforms to the lingonberries and shore pines and indignantly scolding yellowlegs, all of whom are better adapted than humans to the wet-foot lifestyle.

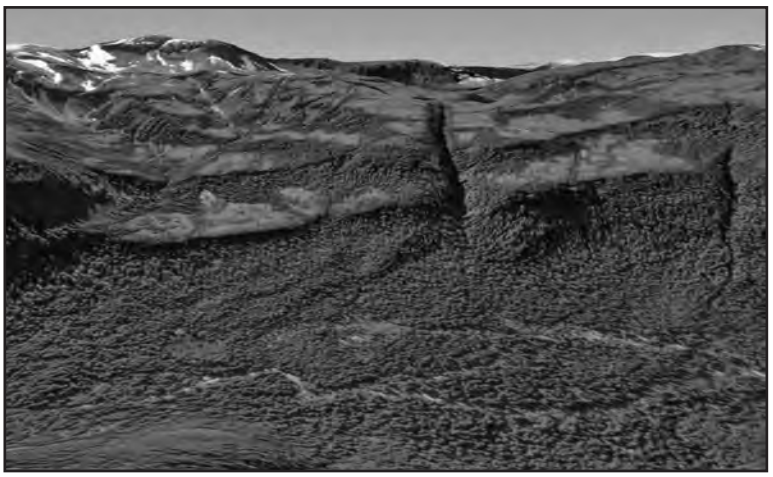
Influence of bedrock type

The youthful Mendenhall forelands and Admiralty's ancient marine terraces are examples of *surficial geologic landforms*– unconsolidated sediments deposited by glaciers, rivers, lakes and oceans. Plant–and ultimately animal–response to these landforms is largely a matter of drainage. Now let's peel away those surficial landforms and get down to *bedrock.* How do living things respond to the mind-boggling mosaic of different rock types that makes the geologic map of Southeast such an explosion of color?

We've already seen that Alaska's largest trees once grew on limestone and marble, rocks with high carbonate content that dissolve to create the distinctive landforms known collectively as *karst*. At the other extreme, our scrubbiest, least productive natural communities are found on acidic, monolithic rocks in the family of







***Top to bottom**: Percentage of karst and granitic bedrock on protected versus unprotected lands. "Timber/development" includes private corporation timber lands. • Geology map of southern Admiralty. • Oblique view of the basaltic staircase formations in Chaik Bay. "Risers" have moderately productive forest; "treads" have peatland and scrub forest.*

granites, resistant to erosion and slow to build soils. Because of the connection to forest productivity, bedrock types are reflected even in the Tongass Land Use Designations. Our congressionally protected Wilderness Areas have double the percentage of granitics of our timber production areas and private corporation lands, but only a third as much karst. And the small amount of wilderness karst tends to be of much lower quality, or at mountainous elevations, far above the productive forest.

Alaska Natives naturally settled on the most productive bedrock types because fishing, hunting and foraging were better there. Of the 14 principal Tlingit and Haida villages in Southeast, none was sited on granitic bedrock. Dyea and Skagway are surrounded by granitic uplands, but these were apparently just summer camps of the Lukaax̲.ádi clan of the Chilkoot Kwan, who wintered in the Haines area. More typical were Hoonah, Kake and Klawock, all on mixed sedimentaries and metamorphics that included substantial high-grade karst with giant conifers and super-productive salmon streams.

It's fairly easy to recognize–if not understand–the extreme cases of bedrock influence on tree size and plant community structure. But for most Southeast rock types, influences are more subtle. Aside from limestone and marble, are other kinds of rock conducive to productive forest? And if so, is productivity linked to their topographic conformation, or their chemistry, or the nature of the soils derived from them?

Since 1996 the Landmark Trees Project has visited and measured 76 one-acre patches between Ketchikan and Juneau representing Alaska's finest remaining spruce forest. Sadly, only a handful are on karst; the superlative karst forest was almost completely logged.

Yet for every site we visit, I hear about two more. My "wish-list" of places to visit now numbers in the hundreds. Scanning that list, it recently occurred to me that we've heard reports of giant spruce in virtually every bay on southern Admiralty. Is there something special about its geology?

Low-elevation limestone occurs only in scattered strips through the central "midriff" of the island; karst can't explain the distribution of these more southerly large-tree forests. The bedrock underlying southern Admiralty is geologically recent (age of mammals) volcanics: basalt and andesite stacked up into gargantuan "staircases."

But neither is that staircase topography the key to southern Admiralty's largest trees. Both the "risers" and "treads" support fairly unremarkable forests. It's down in the river valleys that the truly massive spruce and hemlock are found.

According to Kruckeberg, basalt weathers rapidly

compared to granite, eroding freely along joints into rich clayey soils, basic and spheroidal. The famous pineapple fields of Hawaii are flat tracts of well-drained inter-montane "red dirt" (from iron oxides) weathered from basaltic parent rock. Here in Southeast, our 4th highest-scoring Landmark Forest acre is on the lowland basaltic soils of southern Admiralty's Chaik Bay, a notable "outlier" considering that the other top-scoring sites are all south of Frederick Sound.

As I travel the great Alexander Archipelago–paddling up estuaries, flying into remote lakes, driving the maze of logging roads–the puzzle of productivity increasingly preoccupies me. Why are some watersheds so much richer than others? While climate certainly plays a role, I'm inclined, like Kruckeberg, to assign fundamental honors to geology.

Throughout the world, humans always develop the richest watersheds first, to such a degree that in most bioregions we can now only guess at what the original habitats looked like. Probably no person will ever again walk beneath 10-foot diameter valley oaks arching over grassy parkland on the banks of California's San Joaquin River.

Southeast Alaska is no exception to that global pattern. The difference is that we can still see the stumps. The finest forests of our most productive watersheds were almost completely logged. A tiny few, like Chaik, remain. More important, while the San Joaquin is private farmland, Southeast's finest logged watersheds are still mostly owned by you and me. On those lands, wise management could bring the giants back.

Geologic foundation is the gift that keeps on giving. If we learn that in time, grandchildren yet unborn could receive it, could walk with bears on fertile rocks under big trees. Imagine them telling *their* grandchildren how, in the early 21st Century, people finally decided to include among their wilderness legacies not only the high-mountain granite leftovers, but a few examples of the richest Tongass real estate: the hammered gems of Heceta Island, Katlian Bay, Cowee Creek. We can't take it with us. Why not pass it on?

photo by Jim Baichtal

Above *DSE naturalist Kathy Hocker in the Landmark Forest at Chaik Bay. Alluvium often supports giant trees.* • ***Right*** *Subalpine fir (*Abies lasiocarpa*) rooted in epikarst crevices, alpine summit, Dall Island. Firs are rare on the Southeast islands. They may have persisted here in refugia–places that escaped Wisconsin-age glaciation.*

Camouflage

Scott Burton

One the most popular games on a Discovery hike with elementary-age kids is called camouflage. The game has been passed down through generations of naturalists and is usually used as an incentive, like dessert, for making good choices on a hike. The game resembles hide and seek but instead of hiders and seekers, the kids become red squirrels and owls. And despite its simplicity, the game is an effective nature connection tool.

Set up for the game includes a group brainstorm about the two critters, and if we're lucky, we might even have discovered a squirrel midden or owl sign that day. Whether it is based on fact or convenient myth, I tell the kids that some owls are known to perch near their prey's food source and wait for the critters to come to them. I explain that the owl is guarding their food and the squirrels want to hide as close as possible without being seen. The owls then close their all-seeing eyes and count slowly to twenty in a loud voice while the squirrels disperse like panicked rodents into the shrubbery.

This is where the connection begins, and why I think the game is so popular. As the owl approaches twenty, the kids dive into hiding places; they settle into a mossy or licheny nook and lay there silently while the owl hunts. How often do kids get to be silent and solitary in nature?

Ok, so it may be Discovery Southeastified hike and seek, but within a game or two, the kids begin to think about adaptation. They shed bright colors and make connections with camouflagers like ptarmigan and snowshoe hare.

So do you want to be an owl or a squirrel?

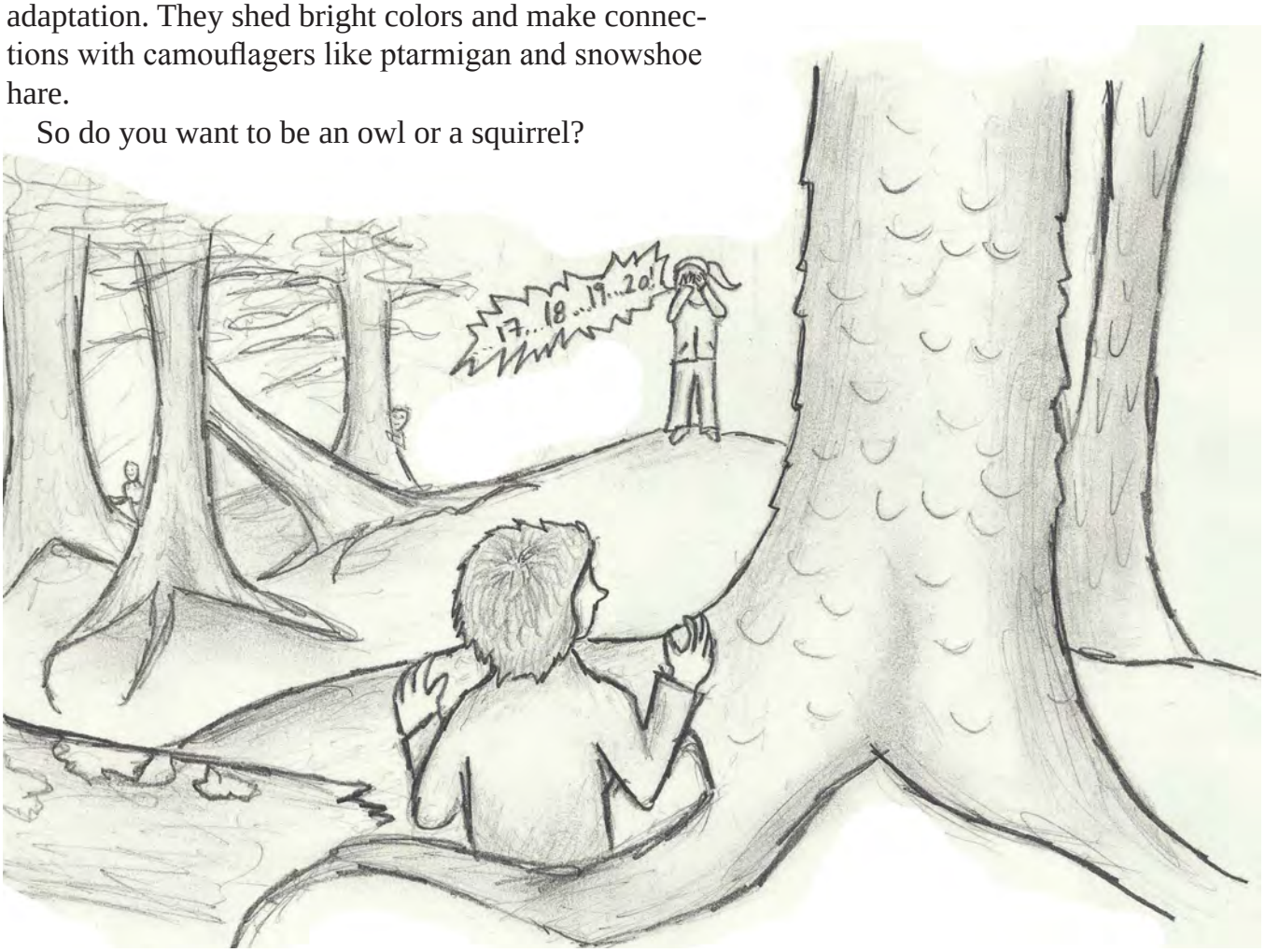


illustration by Cathleen Balantic

Discovery calendar

MARCH

14 Early Release Monday 1:30pm-3:30pm
19 SAGA Eagle Valley Center Spring Equinox Jamboree 10am-4pm
25 Discovery Day at Eaglecrest in conjunction with ski patrol, JMR, and the Southeast Alaska Avalanche Center. 9am-4pm
28 Early Release Monday 1:30pm-3:30pm

APRIL

1 Discovery Southeast Dinner and Auction at Centennial Hall 5pm-8:30pm
10-16 National Environmental Education Week 2011: Ocean Connections
11 Early Release Monday 1:30pm-3:30pm
16 Juneau Health Fair at the Nugget Mall
23 Earth Day events at Mendenhall Glacier Visitor's Center 11am-3pm
25 Discovery Day 9am-4pm
26-29 Seaweek
30 AARP Health Fair

MAY

9 Early Release Monday 1:30pm-3:30pm
9-13 Seaweek
14 Juneau Maritime Festival

JUNE

5 Teacher Expeditions Begin
8 World Oceans Day
13 Outdoor Explorers Begins (This program is partially funded by the City and Borough of Juneau through sales tax revenues)
18-19 BioBlitz at UAS

Summer Teacher Expeditions

Once again this year we are offering–in partnership with Alaska Discovery, Spirit Walker Expeditions, Alaska Geographic Association, USDA Forest Service and the University of Alaska Anchorage–three exceptional opportunities for teachers to participate in week long field studies and earn professional development credits at the same time. The classes are: ***The Brown Bears of Admiralty Island*** (June 5-11); ***Wild Alaska in a Changing World*** (June 14-20); and ***Whales of Icy Strait*** (June 25-July 1). In addition to observing the behavior and habitat of these animals with expert professionals, participants learn about safe, comfortable travel in wild country and collaborate on how to transfer some of this knowledge to students. Please contact the Discovery Southeast office at 463-1500 or our website (*www.discoverysoutheast.org*) ASAP for more information or to register.

Friday Fun Nights

In a new partnership with elementary school PTOs and PTAs, Discovery naturalists, staff, and board members help organize and run Friday Fun Nights. We direct activities such as fish print art, nature hikes, fur and skull identification and more. All proceeds go to the PTO/PTA. Keep an eye on our website for the next one and let us know if you want to volunteer.

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