



Discoveries

News and views from Discovery Southeast Winter 2006

Sitka deer thoughts and field notes

Richard Carstensen

More of my natural history field notes are devoted to Sitka black-tailed deer than to any other subject. Since I first began to watch, track, eat and read about these animals, my fascination has steadily grown. Deer behavior, anatomy, life history and habitat relations are fertile and inexhaustible grounds for mystery and discovery, the twin enticements of the naturalist.

Intimacy with deer is the best way I know to probe and savor the human connections to Southeast Alaska. Thanks to deer, my urban body is made of subalpine flowers, woody blueberry stems and intertidal sedges. My strongest friendships are built around deer. My pulse will never cease to accelerate at each sudden appearance of this loveliest possible animal, a creature at once familiar yet untouchable.

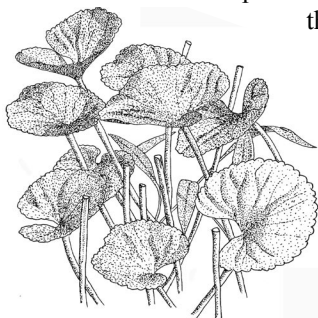
Much has been written about Sitka black-tailed deer. The richest chapters in the most heartfelt book about the relation of people to deer—*Heart and Blood: living with deer in America*, by Sitka author Richard Nelson—are devoted to this subspecies. On the scientific front, the pioneering work on deer/forest connections by Charlie Wallmo, Matt Kirchhoff, John Schoen and Thomas Hanley that began in the 1970s has reshaped ecologists' views on an animal that elsewhere had been thought to respond positively to the logging of old-growth forests.

But these books and reports and articles will always leave plenty of room for unsolved mysteries and unasked questions. Here I've mined my field notes for some favorite subjects of rumination.

Does our loveliest animal "create" our loveliest habitat? The most beautiful place I know is a mountain I return to every August in search of deer. I go with friends like Hank Lentfer, Judy and Anya Maier, Steve Merli, Bob Christensen and Cathy Pohl. The beauty of the ridge top meadow/elfinwood mosaic is partly owed to anticipation of deer. But the parkland itself is so inviting, so . . . *intended* . . . that it's hard not to wax religious about it.

On July 31st this year I was trudging slowly up the ridge with Steve Merli. The rain had let up for an hour or two and the mist was layering through the little groves of bonsaied mountain hemlocks. Our boots swished loudly through a

Deer cabbage (Fauria crista-gallii) grazed by deer, Admiralty Island subalpine.



carpet of 6-inch-high deer cabbage leaves but they offered no palpable resistance. The footing was firm and level and predictable. We could look around without tripping, a rare treat on an off-trail walk in Southeast, where bushwhacking is the rule.

Here on the mountain we felt *at home*, in a land damper but visually similar to the African savannah where our species evolved. We walked with a sense of privilege, of returning to a kind of utopia from which humans have been largely self-exiled. In that mood I suppose it's to be expected that scientific objectivity relaxes a bit.

"God must have made this place," I said to Steve. I wasn't joking, but groping for an origin story. When humans find paradise, we feel compelled to explain it. My particular gods are hooved, so I'm guilty of a form of conditional cervid creationism.

In nature, "bottom-up" influences are widespread and obvious: bedrock dictates surficial landforms that in turn control vegetation that suggests herbivores who entice predators. Top-down influences of an herbivore or predator (us excepted) on plants or landforms may be equally prevalent but more easily escape our notice. Beavers restructure streams. Sea otters administer the kelp forests. Bison and prairie dogs "till" the plains.

On my favorite mountain the grounds-tenders are Sitka black-tailed deer. I don't know just how they do it, but I believe it's them.

If scientists wanted to know how deer shaped

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Masthead: forkhorn in velvet, July 16, 2003, Kosciusko Island

From the Director

Dana Owen

Winter. In the world outside our workplaces and homes, things generally slow way down. Photosynthesis, for instance: as the sun dials back its work hours, plants take a break, gearing up for longer nights and colder temperatures. Bears have shuffled off to sleep, and migratory birds have, well, migrated. If I didn't know better, I'd expect life to slow down for us two legged types, too. Not here at Discovery Southeast. Our naturalists are back in the classrooms and out in the field, showing young students how seasonal change is a part of the natural world. Snow, when it does finally get here, becomes another great teaching aid as we look for signs revealing which animals stick around and how they cope. This year, Nature Studies is in every Juneau School District elementary school, and thanks to a generous donation from the Douglas-Dornan Foundation, we're again able to offer our Discovery Days adventures during breaks in the school calendar.

Here in the office, we're busy planning next summer's schedule. We are looking forward to a major expansion of our Teachers' Expeditions. Adding to our well established Admiralty Island expedition that focuses on brown bears, we are developing a course about seals and their relationship to wilderness in Endicott Arm and the ice of Dawes Glacier. Our third expedition will study whales and other marine mammals in Icy Strait. John Neary will once again lead the bears expedition, while author and US Forest

Service wilderness manager Tim Lydon will head up the seals trip. Discovery's own Bob Christensen will lead the whales expedition.

Along with our regular partners—Alaska Discovery Wilderness Adventures, the Forest Service, and the Alaska Department of Fish and Game—

we are collaborating this year with the Alaska Natural History Association to take advantage of their marketing expertise and to reach a broader base of potential expedition members. All three courses will be a part of ANHA's Alaska Natural History Institute (formerly Denali Institute) 2006 catalogue.

We're also looking forward to an additional two weeks of Outdoor Explorers this year, starting in June. And we're in discussions with the Forest Service to offer other, similar day camps led by their naturalists, but keeping the Discovery Southeast focus on fun and adventure. Keep an eye out for an announcement on our web site or in your mailbox.

We've got other new initiatives that are still in the very preliminary stages, but I'll save their stories for future *Discoveries*. Stay tuned.



Glacier Valley School Nature Studies team in old-growth forest. Naturalist Steve Merli on right.

Cheryl Van Dyke

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Discoveries is published by Discovery Southeast, Southeast Alaska's leading source for natural history and conservation education. Founded in 1989 in Juneau and serving communities throughout Southeast Alaska, Discovery Southeast is a nonprofit organization that promotes direct, hands-on learning from nature through natural science and outdoor education programs for youth, adults, and teachers. By engaging youth and adults in the study of nature, Discovery Southeast naturalists deepen and enrich the connections between the people of Southeast Alaska and nature.

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Discovery News

The 2006 Auction Date Set

It's time to mark your calendars for the 2006 Discovery Southeast Auction: Friday, March 17 at the ANB Hall. This will be our 17th annual gathering, and it promises to be another evening of good food, great socializing, and keen competition for cool auction items. Make plans to attend, and bring a friend. If you have something you would like to donate, give us a call at 463-1500.

Welcome

Clocking in at a solid eight pounds two ounces, Wren Pearl Grabham arrived in the world on December 5, daughter of Discovery naturalist Cheryl Van Dyke and husband Drew Grabham. We're all delighted with this latest addition to the Discovery Southeast family and looking forward to seeing Wren bouncing along with mom in the field.

Transitions

This year we welcome naturalists Dell Cummings, Kristina Quinto and David Troup to the DSE staff. Dell is working at Harborview and Gastineau Schools, Kris is at Mendenhall River and Glacier Valley, and David is at Riverbend and staffs Discovery Days. We say goodbye to Gareth Hummel who most recently taught at Auke Bay and to Kate Savage who ably filled in this fall at Riverbend. We will miss their skill, experience and enthusiasm.

With wildly mixed emotions, we say both goodbye and hello to Walt Chapman, long-time DSE naturalist who has taken a position teaching 4th grade at Harborview School. Even though he won't be leading trips into the field for us, Walt hasn't left Discovery completely. We're happy to welcome him to the Board of Directors. He joins Colleen Goldrich, Ron Clarke and former DSE Executive Director Larry West as our newest members of the board.

We say goodbye and thanks to board members Barb Sheinberg, Dave Haas and Sue Baxter. Their many years of service to Discov-

ery Southeast represents a large part of our institutional memory, Sue in particular. She has been with us since the inception of Nature Studies in 1989 and is the longest serving board member in Discovery Southeast's history.

When you run into any of our board members or naturalists, past or present, please thank them for their service. Their dedication, professionalism and enthusiasm make it possible for us to do the important and exciting work of connecting Southeast Alaskans with nature.

Rasmuson grant

Discovery has been awarded a grant from Rasmuson Foundation for the purchase of four high-powered laptop computers, office computers, digital projector, GPS units, digital cameras, and other field and office equipment. Some of these items are already in use. All of our naturalists, for example, now have access to a photo library of thousands of natural history images for use in their school presentations. Thanks to a partnership with SEAWAAD, we also received ArcView licenses in a grant from ESRI, the makers of GIS (Geographic Information Systems) software.

When not distributed among the staff for designing and presenting nature programs, our "laptop fleet" can also be used in GIS workshops for teachers and students. Discovery will never forsake "muddy-boots" field biology, but we are rapidly adding cutting edge technologies to our repertoire. Thank you, Rasmuson and ESRI!



Brady Scott

Discovery board and staff gathered recently at the home of Cindy and Brady Scott. Back row, left to right: Dan Hall, Dana Owen, Richard Carstensen, Larry West, Darren Snyder, Kristina Quinto, Steve Merli, Scott Burton. Middle row: Joyce Sarles, Colleen Goldrich, Jan Carlile, Dell Cummings, Walt Chapman. Front row: Cindy Scott, Cheryl Van Dyke with Wren, Diana Brann.

Not shown: Mike Stanley, Alex Wertheimer, Ron Clarke, Cathy Connor, Dick Stokes, Diane Antaya, Bob Christensen, Kathy Hocker, David Troup, Hank Lentfer and Tim Blust.

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the mountain parklands they'd build an exclusion plot. They'd fence in an area where the soil, aspect, slope, canopy, snow regime and original vegetation were as close as possible to an unfenced "control" plot. Then they'd watch, and document how the absence of grazing, trampling and turd-fertilization slowly changed the exclusion plot. At sea level, results might come in before their retirement, but on the ridgetop things happen more slowly. Science may therefore never tell us how much of the "sculpting" of the subalpine pastures is owed to soil differences, current and past climates, or herbivory.

From good vantage points over certain high-country meadows on Admiralty Island we can see 10 or more foraging deer at once. You might think that since deer cabbage is the favorite summer food of Admiralty blacktails (accounting for the bulk of high-country stomach contents we've examined), then more deer would equal less deer cabbage. But the reverse seems true. Deer cabbage appears to "like" the attention given it by these dainty-footed grazers. It's my impression—admittedly unquantified—that mainland mountain meadows where far fewer deer collect in summer have a higher plant diversity than topographically similar habitats on Admiralty. Deer are catholic grazers, eating almost every vascular plant species. Perhaps deer cabbage is simply our most tolerant subalpine herb of steady foraging pressure; as other species are mowed down, it inherits the space they vacate.

Like some of the primary lowland winter deer foods—five-leaved bramble, ground dogwood, fern-leaved goldthread—deer cabbage spreads clonally. Hundreds of the individual kidney-shaped leaves, covering large areas, may belong to a single, tenacious plant that can well afford to offer up a portion of its growth in return for the "weeding out" of taller competitors, and the moist, nutrient-rich summer droppings that deer spread throughout the meadows.

Large grazers such as cattle and horses have a similar relationship to grasses. Because grasses are more trample-resistant than tender herbs, grass replaces herbs under heavy grazing pressure. Grasses also grow from the base and endure repeated clipping. Likewise, a clipped leaf or two of deer cabbage leaves the growing runner tip unharmed. As for trample-resistance, deer cabbage seems rather fragile. Cattle would quickly turn deer cabbage pastures into mud-slicks. Perhaps the narrow hooves of deer are "friendlier" to deer cabbage, brushing harmlessly and silently through the leaves.



Fat-footed humans have no such skill. I've noticed that even my dull human ears sometimes pick up the sounds of friends marching through deer cabbage at more than 100 yards away. To the keener ears of deer we must sound cacophonous. This may be yet another element of the apparent symbiosis of deer and deer cabbage; the plant warns deer of approaching predators.



Subalpine parkland: *A* sedge-dominated fen on poorly drained ridgetop; *B* mountain hemlock elfinwood occupies the convex microsites, providing hiding and bedding cover; *C* deer-cabbage-dominated "salad bowl" covers vast acreage on gently sloping, moderately drained surfaces on Admiralty where snow lies deep in winter.

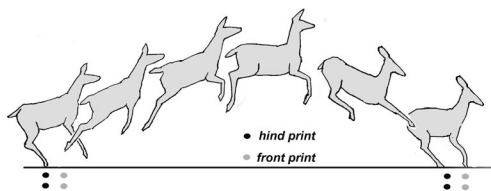
Prominent deer/bear trail runs up through the center, but the entire pasture is laced with a spiderweb of feeding paths. **Inset:** Both European and Native traditions hold that white deer (like white bear, bison, etc.) are sacred emissaries, not to be killed for food. Plant cover in this enlargement is almost solid deer cabbage.



This August I sat quietly for several long periods overlooking a huge deer cabbage bowl near our camp. The weather was fickle, alternating between showers and periods of direct sun. In the dry intervals there were usually deer in view, grazing slowly out from the cover of montane hemlock stands and islands of elfinwood. When it rained, they faded back into the forest. Sitka deer are certainly not averse to rain *per se*, so why the behavioral change?

Rain falling on deer cabbage leaves is almost as noisy as on a tent fly. Perhaps this makes deer uncomfortable, limiting their ability to detect the movements of other animals. Under a conifer canopy the rain is relatively silent.

Why do Sitka blacktails "stot?" Sitka black-tailed deer are one of 7 currently recognized subspecies of mule deer (*Odocoileus hemionus*). As a group, "mulies" tend to be western deer, meeting the eastern whitetails (*O. virginianus*) in the Rockies. In this zone of overlap, mule deer tend to occupy more hilly, broken cover. Much attention (but little science) has been paid to the very different gaits of mulies and whitetails. White-tailed deer have



Stotting gait of mule & black-tailed deer

a fluid, lightning-fast gallop with flat trajectory. Alarmed mule and black-tailed deer have a high-bounding gait referred to as “stotting.” Conventional wisdom holds that stotting, although slower than the whitetail gallop, can clear obstacles that a pursuer must run around. It’s good for ascending hills, and allows rapid directional change that could throw off a wolf or cougar (or Admiralty brown bear?) in close pursuit.

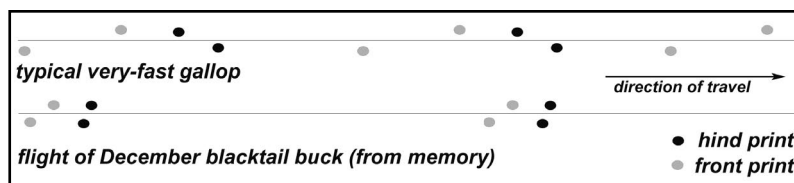
Valerius Giest’s behavior chapter in the standard reference on mule and black-tailed deer¹ claims that “In Sitka blacktails, stotting is not frequently seen.” This is incorrect, as any Southeast woods-tromper can attest. It’s even more frequently *heard*.

Field notes, August 1st, 1999: As we approached the bowl, a doe stotted away over the open meadow of the ridge top and I was struck by the *resonance* of her 4-hoof slamming. It occurred to me that this noise might be a better clue to the function of stotting than the rough-terrain predator-evasion hypothesis.

Blacktails are fully capable of flat-trajectory galloping. I’ve seen them do it when chasing each other, and when truly terrified. Stotting is energetically expensive, and if the predator evasion hypothesis were true, fleeing muley/blacktails should gallop on open terrain, and only switch into stotting in hilly, broken cover when a predator closes on them. Many of the dozens of stotting blacktails I’ve seen and heard did so in terrain where the evasion hypothesis makes no sense. And none were being pursued.

I don’t know about mulies, but mildly frightened Sitka blacktails normally stot just a few times, then settle into a fast but less exhausting trot as they weave into dense cover. I think stotting may be analogous to tail-slapping by beaver. It spreads the alarm to other nearby deer, some of whom may be relatives, making such apparent “altruism” evolutionarily adaptive. A fawn obviously benefits by alerting its mother, and a doe is heavily invested in her fawn. Also, in most deer species, female groups are close relatives, i.e. matriarchs with current fawns plus grown offspring.

Noisy, highly visible stotting does carry risk. It focuses a predator’s attention on the stotter. In that regard, stotting resembles the raised tail-flag of the fleeing white-tailed deer, a confident *forget-it-buddy* statement. Since stotting is energetically expensive, it displays vigor and is probably



Galloping print clusters compared

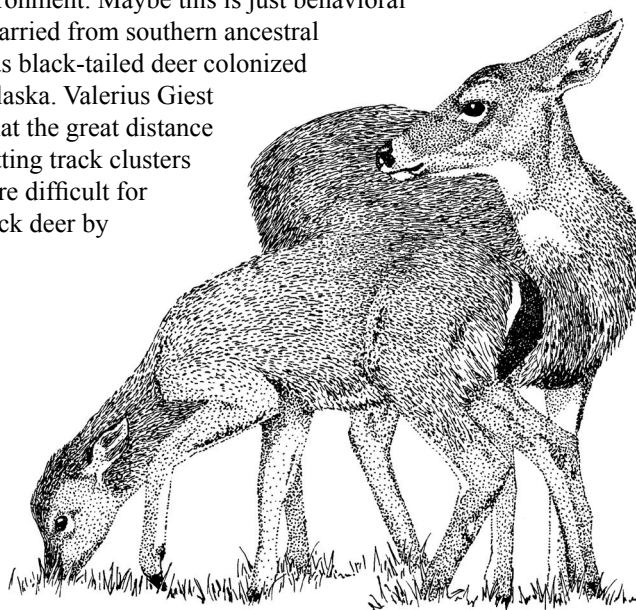
discouraging to a solitary predator. Studies of gazelles suggest the primary purpose of stotting in this open-plains ungulate is to signal to cheetas that pursuit is a waste of time.²

Geist does mention the group-alarm function of stotting, but emphasizes the benefit to the first stotter of having other deer also bound away, dividing the predator’s attention. In Southeast, I’ve rarely seen cases where this might prove useful. More often the first stotter rivets me, allowing any nearby companions to slip unnoticed into cover. Predator distraction by alarming other deer may be Geist’s attempt to avoid the trap of “altruistic” explanations.

Insight might be gained by asking whether female groups stot more often than do bucks, who presumably are less often surrounded by immediate relatives. If stotting is a warning to relatives, it should be less common in bucks.

I’ve certainly seen bucks stot, but I’ve watched them in rapid gallop more often than I’ve seen this gait in does. For example, I launched a December buck from his snowy bed a few years ago. His departure was almost soundless, and about as fast as I’ve seen a blacktail move. He was more concerned with leaving me behind than with warning other deer, relatives or not. Oddly, when I later tracked him, I found clusters of 4 rather closely grouped footprints separated by 10-foot gaps. This is not what a typical rotatory gallop should look like. Bodies of the fastest gallopers scarcely rise and fall as they run, and their footfalls are more evenly spaced. This buck’s gait was neither a gallop nor a stot. His front feet came down first, with hind slightly overstepping. Because of his flat trajectory, he didn’t come down with a resounding thump. Whatever the gait, it was a *me-first-and-good-luck-to-the-other-guys* exit.

Biologists Thomas Hanley and Winston Smith of Juneau’s Forestry Sciences Laboratory added two more possibilities when I asked them about stotting: 1) By bounding over rather than threading through obstacles like down logs and dense blueberry brush, stotting blacktails can glance backward at their pursuer, laterally at other fleeing deer, or ahead to possible ambushers (the last particularly important with pack-hunting wolves). 2) Evolutionarily speaking, Sitka deer are recent arrivals in Southeast. Stotting may not even be adaptive in their current environment. Maybe this is just behavioral “baggage” carried from southern ancestral homelands as black-tailed deer colonized Southeast Alaska. Valerius Giest also notes that the great distance between stotting track clusters makes it more difficult for canids to track deer by smell.



Doe with 4-month-old fawn, Sept 18, 2005.

Why do bucks hang out in groups on mountaintops? After a sweaty summer climb through the forest to our Admiralty Island ridge top, we meander for two miles through entrancing subalpine parkland to the place where we like to camp. Flipping back through decades of notes, it's pretty clear that we see females and young in different places than we see bucks.

Field notes, August 15, 1993: Age/sex distribution of deer on this trip supports what I think we've always seen: does/fawns/yearlings and occasional spike bucks in the closely-interspersed mosaic of montane forest, deer-cabbage meadow and sedge fen; groups of mature bucks on the higher knolls and precipitous summits where hiding cover is sparser and you can see for up to a mile. This of course is a generalization. Mature bucks could well be present in the lower parkland but slip away unseen while does linger. Likewise, there *are* females in the airy heights with the bucks, but the age/sex balance up there definitely shifts to forkhorns and larger deer, *i.e.* males at least 3.5 years old.

How do you explain this difference? I don't think big males stay higher to make humans work harder. It's surely not from logic on their part, nor can I picture genetic selection for this in the blip of time since rifles and August openings. In fact, the tendency of bucks to hang out in places where a hunter might see them 500 yards away is maladaptive; it gives the normally-noisy human a chance to plan an against-the-wind stalk.

Forage value probably has little to do with the different age/sex distributions we observe. Deer cabbage and other choice herbs are abundant in both habitats. If anything, the grazing opportunities tend to thin out a bit on the high ridge tops where we see more bucks. There's a stronger component of inedible heather communities up there.

The high-mountain-males syndrome is not limited to blacktails.

Mature male mountain goats *tend* to stay higher on the mountains than do females and nursery groups. Solo billies are probably the norm, but bachelor groups are common in goats as well. Studies of sexual segregation in Texas white-tailed deer also showed that males use more open habitats than do females³. Competition between the sexes was rejected as an explanation; segregation seemed more related to differing strategies of predator avoidance.

Sometimes it's not initially obvious that high-mountain bucks are hanging out together. But when a "solo" buck is spooked, we have frequently stared in amazement as up to 8 large-racked deer trotted "out of nowhere," following each other up switchbacking trails to disappear

over the alpine ridge top.

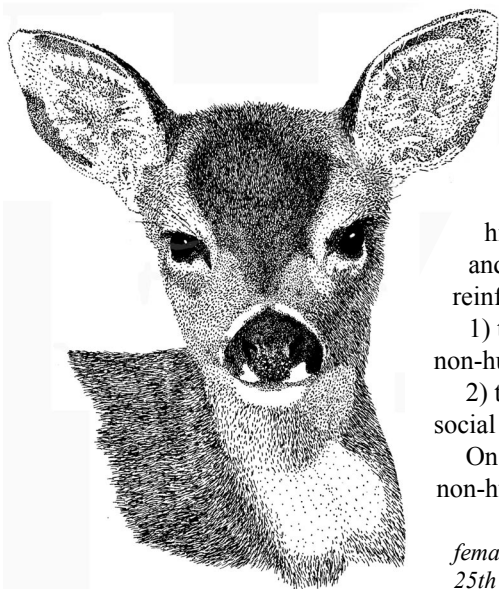
(We rarely see female groups of this size; 2 does, each with fawn, is about maximum in the mountain meadows.)

So I'm left with 2 possible explanations for high-mountain buck groups, and these could be mutually reinforcing:

- 1) they offer security against non-human predators;
- 2) they facilitate some kind of social interaction.

On Admiralty, the only non-human deer predator is the

female fawn, 4 months, September 25th



brown bear. While brownies might occasionally ambush a deer, we see no evidence that this is common on our ridge top. Healthy late-summer bucks have little cause for alarm at the presence of a grazing brownie, and might actually prefer to have it out in plain view, rather than slinking around in the tighter forest/meadow mosaic where we see mostly does and fawns.

We don't think of Sitka blacktails as gregarious deer to the degree of Rocky Mountain mulies, but in the Southeast high country they do seem to enjoy a loose companionship. Deer have sophisticated signalling systems that range from noise (alarm snorts, bleats, stotting) to smell (tarsal-gland discharge) to body language (attention posture and tail-flicking). It must be comforting for a buck to have several calmly grazing buddies in sight. Less time need be spent on predator-scanning in such company. For August bucks, the more the merrier, because juicy, high-protein food is everywhere, and there's no need to be territorial.

If a deer wants to keep several grazing companions in sight, or at least in earshot, this is easier to do in the more open high-mountain bowls than in the tighter parkland mosaic of the forest-limit transitional zone. Doe-fawn pairs forage almost side-by-side, and for them, staying in contact is less problematic.

It's fun to think about the ephemeral partnership of high-mountain bucks. After all, these same animals will be thrashing each other during the November rut, and casual sparring begins well before that. This year on September 19th I watched 2 young forkhorns shoving each other around for practise in the salt marsh. Their bone-white antlers were only recently shed of velvet. Is there an aggression hormone that turns on as velvet drops and rut approaches? Or is there instead a summer-pacifist hormone that neutralizes a buck's "base-level" macho, inspiring neighborliness in mountaintop allies?

Aggression would be foolish for a buck in velvet. Growing antlers are easily damaged. If you made the mistake of challenging another summer buck, he might just reciprocate and leave you both with a pair of furry pretzels. I've never seen a hint of aggression between high-mountain bucks. This contrasts with the behavior of mountain goat bachelor groups, in which any invasion of personal space results in a head toss or other *don't-mess-with-me* gesture. Goat horns don't go through the vulnerable growth period of annually replaced antlers, and can be used year round for displays and predator defense.

6 ³ Kie, J. and R Bowyer, 1999. Sexual segregation in white-tailed deer: Density-dependent changes in use of space, habitat selection, and dietary niche. *Journal of Mammalogy* Vol. 80, no. 3, 1004-1020.

Finally, there may be more to the social exchange among high-mountain bucks than a simple predator avoidance network. After all, only a small fraction of Southeast's mountain meadows ever see a human hunter. Dave Person's Prince of Wales⁴ studies suggest that wolf predation is likewise concentrated in the lowlands, and that high-country meadows are relatively carefree habitats for deer. Mountain buck groups may be ways for younger males to learn daily foraging strategies by emulating their elders. It could also be a time for males to size each other up, so that November competitors become known quantities, rather than strangers.

How much turnover is there from week to week in the summer ridge-top buck groups? Do some of these bucks descend to "shared" rutting grounds or do they drop randomly to distant flanks of the mountain as snows and wilting forage force deer down from the high meadows?

Are bucks warier than does? In mountain habitats it's hard to tease out differences in male/female wariness, because of the above-mentioned differences in topographical distribution and long-range observability. It's best to address this question through fall/winter observations, a time when all deer are down in the forest and peatlands.

I rarely see forest deer when the wind is at my back. Human odor usually gives bucks and does enough warning to get out of the way before we pass through. But the noise of an approaching human may be less diagnostic. A person downwind, walking slowly, with frequent pauses, may be mistaken for another deer. Here variable wariness might come into play. It's been my impression that does and young deer may wait, listening, somewhat longer than do bucks after hearing my approach. (It's embarrassing how rarely I've truly surprised a deer of any age or gender in the forest: even fawns are almost always already looking at me when I first see them.)

Most hunters would probably claim that mature bucks are much warier than does and young deer, except perhaps in the November rut when some males become crazed and reckless. To see if my notes supported this, I went back through 71 days of forest deer observations taken between late September and January. These were days in which I spent at least 5 hours in the woods. Of 131 deer seen at relatively close range in the forest, 23 (18%) were forkhorns or larger (3+ years old).

What percentage of the total population is composed of mature bucks? Well, a 6-year-old

deer is an old-timer; only 5% of the jaws I've examined appeared to be older than this. To make it simple, assume an equal sex ratio at birth, and zero mortality among young deer. Then all deer suddenly die at 6 years. In that scenario, 25% of the population would be males older than 3 years. In reality, of course, mortality is high across the age/sex spectrum, and especially so in males. Young bucks are like teenaged boys in cars. Mature bucks are more vulnerable than does because they burn themselves out in the rut and enter the winter with low fat reserves.

So it's quite possible that mature bucks constitute *less* than 18% of a typical Southeast population, and that I've actually seen slightly more of them in the forest than one would expect, if mature bucks and does and younger deer were all equally wary.

Is the rut is a confounding factor? When I exclude observations between November 1st and 25th, tallying only pre and post-rut sightings, the percentage hardly changes; 13 of 79 sightings (16%) were mature bucks.

I know I'll never convince hunters that bucks are not more wary. In fact, I can't convince myself. Maybe there's something about my woods-walking style that's biased toward encountering mature bucks. And the non-rutting bucks I've seen in the woods were memorable for the brevity of their appearance; they evaporated with gusto unusual in does.

But if bucks actually *are* more wary than other deer, why should that be so? Only a small percentage of human hunters selectively seek bucks. As for wolves and cougars, one might think that large bucks would be safer from them, but there is evidence that they are killed more frequently than does. Valerius Geist explains that bucks are heavier and more "front-weighted," and cannot accelerate nearly as fast as does and fawns.

*"Running from predators is more hazardous for a buck than for a fleet-footed doe. This predicts that bucks should hide or sneak away more often, should quickly leave dangerous areas, and should run farther . . . than does."*⁵

Bob Christensen lives with deer. Like most Southeast woodswalkers, he thinks bucks are indeed warier. But he suggests this vigilance may have several components. In addition to predator wariness bucks are highly attuned to *each other*. More than females, they are intensely competitive, and this could be expressed outside of the rut in ways we don't yet understand. If indeed mature bucks are less observable in the woods by humans, perhaps it's because they are more apt than does to fade into cover at unidentified sounds—sounds that might signal another buck as well as a 2- or 4-legged carnivore. Maybe does and young deer have more social incentive to wait, curious about which relative might be making those sounds. And maybe with their lightning agility, they can afford to linger somewhat longer than bucks, a behavior that sometimes proves maladaptive in encounters with armed humans.



Massive, slightly palmated antlers. Thorne River, Prince of Wales Island. Larger than any rack I've seen on Admiralty.

⁴ Person, D. 2001. *Alexander Archipelago wolves: ecology and population viability in a disturbed, insular landscape*. Dissertation, University of Alaska Fairbanks, AK. • ⁵ Geist, V. 1998. *Deer of the World: Their evolution, behaviour and ecology*. Stackpole Books. These comments were in reference to whitetails but might apply equally to black-tailed deer.

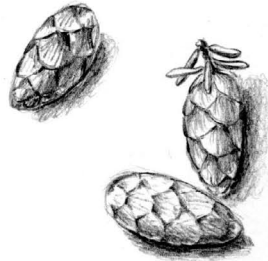
Sketches from a Field Notebook

Kathy Hocker



Across the street (and across town), Spruce are heavy with cones - makes me remember this summer, when the wind gusts puffs of greenish pollen out of the treetops...

Squirrels have been busy clipping cones in my yard

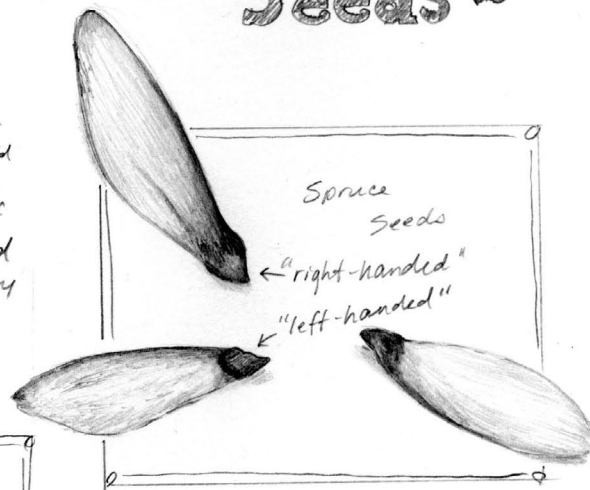
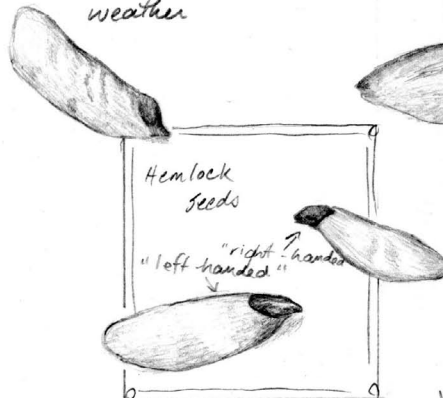


As I drew these cones, they slowly opened in the dry warmth on my table ~ hemlock quicker than spruce.



Invasion of the ~Winged Seeds~

Periods of sharp, dry cold... after the third day or so I'd find my car covered with winged seeds ~ so many of them! They must be released from the cones by this dry weather



Definitely a difference, though subtle. Spruce seed wings longer, stiffer, smoother. They remind me of insect wings in shape. Hemlock wings subtly wrinkled, tissue-thin, very slightly smaller.

- 21 December 2005 -

Deer Puzzlers

Richard Carstensen



1) This closeup shows a muddy slough bed near the mouth of Cowee Creek. What month of the year were these deer tracks made? *Hint: Think about the difference in the size of the tracks. For scale, the pencil is almost 6 inches long.* (Bonus puzzler: What other animal left tracks here?)



Answers
on page
10

3) How long has this deer been dead? (September photo, elevation 500 feet.) Who, or what killed it? Who ate it? *Hint: condition & arrangement of bones.*



4) Here's a meadow—sometimes beaver-flooded—near Peterson Creek, Douglas Island. What happened here, in what month?



2) This August photo was taken in a subalpine meadow full of colorful (and tasty) wildflowers. How old is this deer? *Hint: the forehead.*



5) On the left is a clearing in high montane forest. On the right is an "uplift meadow" just above high tide line. Both show animal trails in remote places where humans have little impact. One is a deer trail and the other is made by black bears. Which is which?

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Super Bear
Thunder Mountain Sports Camp
Wee Fishie Shoppe



Answers to Puzzlers on page 9:

1) These are tracks of a doe with a very small fawn. If the pencil is 6 inches, then the small track near the top is only 1.5 inches long. Fawns are usually born in late May or early June. This photo was taken on June 19th. The tracks near the tip of the pencil are porcupine, going left; note the claw marks.

2) This deer is called a nubbin buck. In Alaska, yearling bucks (a year and 2 months old in this case) have only little furry bumps on their foreheads. Next year he'll have short spikes.

3) It's very unusual to find a carcass so little disturbed by scavengers. I found this female fawn skeleton in September on an island lacking both wolves and bears, either of which would have crunched and scattered the bones. The fawn probably died of starvation, which usually happens in mid to late winter, so it's been dead roughly 6 months. Ravens moved the spine slightly, but the vertebrae are still articulated. Fly and beetle larvae have cleaned all the meat from the bones.

4) The photo was taken on May 2nd, but deer nipped off these skunk cabbage sprouts in mid-April, and they are starting to expand again.

5) Heavily used deer trail on left. Bear "hotfoot" trail on right. In some places, bears place feet in their predecessors' tracks, eventually creating these alternating footprint patterns.

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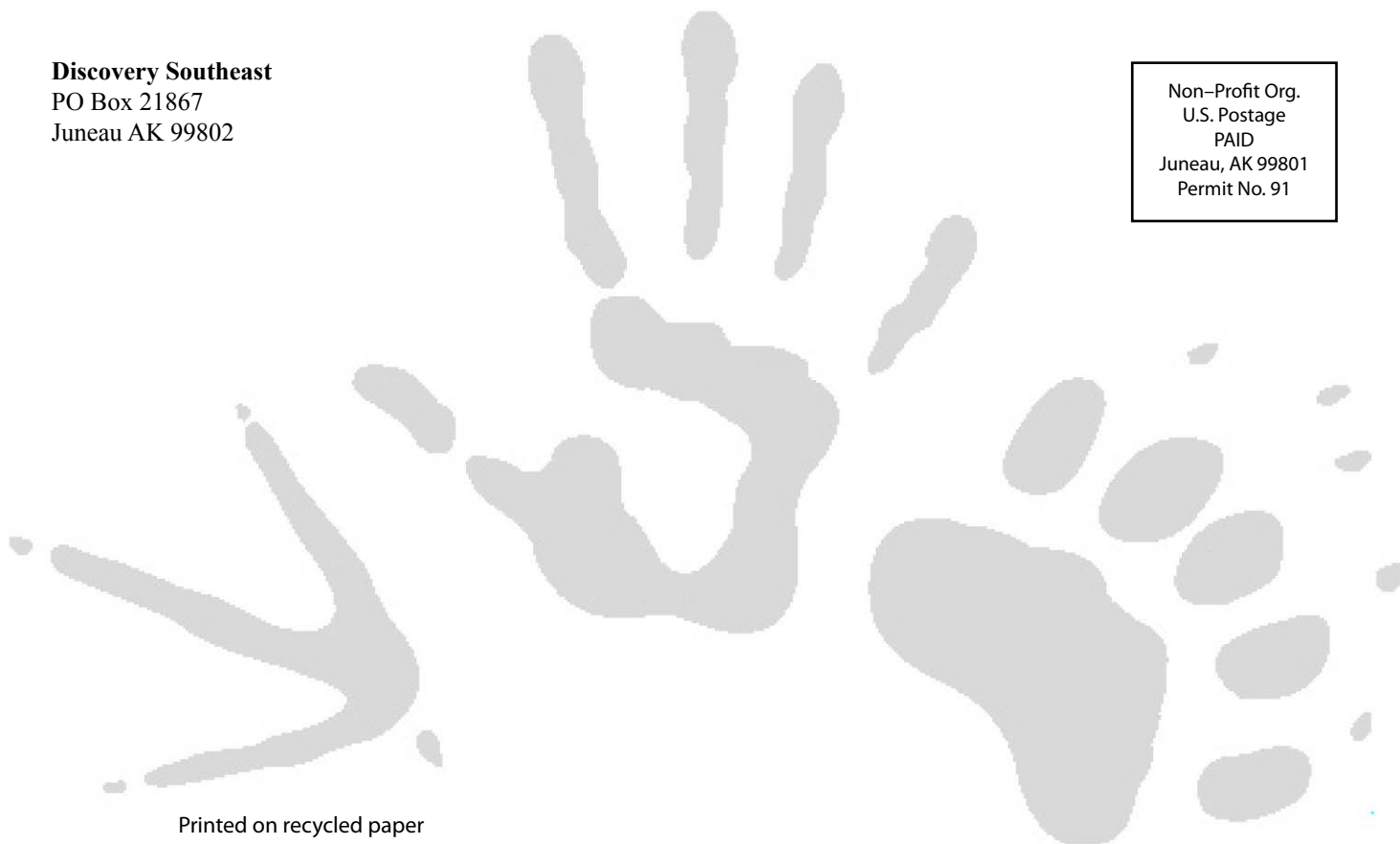
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