

KANSAS ALUMNI

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The Naturalist

Henry Fitch and his prairie lab

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Regarding Henry

HOW ONE MAN, LIVING FOR A HALF-CENTURY
ON ONE SQUARE MILE OF KANSAS, MADE NATURAL HISTORY

In the rolling hills that hem the Kaw River Valley like a ruffled border on a patchwork quilt, eastern hardwood forest bumps up against the tallgrass prairie of the plains. Biologists call this unique transition zone between different plant communities an ecotone. Since 1950, Henry Fitch has called it home.

Fitch, professor emeritus of ecology and evolutionary biology, lives and works on the 590-acre Fitch Natural History Reservation. Once part of former Kansas Gov. Charles Robinson's farm, the land was set aside in 1947 as the University's first site for field work in biology. The late E. Raymond Hall, c'24, director of the Natural History Museum and head of the zoology department, had seen the research and teaching value of a similar site at the University of California, where he taught before returning to his alma mater. Hall recruited one of his star graduate students at Berkeley to set up the KU reserve, and in 1948 Fitch joined the faculty, teaching the Hill's first ecology course in a decade. Two years later,

when the University completed a house on the reservation, Fitch moved in with his wife, Virginia, and their two children. He's been there ever since.

Now 92, Henry Fitch has seen the corn fields and cow pastures change to grassland and forest. Where cornstalks stood half a century ago, 40-foot cottonwoods tower now. He and his students have documented the changes, helping write the book on ecological succession—a topic that, strictly speaking, lies outside his area of specialization. He is best known for his work in herpetology: His 50-year study of the 18 snake species found on the reservation, summed up in his 1999 book, *A Kansas Snake Community: Composition and Changes Over 50 Years*, is universally hailed as the longest study of vertebrates ever conducted. "If you stop and think about it," says Joe Collins, herpetologist emeritus, "he has probably the longest running field project of any scientist in history."

In addition to the changes he witnessed in the reservation's flora and fauna, Fitch has also seen

BY STEVEN HILL ■ PHOTOGRAPHS BY AARON DELESIE





KU's facilities for biology field research—the University of Kansas Field Station and Ecological Reserves administered by the Kansas Biological Survey—triple in acreage. For a decade, Fitch's plot (called the KU Natural History Reservation until 1986, when it was formally renamed for him) was the University's sole ecological field site. The 1956 addition of the adjacent Rockefeller Experimental Tract

Fitch's own work shows just how varied the research and teaching opportunities at these sites can be—and seemingly renders all discussion of “specialization” irrelevant. His publications number nearly 200 and range well beyond snakes to iguanas and skinks; horned owls and yellow-bill cuckoos; ground squirrels and kangaroo rats; rabbits, opossum, raccoons and skunks; ant-eat-

outside the window, very convenient for taking notes,” Fitch recalls.

Such an approach to science harks back, says one prominent biologist, “to the great explorer-naturalists of the 19th century,” including Darwin himself. Fitch has long been regarded as a pioneer by fellow scientists: a consummate field biologist whose innovative tools and techniques are still widely used, a distinguished researcher whose decades-long studies set a standard for long-term research as yet unsurpassed, a true gentleman whose openness and generosity helped set the collegial tone that some say distinguishes herpetology from more cutthroat fields.

Although he conducted some of his pioneering field work abroad—notably in Central America—most of Fitch's distinguished research can be traced to the limestone-studded hills north of Lawrence, to the border between prairie and woods and the little patch of Kansas upland that he calls “this square mile.”



■ Teaching KU students (above) and Kansas schoolchildren (p. 23) about the reservation's flora and fauna is part of Fitch's mission as resident naturalist.

started a steady expansion; the most recent acquisition, 116 acres of prairie and woods near Lecompton, was donated in 1999 by E. Raymond Hall's son, Hubert, c'49, and his wife, Kathleen McBride Hall, d'49. Now eight tracts scattered across three Douglas County locations give students and faculty members nearly 1,900 acres of fields, forests, wetlands, ponds, streams and lakes to use as research laboratories and living ecology classrooms.

ing frogs and foster-parenting sparrows. He became an authority on spiders after becoming intrigued by the eight-legged specimens that turned up frequently in the stomachs of skinks, eventually discovering a spider species, *Pholcus muralicola*, that has been seen nowhere else. A paper on summer tanagers co-authored with Virginia used data she gathered while pregnant with their third child: “She was spending a lot of time lying on her bed, and the tanager nest was right

On a windy, unseasonably hot October day, with a stiff south wind souging in the trees, the dozen or so visitors to the Fitch Reservation—undergraduates in Assistant Professor Stan Loeb's environmental studies class, Field Ecology 460—seem thankful for the breeze. Dressed in a T-shirt, battered khakis and a baseball cap, Fitch scrambles headlong up steep creek banks and charges down barely discernible paths that spiderweb the dense brush. With a gnarled branch that doubles as a walking stick and a snake wand, he knocks aside any stray branch that blocks his path. The students hustle to keep up.

Though he's remarkably fit for his age, hip and back ailments have slowed him in the past year. This fall he set out fewer of the wire snake traps that he invented—and that are now standard equipment for herpetologists around the world. Live traps must be checked daily.



“ TO UNDERSTAND HENRY’S IMPACT, YOU HAVE TO REALIZE JUST HOW UNPOPULAR SNAKES WERE AS RESEARCH ORGANISMS NOT TOO LONG AGO. REPTILES GOT VERY LITTLE ATTENTION, SNAKES LEAST OF ALL. ”

Now he relies more on corrugated metal shelters that he can check less frequently, but which still hold the promise of discovery.

“He’d wear those shelters out checking them if he could,” says his daughter, Alice Fitch Echelle, c’70. “Every time he does it’s like a new experience: It’s like opening a gift when he turns one over and finds something under it.”

Echelle’s earliest memories involve following her parents in the field as they checked traps. From the beginning, science was a family affair: Henry took Virginia on collecting excursions when they were courting, and together they reviewed proofs for his articles—even on their wedding night. Virginia recorded field data and typed his papers; the children helped gather specimens and police the reservation.

Now a research assistant in the zoology department at Oklahoma State

University, Alice and her husband, biology professor Tony Echelle, work together as a research team, much as her parents did. Older brother, John, c’66, teaches ecology at Florida Gulf Coast University; younger brother, Chester, ’76, lives near his parents on his own “mini-reservation.” Echelle says her father’s passion for nature inspired all three.

“He’s always had this total fascination with the world around him. If you hand him something he’ll feel it, turn it over and look at it, probably take a sniff of it,” Echelle says. “It’s a kind of curiosity, that always wanting to see more.”

This affinity for finding gifts under every rock might have something to do with the when of his birth—Christmas Day, 1909. More likely it’s the **where**: Shortly after Fitch was born, his family moved from the East Coast to the foothills of the Siskiyou Mountains in Oregon’s Rogue River Valley.



“I ranged far and wide over the wild country,” he recalled in an oral history compiled by the family in 1998. “We were rather isolated, at least half a mile to the nearest house. My early life was rather solitary, and I early developed an interest in animals.”

Snakes were a particular pleasure: Fitch recalls picking up bull snakes as long as he was, and handling them even after his hands bled from the bites.

“It was quite a feeling of power for a 5-year-old,” he says, laughing heartily at his own mischief. “I’m sure that was part of the attraction.”

That interest in snakes would earn him some minor trouble when he started his career as a biologist.

Having completed his PhD under the tutelage of Hall and the eminent zoologist Joseph Grinnell, Fitch in 1938 joined the Bureau of Biological Survey (later the U.S. Fish and Wildlife Service) as a field biologist in the San Joaquin Experimental Range near Yosemite National Park. There he worked with the U.S. Forestry Service on a rodent control project. When he began studying rattlesnakes as rodent predators, a Forestry

Service supervisor objected, and he was ordered to stop. "After that, I rarely brought live snakes to headquarters," Fitch says. "But whenever I caught one in the field, I would process it there, 'bootlegging' this part of my research."

For Loeb's class, the official reason for their visit is to observe what happens to plant life when nature is left to run its course, without interference, for half a century. But as Fitch leads them here and there, citing the Latin genus and species of every green thing he encounters (even those that stump Loeb) there's a feeling of preamble.

The real fun starts when the serpents come out.

A litter of wriggling rat snakes, a feisty northern water snake, a red-sided garter. Students crowd eagerly around a table Fitch has set up under a shade tree near the house to see what he'll pull out of a jar next.

Fitch is an active, engaging listener. Pose a question—about the type of trees

that have replaced prairie grass on his reservation, say—and he listens patiently, head cocked bird-like as he ponders. Frequently he'll give a little chuckle before he answers, especially with the one question he gets more than any: "Have you ever been bitten?"

Copperheads have nipped him several times, most recently four years ago during the Biological Survey's fall field day, the annual event that showcases the reserves to students and the University community. ("Quite embarrassing," Fitch laughs.) His most serious bites came in the San Joaquin. Twice rattlesnakes struck while he was trying to release them. He changed his release technique, but never let go of snakes as a research subject.

When he lifts the lid on an old aquarium and fishes out a big timber rattler, the students step back to give him room. Way back. He warns them to keep their distance. The "bootlegging" long ago went mainstream, but there lingers in



Fitch's delight at taking up snakes a hint of forbidden fun, a flouting of our cultural fear of the serpent—a fear ingrained so deeply, whether by genetics or myth, that it runs all the way back to the Garden.

He lowers the rattler to the ground, deftly manipulating it with a long, L-shaped rod. As he tries to coax a strike with a gentle nudge from his boot, you can see in Henry Fitch's face the joy and purpose of the 5-year-old who found his life's calling.



■ Checking one of his many snake shelters (top right), Fitch finds a prize: A red-sided garter snake. In his 52 years on the reservation, he has captured and documented more than 32,000 snakes.

To understand Henry's impact, you have to realize just how unpopular snakes were as research organisms not too long ago," says Richard Shine, professor of evolutionary biology at the University of Sydney and Australia's leading snake expert. "Reptiles got very little attention, snakes least of all. So it was important that someone actually went out and conducted studies, and published them in reputable journals."

That work inspired a whole generation of herpetologists, Shine included.

"Natural history was decidedly out of fashion, and Henry not only published on the animals many of us were interested in but had thought almost impossible to study—he focused on their day-to-day lives and revealed a wealth of fascinating insights. In the process, he developed some simple but effective field techniques that have since been adopted very widely."



Prairie labs seek NEON designation

Since it was set aside in 1947, the Fitch Natural History Reservation has maintained a hands-off policy intended to minimize human impact on nature. But several of the other seven tracts in the University of Kansas Field Station and Ecological Reserves allow scientists to study the effect of management techniques such as burning and mowing on prairie habitats. Experimental ponds and other man-made features have been constructed to allow students and faculty members to pursue research in a controlled natural environment.

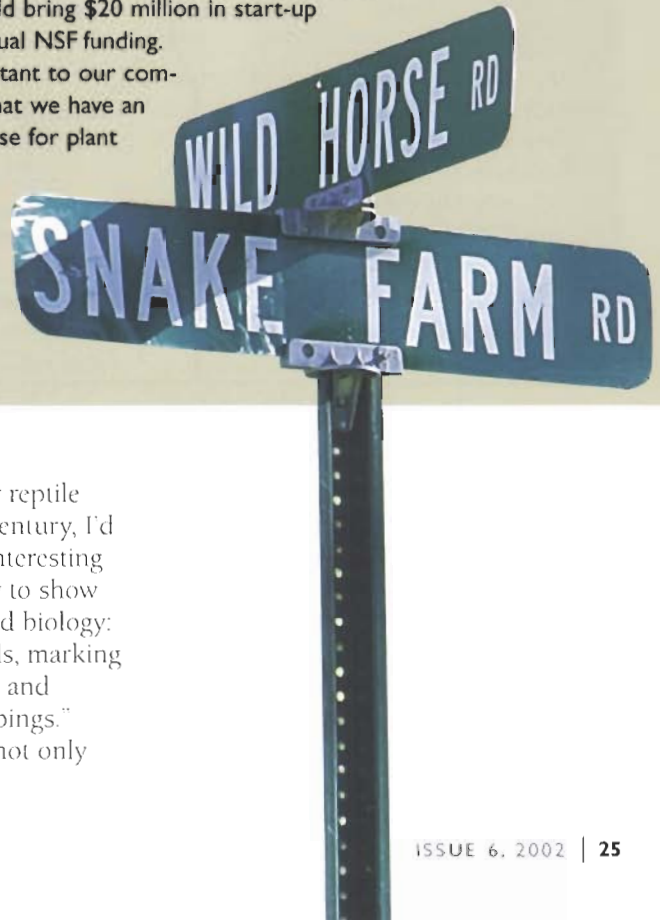
By demonstrating the wealth of knowledge that can be mined from a relatively small patch of land, Henry Fitch helped create an impetus at KU for acquiring and setting aside more research tracts. By creating a 50-year-database—much of it after retirement—he laid the groundwork for future research on those sites.

“That land is now probably one of the most valuable pieces of biological scientific research land in the world in terms of future work, because it’s been so thoroughly studied by Henry,” says Joe Collins, herpetologist emeritus at KU. Fitch’s painstaking work to document the changes in the flora and fauna of the area “is the reason the land has reached the level of value it has. There aren’t other places like that in the world; it just doesn’t exist.”

The precise value of Fitch’s work to these sites and to the University may soon become clear. The Kansas Biological Survey, in partnership with researchers at the Konza Prairie, the University of Nebraska and the University of Oklahoma, is angling to make the reserves one of eight national sites funded by the National Science Foundation’s massive National Ecological Observatory Network. NEON, which aims to create a network of long-term databases to study changes in plant and animal life

across North America, would bring \$20 million in start-up money, plus 30 years of annual NSF funding.

“One thing that is important to our competitiveness for NEON is that we have an extremely long-term database for plant and animal change in the area,” says Ed Martinko, director of the survey. “And that’s due largely to Henry.”



Just as the trap that he invented and used to log more than 32,000 snake captures is the field standard, so are many of his procedures for recording data after specimens are caught, says Harry Greene, a Cornell University professor of ecology and evolutionary biology. As a high school student in Warrensburg, Mo., Greene wrote to Fitch after reading of his work on lizards. Fitch wrote back, and Greene later spent two summers working with him at the Natural History Museum. Now writing *Tracks and Shadows: Field Biology As Art*, a collection of essays on his life as a field biologist, Greene says that Fitch is for him the link between the 19th and 21st centuries, the originator of not only the trade’s tools but its techniques.

“When he was a grad student, we were in the flush of post-Charles Darwin, post-Alfred Russel Wallace—the great explorer-naturalists of the 19th century,” Greene says. “He’s one of the pioneer

natural historians, the premier reptile natural historian of the 20th century, I’d say, and he’s still publishing interesting work. In the book I use Henry to show how one goes about doing field biology: setting traps, collecting animals, marking them for recapture, measuring and weighing, studying their droppings.”

Perhaps more remarkably, not only



convention. “One of the things they wanted to do was meet Henry Fitch,” he says. “It’s like if you’re a basketball player and come

to Lawrence you visit the grave of James Naismith.” Due to the breadth of his work, it’s not only snake lovers who make a pilgrimage to the reservation. “I suspect a lot more people come through Lawrence to meet Henry—they just don’t stay at my house.”

Says Greene, “He’s revered. I’ve never heard anyone say a bad word about him, never heard him accused of exploiting grad students or taking advantage of people professionally.” Tributes range from colleagues naming a tropical lizard (*Anolis fitchi*) for him, to the American Society of Ichthyologists and Herpetologists establishing the Henry S. Fitch Award for Excellence in Herpetology. (Awarded annually since 1997 for outstanding field work, it is one of only two named awards the field’s oldest society gives to professionals.) But two years ago, at a national ASIH meeting in Baja, Calif., Greene witnessed a more spontaneous outpouring of what he calls “the extreme respect and affection” with which colleagues regard Fitch. “The usual convention is that someone introduces a speaker, the person gives a 15-minute talk, everyone applauds and it’s on to the next speaker. When Henry’s turn came, he got a standing ovation *before* he even started his talk. I’ve never seen that happen.”

After 52 years on the reserve, he knows every one of its 590 acres by heart. He has guarded it from deer poachers and firebugs and hellraisers, has dealt with an irate cattleman, who, unhappy at the loss of free grazing, turned his cows out on the land anyway.



■ The University of Kansas Field Station and Ecological Reserves:

1. Nelson Environmental Study Area
2. Rockefeller Experimental Tract
3. Fitch Natural History Reservation
4. Robinson Tract
5. Hall Nature Reserve
6. Wall Woods
7. Breidenthal Biological Reserve
8. Rice Woodland

have Fitch’s techniques survived as the standard, so has his attitude.

“The personalities and approaches of the pioneers within any field of human endeavor have a long-lasting impact on the ways that people behave within that field,” Shine says. Fitch’s passion, modesty and generosity serve as models. “Snake ecology remains a remarkably

friendly field today and is not wracked by the petty academic disputes so evident in many disciplines,” Shine says. “Part of the credit for that situation belongs to Henry Fitch.”

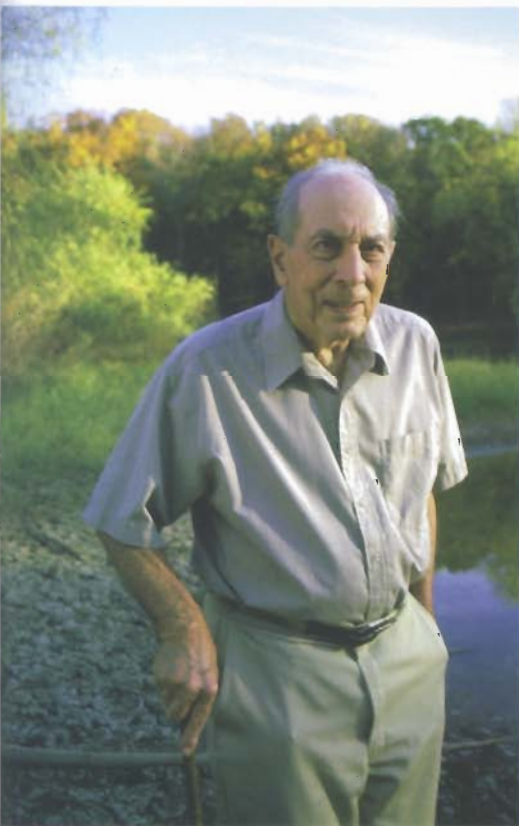
Indeed, Fitch is beloved inside and outside the field. Last summer Joe Collins hosted a group of Texas graduate students on their way to a herpetology

He has watched the plant and animal life change in a transformation that looks dramatic when viewed whole, but which seen in real time was so gradual he hardly noticed. Change continues even now. "Sometimes," he says, "I stop and try to imagine what it looked like when I first saw it."

Through it all Fitch has been a caretaker, not a gatekeeper.

"Sometimes when people have a real link to a place, they become protective," says Suzanne Collins, a photographer who took many of the photos in *A Kansas Snake Community*. "While he's protective of the land, he hasn't isolated the place from others. He's not territorial; he's very welcoming."

Indeed, 22 years after he reached mandatory retirement age, the yellow school buses and KU vans bearing students still turn in at his gate. Since 1996, the Henry S. Fitch Nature Trail, planned with daughter Alice, has welcomed visitors to "this square mile." It's the only



KU field site open to the public.

He has long since won over his neighbors, who've increased with suburban sprawl. Whispered rumors that he was importing venomous snakes and turning the reservation into a breeding ground for pests long ago faded to lore, echoed on a nearby signpost marking Snake Farm Road. Now they call when rattlers turn up on their lawns. More and more, those snakes are alive when he arrives—another sign of changing attitudes.

He still makes his rounds, if a little more slowly than he'd like. In an age when global satellites can pinpoint a man's earthly position within yards, the place-names Fitch invented to tie his data to the land (House Walnut, Willow Woods, Picnic Field) seem fairytale-like, charted like the key to an enchanted wood on a map hand-drawn by Alice and taped to the kitchen door. He has outlasted many of those landmarks: The grand elms that once shaded the hill-slopes have long since succumbed to Dutch elm disease; they weakened, fell and finally rotted to dust. Henry Fitch has endured.

And adapted. As the transformation from prairie to forest drove out many species, Fitch expanded his research to other KU field sites. He now seeks timber rattlers on more open areas to the north. In May, a snake he caught and marked in 1978 was recaptured, snaring the record for the oldest free-living rattlesnake ever recorded. "It had shed its skin and added a rattle as many as 30 times," he says appreciatively, delighted to get the record. "It's quite a lucky one that survives that long in the wild."

In recent years, Fitch has also taken steps to preserve his data, working with Associate Director Dean Kettle and others at the Biological Survey to map his landmarks, ensuring that others can build on his work in the future. (See sidebar, p.25.)

Continuing Fitch's work is a given, says Ed Martinko, director of the Kansas Biological Survey. How to go about it is more difficult. "Henry is a multifaceted

individual who has a lot of experience in a lot of areas. Compensating for that is not likely to happen with just one person or even a few." Universities now look to flashier, grant-attracting areas such as genetic or molecular biology when adding new researchers. Funding cycles and pressure to publish still create a climate in which a 3-year-study is considered long-term. The distractions of daily life have grown more clamorous, not less.

"It comes down to whether or not people are willing to dedicate that much time and that much of themselves to their profession," says Collins, "It's a different world we live in today; maybe there's no reward system in place for doing what Henry has done."

Fitch says it has been reward enough to inspire students' interest in ecology and conservation. "When I was in school I knew what I liked, but I had no idea how to go about making a career of it. It has been mainly through luck that I have fallen into this position." He's been pleased to see KU's sites for ecological study expand, and takes pride in the fact that he "may have had a role in it." And he seems determined to keep adding to a database—and a career—that have redefined long-term.

As mandatory retirement loomed two decades ago, Fitch fully expected to leave the land that bears his name. But his bosses asked him to stay on.

"They offered to let me continue living here as long as it was to the benefit of the University," he says.

He has tried to make it so.

