

The Curators *and the* Research Mission

*Into the field or into the laboratory,
these SNOMNH scientists just can't wait to get to **work**.*

BY LINDA COLDWELL

Take a peek into the curatorial storage rooms and you might be surprised at what you will see. Metal shelving from floor to ceiling is neatly stacked with sleeping bags, Coleman lanterns, ropes, tents, shovels, nets, and traps. There's enough gear here to send a good-sized Boy Scout troop into the wilderness for a week. It all has the air of being well used, well maintained, and packed for easy access.

Although over the past few years a great deal of attention has focused on the museum's exhibits and the cataloguing and preservation of existing collections, the gear in these storage rooms perhaps best characterizes the true heart of the museum's most vital work: that of research and discovery. Unlike some scientific work, with sterile white laboratories and tidy rows of vials, work of the museum's curators is often dusty, hot, muddy, and strenuous. For up to four months out of the year, they will take their research into the field, studying up close and personal the plants, animals, or cultures that make up their lives' work. The expeditions may travel to sites as nearby as the Oklahoma Panhandle, or as far away as Argentina and the Amazon basin, but new discoveries are made on each trip.

With the completion of the new Sam Noble Okla-

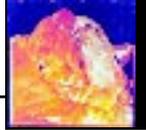
homa Museum of Natural History, a new chapter has opened in the future of the museum's curatorial research. The state-of-the-art research and collection space has allowed Michael Mares, the museum's first paid curator, to make the hiring of additional curators a top priority.

Even though in the past adjunct curators (University faculty members whose areas of research were relevant to a particular collection) oversaw some of the museum's collections, research productivity was high. Mammalogy, herpetology, vertebrate paleontology, and archaeology have had curators for many years, and research in those areas has flourished. New

curators recently have been hired in the areas of invertebrate zoology, micropaleontology, and ethnology, bringing the total number of curators to 14. All curators have an academic home in one of the University's departments.

As a result of having nearly a full complement of curators, the museum is experiencing an unprecedented period of high research productivity. "It's important to understand how people feel about their work here," says vertebrate paleontology curator Richard Cifelli. "Every morning they get up and can't wait to get to work."

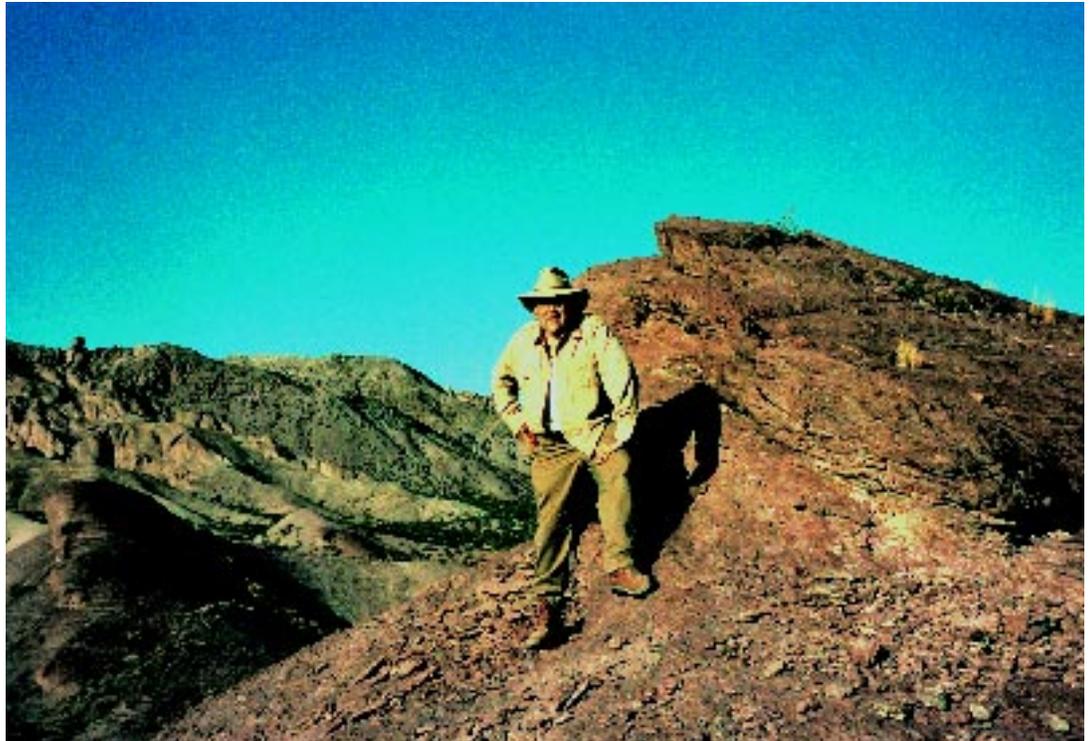




The focus of mammal curators **Michael A. Mares** and **Janet K. Braun** has been largely on finding undiscovered species: animals that previously have not been described by scientists. In the past 10 years, these researchers have discovered more than 15 such species of mammals in Argentina where, with the help of grants from the National Geographic Society and the National Science Foundation, they currently are studying the mammals of the high Andean desert. The work frequently takes them to remote, isolated areas where there are extremely poor roads, if any roads at all.

Working in partnership with Argentine scientists, they aim to better understand that country's mammal fauna. "Desert habitats are extremely susceptible to human intervention, and host a very wide diversity of life," says Braun. "By learning what's there, we can better decide what conservation steps, if any, will be required."

Janet K. Braun



Though the discovery of new species is an exciting part of curatorial work, much can be learned by studying the fauna of our own regional backyard. One of the research projects conducted by ichthyology curators **Bill Matthews** and **Edith Marsh-Matthews**, for instance, has focused on the red shiner, a midwestern minnow so common that it has been largely overlooked by other researchers. The shiner's ability to tolerate extreme fluctuations in its harsh flood/drought environment has been the focus of their ongoing study, which includes not only field work, but also controlled research in a laboratory on the University's north campus. In the future, the team plans to expand their research to examine the effects of global warming on the life history strategies of these small prolific fish.

"There are balances and trade-offs between survivorship, reproduction, growth, and environmental conditions," Marsh-Matthews says. "It is important to study these relationships, especially when you know that dramatic environmental changes are on the horizon."

Invertebrate zoology curator **Ken Hobson** also conducts his research close to home, focusing on the habits of wood-boring beetles that inhabit Oklahoma's pine and deciduous forests. Hobson's research centers around insect pheromones: the scent-based "language" insects use to find food sources, select mates, and communicate with others of their species.

He is currently studying areas in south central Oklahoma where recent ice and windstorms have caused an enormous amount of limb breakage in forested areas. The downed limbs and injured trees provide a smorgasbord for wood borers, and a virtual living laboratory for Hobson. Injured trees give off an

Laurie J. Vitt



TOP: After many years of faculty members serving as adjunct curators for the collections, mammalogist Michael A. Mares, shown here in the field in Mendoza Province, Argentina, became the museum's first paid curator.

ABOVE: Herpetology curator Janalee P. Caldwell's study of amphibians often takes her into the remote regions of the Brazilian Amazon rain forest, many of the areas scheduled for clear-cutting.

Bill Matthews



aroma of their own, making them a target for attack by insects, and Hobson seeks to understand this scent “code” for use in monitoring and potentially controlling destructive insect populations.

Herpetology curators **Laurie J. Vitt** and **Janalee P. Caldwell** specialize in the study of reptiles and amphibians, respectively. They and their students are interested in the distribution, ecology, and behavior of Oklahoma amphibians and reptiles, which form a diverse fauna of about 130 species. In addition, they frequently work in the Amazon rain forest in Brazil, in remote regions that have not previously been studied. Here they investigate the biodiversity of amphibian and reptile communities. Each expedition yields numerous undescribed species and data

on the ecology and behavior of these animals.

Often, the areas where they work are scheduled to be clear-cut and burned immediately after their expeditions; thus, the specimens they collect and deposit in both the Oklahoma museum and in the collaborating Brazilian museum may be the only record of the fauna of the area. “To understand the coexistence and interactions of species that form our ecosystems is one of the greatest challenges facing humans,” Vitt says. “Our continued existence depends upon it.”

Edith Marsh-Matthews

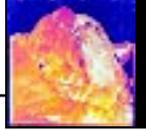


SNOMNH ichthyology curators Edith Marsh-Matthews (TOP), assisted by a group of OU students, and Bill Matthews (ABOVE) collect their research specimens close to home by exploring the streams and rivers of Oklahoma.

RIGHT: Herpetology curator Laurie J. Vitt, a specialist in the study of reptiles, wades into a swamp in the Amazonian region of Ecuador to view a family of newborn anacondas.

Janalee P. Caldwell





Science has the power to illuminate, but not to solve, the deeper problems of mankind. For always after knowledge come choice and action, both of them intensely personal.

Professor Paul B. Sears
Deserts on the March—1935

Ethnology curator **Jason Jackson** also is interested in preservation and record keeping. For many years he has been working with Oklahoma's culturally rich Native American communities, collaborating primarily with the Euchee (Yuchi) tribe in the northeastern part of the state. Like other curators, Jackson's work also takes him into the field, but his subjects are contemporary people—the living tradition-bearers of centuries-old cultures. Jackson works closely with tribal elders, documenting and studying their history, culture, and language. One area of his attention is documenting traditional herb lore in an attempt to assist the tribe with the preservation of such knowledge. With his museum colleagues, Jackson sees the maintenance of diversity—cultural as well as natural—as a key to human survival.

“Over its history, anthropology has developed a range of methods for documenting traditional languages and cultures,” Jackson notes. “What is exciting about the present moment is that local communities are eager to use these tools for their own preservation projects. This is crucial now because globalization is quickly pushing thousands of languages and cultures to the brink of disappearance. Scholars have an obligation to assist communities seeking to retain their own ways of life in the face of such change.”

While some of the research of museum curators seeks to solve modern-day questions of preservation and discovery, the museum's paleontology curators focus their research on mysteries that are millions of years old. In the fall of 1999 vertebrate paleontology curator **Richard Cifelli** announced his spectacular discovery of *Sauroposeidon*, the largest dinosaur that ever existed, which was unearthed right here in Oklahoma. **Richard Lupia**, curator of paleobotany, also makes grand discoveries, although on a much smaller (almost microscopic) scale—unearthing tiny fossilized flowers that have never before been viewed by humans.

These paleontologists are working together to unravel the mysteries of a puzzling 15-million-year “twilight zone” in the middle of the Cretaceous period. They hope to discover the connection between dramatic changes in both the plant and animal life that occurred during this period 100 million years ago.

The path to these scientific discoveries is a twisting one, full of tiny clues and many mysteries. Unraveling them requires a disciplined attention to detail and an almost unlimited amount of patience and focus. **Nicholas Czaplewski**, another of the museum's two vertebrate paleontology curators, concentrates his research primarily on ancient bats, studying tiny fossils that are millions of years old. It takes a sharp eye, a deep understanding of species both ancient and modern, and a certain amount of imagination to piece together the stories these tiny fossils tell.

Czaplewski points out that often a curator's exciting discovery lies in the smallest of clues, details that would be insignificant to a layperson. “In paleontology you go out and you find what you find,” Czaplewski says. “One time it might be junk . . . another time it might be something entirely new: a new species or one which is new to a certain time period or region. If you're good at what you do, you'll recognize it, however small.” *continued*

BELOW: “In paleontology, you go out, and you find what you find,” says vertebrate paleontology curator Nick Czaplewski, here with Tom Deecken, a wildlife biologist with the Arizona Forest Service. The two ventured into a cave near Sierra Vista, Arizona, to excavate the bones of the prehistoric bear *Arctodus*, buried under an ancient rock fall approximately 22,000 years ago.



Bill Peachey



Newman Littlebear

ABOVE: Jason Jackson, SNOMNH ethnology curator, here, collecting spicebush with Chief Simon Harry of the Euchee (Yuchi) tribe in Hectorville, Oklahoma, assists tribal elders in studying language and documenting traditional lore in order to preserve their native culture.

BELOW: Mammalogy curator Janet K. Braun works on rabbit specimens with her colleague, M. M. Diaz, in Salta Province, Argentina.



Sometimes a curator's research leads not to answers, but to ever more puzzling questions. **Don Wyckoff**, archaeology curator, is a veteran archaeologist who spent 28 years as director of the Oklahoma Archaeological Survey before joining the museum in 1996. Some of his discoveries of human artifacts at one Oklahoma site have challenged his long-held beliefs about the earliest human habitation in the state. The artifacts he found in an ancient pond deposit have pointed to the possibility of human occupation in the region as much as 15,000 years earlier than is generally believed by most archaeologists.

"I didn't want to believe it myself, at first," Wyckoff said. "But I have come to believe that it is possible. Now I feel compelled to see what further evidence may turn up." His field research in the next few years will focus on excavating more ancient pond beds that date from 21,000–22,000 years ago, in hope of finding answers.

Curators conduct research not only to elucidate academic questions, but also often in public service, or under contract to various agencies. Ornithology curator **Gary Schnell** and mammals curator **Michael Mares** conduct research projects on behalf of clients ranging from the Army Corps of Engineers to the Oklahoma Bureau of Investigations. The projects range from the identification of bird feathers to a contract for an ecological study of the effects of various pollutants on Lake Texoma. Mares assisted in identifying remains from the Oklahoma City Federal Building bombing. The museum also seeks "applied" research contracts, the income from which can often help fund other types of research. The museum's expanded resources will make it easier for museum curators to secure these types of contracts in the future. The new facility also will make the museum more attractive to the national organizations and foundations that fund curatorial research, making even greater discoveries possible in the years ahead.

The work of each of the museum's curators is helping to fill in the gaps, piece by painstaking piece, in our understanding of the way the world works. No matter how much is discovered, there are always more questions to be answered. **Steve Westrop**, curator of invertebrate paleontology, has traveled all over the continent in his research and is excited by the vast stores of knowledge still to be obtained.

"There are still places in North America where you can be one of the first scientists ever to look at the region's fossils," he says. "There are still frontiers to be explored."



Gary Schnell