

Yellowstone Science

A quarterly publication devoted to the natural and cultural resources



A Chat with a Grizzly Bear Expert
Carrion Beetles and Biodiversity
Observing Yellowstone Otters

Volume 6

Number 1

Photo courtesy IGBST.



The Legacy of Research

As we begin a new year for *Yellowstone Science* (the journal and, more important, the program), we might consider the value of the varied research undertaken in and around the park. It is popular in some circles to criticize the money we—our society, not just the National Park Service—spend on science. Even many of us who work within a scientific discipline admit that the ever-present “we need more data” can be both a truthful statement and an excuse for not taking a stand.

Researchers themselves are often prone to apologize for not being able to give definitive answers to what may *seem* like simple questions. How many species are there in Yellowstone? How abundant is each one? Should there be more, and what can we do to make it so? Our eagerness to learn and to do right in our mission to conserve the park’s component species and ecological processes makes us anxious to *know* with certainty.

But scientific understanding comes slowly, often with painstaking effort.

As a graduate student I was cautioned that my goal should not be to save the world with my research, but to contribute a small piece of knowledge from a particular time and place to just one discipline. I recalled this advice as I spoke with Nathan Varley, who in this issue shares results of his work on river otters, about his worry that he could not definitively comment about their abundance. Otters have not previously been studied here, and his observations of their behaviors and distribution are a valuable contribution to Yellowstone science.

Sandwiched between two stories of popular favorites is Derek Sikes’ article on carrion beetles. His fascination with the often-overlooked invertebrate fauna comes through with humor as he reminds us how much we have yet to learn about the complex interactions among species,

big and small. Studies of non-charismatic creatures and features are as vital to our understanding the ecosystem as those of megafauna.

For 24 years, Dick Knight studied one of Yellowstone’s most famous and controversial species. With a bluntness atypical of most government bureaucrats, he answered much of what we demanded to know about grizzly bears, never seeking the mantle of fame or limelight that often falls easily upon biologists who study endangered species. At the end of his career he marvels at how much there is still to learn, and leaves us with a rich legacy of research added to the body of knowledge about grizzly bears. For myself and for many others who value the wild creatures of Yellowstone, I say thank you, and farewell.

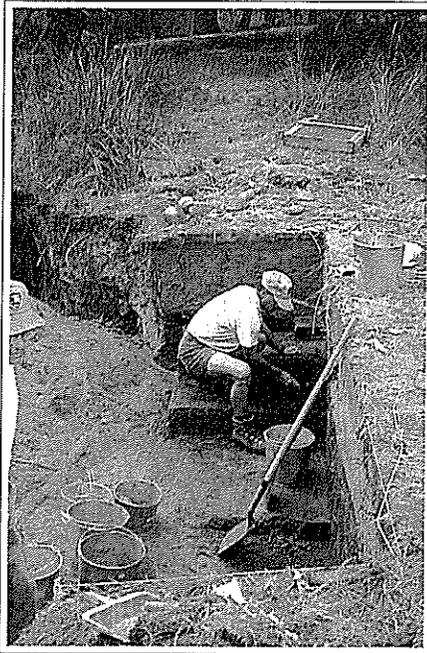
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On the cover: Otter pup. See related story on page 15. Photo courtesy Nathan Varley/Landis Wildlife Films. Above: Archeological fieldwork in Yellowstone. See page 20. Photo courtesy Mack Shortt.

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Yellowstone Science Interview: Richard R. Knight

Holding on to Yellowstone's Grizzlies

A Parting Chat with a 24-year Veteran of
 Yellowstone's Grizzly Bear Wars

Richard R. "Dick" Knight was born in Wyoming and raised in Montana, where he earned bachelor's and master's degrees in wildlife biology. After earning a Ph.D. studying Montana's Sun River elk herd, he was teaching at the University of Idaho when he was lured away. He became the first—and until his retirement in September 1997, the only—head of the Interagency Grizzly Bear Study Team (IGBST), created in the aftermath of a stormy parting between Yellowstone National Park and brothers Frank and John Craighead, who studied grizzly bears in the park from 1959 until 1969. Dr. Knight has published numerous papers on the grizzly bears of Yellowstone and advised managers through thorny controversies since the population was listed as "threatened" under the Endangered Species Act in 1975. He was interviewed for Yellowstone Science in August of 1997 by the editor and John Varley, Director of Yellowstone's Center for Resources, both of whom have had a long profes-

sional association with Dick and his study team.

YS: How did you get started studying bears?

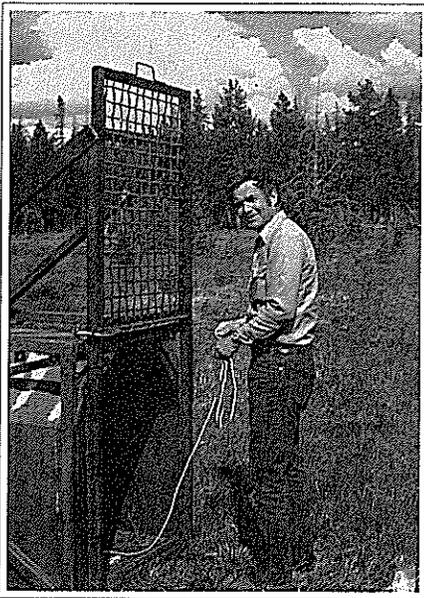
DK: Well, I was tired of teaching. I wanted to get back in the field. I had a lot of contact with bears when I was in the Bob Marshall Wilderness Area in Montana. I was slated to do a grizzly bear study up there, after I was done studying elk and sheep and deer; we never got around to it.

I first started working for Glen Cole [supervisory research biologist for Yellowstone National Park from 1969 to 1975] in Montana, so we're old friends. When I was in Idaho I kept bringing field trips to Yellowstone every year, and I'd have dinner with Glen and Gladys and we'd talk about old times. We had an argument in spring 1972, something to do with natural regulation, and some assumptions that he was making that I didn't think he could make. He just got mad—I didn't get invited to dinner that

night, either!

So, I didn't hear from him until probably August, and he called me up and [said] "Gladys and I were wondering where we'd like to go for Labor Day...and she says, I'd like to go over and visit the Knights in Moscow, Idaho." I said, "Well, the steelhead fishing's good, come over." And I turned to my wife and said "Something's wrong in Yellowstone Park, because Glen never goes anyplace for pleasure; there's something up." The grizzly bear job was coming open, and Glen came over and said, "We've got this position, and I want you to apply for it." **YS:** Did you see changing from waterfowl and ungulates to bears as a career shift, or as fish biologists would when moving from grayling to trout? Were you aware of how controversial it was?

DK: It's just a different animal to work on. If I had known what the next five years were going to be like, I'd still be running the other way! I'd been through a lot of controversies and stuff...but the feds—people stab you in the back for



Dick Knight setting a bear trap. Photo courtesy Bonnie Blanchard.

practice! I wasn't used to all that.

First, I didn't know who was supervising me. No one was—no one really ever has—but I was reporting to Washington, D.C., and I was supposed to be working for Nathaniel Reed [Assistant Secretary of the Interior in 1973]. Eventually I was reporting to the National Park Service's (NPS) chief scientist, then they reassigned me to Bay St. Louis, Mississippi, then Denver, and finally, on paper at least, to Yellowstone National Park.

YS: Did you get much direction in the beginning about your mission and that of the new concept—an independent group of scientists from various agencies, working together to study the ecosystem's grizzly population? Was this on the heels of the National Academy of Science's review of the Craigheads' data and the Park Service's reinterpretation of it? [Ed. note: The rift between the NPS and the Craigheads was largely due to disagreement over whether to abruptly close park garbage dumps, where bears had fed for decades, or to phase the dumps out and wean the bears slowly back to natural foods. It was a time when NPS policy was moving toward what is now called "natural regulation." Debate over what percentage of the bears relied upon the dumps and the size of the ecosystem's grizzly population ultimately led to a National Academy of Science

(NAS) review of the grizzly bear data.]

DK: This was before that started in 1974; I'd been here a while. We'd have these meetings, of a steering committee which was like the IGBC [the present day Interagency Grizzly Bear Committee, made up of senior agency managers]; it had six agencies, and I had advice like you couldn't believe. I had Starker Leopold and Durward Allen putting in their two-cents worth; you had to take their thoughts seriously. These people had great ideas on what to do—I've got a list of them someplace—it's about a foot long of things to look at, with \$47,000 in the budget!

YS: Did that include your salary?

DK: Yep! So I just went ahead and decided what to do. Of course, we couldn't do much since we weren't allowed to tag bears to start with, but we just designed a study and did it. Once a year I'd report to the steering committee and they'd spend most of two days fighting with each other. First it was about whether the bears would be listed or not. The states would be fighting with the feds, and the Forest Service would fight with the Park Service and the Fish and Wildlife Service. About the last half-day, they'd say, "What have you been doing, Dick?" And I'd tell them and I'd go my way for another year.

YS: Wasn't each state and federal land or wildlife management agency in the ecosystem to help fund the IGBST?

DK: The original deal, made in West Yellowstone in 1972, was that everybody would contribute money and a person, and everybody would hire a new biologist that wasn't part of their outfit to become part of the team. Actually, the Park Service was the only one that hired somebody new. Of course, they had to keep the deal, 'cause Nat Reed was overseeing all this stuff. The Fish and Wildlife Service transferred in one of their guys who had just finished another project, and the same with the Forest Service. Wyoming took Larry Roop, who was working with their magazine at that time, and they put him on the team. Montana assigned Ken Greer part time, and Idaho never assigned anybody. Nobody ever gave any money, except Wyoming. Of course, the Fish and Wildlife Service did support their person, and the park and the Forest Service did. After Joe Basile left

the Forest Service, all we got was office space. And when Steve Judd left the Fish and Wildlife Service, they took his money to hire Chris Servheen, [as Grizzly Bear Recovery Coordinator]. Fish and Wildlife Service kept giving us \$25,000 a year for quite a while, but a couple years ago they gave that up because they didn't have the money.

YS: Was it your idea or someone else's that stationed you in Bozeman, associated with the Montana State University campus, a bit removed from Yellowstone and the other land managers?

DK: You know how that happened? At the International Association of Fish and Game Commissioners in 1974, they decided to have a committee on grizzly bears. They said they didn't see how Dick Knight could be objective, since he was right in Yellowstone Park. So, Nat Reed said, "We'll move him to Montana State University." And that was it. I didn't know about it until my boss called me and said, "We're moving you up to Bozeman." I said, "I can't afford to move to Bozeman." He said, "We'll promote you." But the promotion took almost 20 years!

YS: So you were supposed to study bears and you had almost no money, and you couldn't touch them? Why was that? Weren't, if I recall, the "green groups" against trapping and collaring any bears at that time?

DK: There was opposition from all kinds of people. Even some government people were against it because the Craigheads had tagged bears and used radiotelemetry, and they didn't want anything to do with anything the Craigheads had done. So I couldn't radiocollar bears.

We were interested in assessing the population, but the only thing I could do for the first two years was collect bear scats and assess some habitat use. We'd see bears from observation flights and record that, but there was no way that we were going to get any good population data at all, because bears are hard to work with to start with—they're secretive and low density, and it's pretty tough.

I finally got permission to do trapping down at Yellowstone Lake inside the park. I had to use psychology... I went to Glen and [park superintendent from 1967 to 1975] Jack Anderson and said, "we've got these bears down there and I don't

know where they come from and what they do; the Craigheads didn't know anything about this." And they said, "Oh, the Craigheads didn't, eh? Well, maybe we *should* put a couple of radios on."

So that's the way it went. Every time I wanted to tag some bears, I'd write up a special project proposal. It took about five years, until about 1977, before we finally got a widespread trapping effort started. **YS:** In 1975, when the grizzly was listed, the politics were rampant. Were the bears biologically endangered in your view?

DK: They probably were, but I didn't *know* it at that time. In 1974, when we first started talking about it, I said, "I haven't got any data to show one way or another whether they're threatened or not." Nat Reed got a little angry with me because of it, but hell, I couldn't tag, where was I supposed to get the data? But they listed them anyhow; it was done strictly on politics.

YS: Did you have any notion that listing—not the process of listing, but the fact that the bears were listed—would be as complicated as it is?

DK: No, I don't think anybody did. It was all new—the Endangered Species Act was new; it was a great thing.

YS: Did you have access to the Craigheads' data when you first started?

DK: No. Well, I had all of their reports; they had publications, such as the one they came out with in 1974.

YS: Were the Craigheads right or wrong?

DK: Well, they weren't *all* right, and they weren't *all* wrong, either. By phasing the dumps out slowly, I believe it would just have caused more bears to learn to eat at dumps over a longer period of time, then they'd be fighting over what was available at the dumps—decreasing amounts of food. It wouldn't have done the bear population any good. So I think that closing the dumps abruptly was the way to do it. But that had a traumatic effect on the bear population, and the Park Service did not foresee all of what was going to happen. They should have had a big campground management and bear management program in place before they did it; a lot of bears just disappeared during that time. They weren't necessarily *killed*, but they were transplanted and never came back. Glen told me that bears would come into the campgrounds, and that they



had an 83 percent success rate at transplanting bears. Well, we've *never* had that. You get an adult bear, it's pretty hard to move them far enough to where they don't come back. The only two adult bears we've moved successfully went to Canada.

YS: Did you work outside the park much in those days, and did you see bears in Idaho, and in the Big Sky area of Montana—places where they are thought to be expanding today?

DK: Occasionally you'd get one in Idaho...in the early 1970s we had one in the Yellow Mules, and in Buck Creek, northwest of the park, but we weren't doing a lot of work over there. In Cabin Creek [*also on the Gallatin National Forest*] we did a lot of work, and we had a lot of bears in that area, which we don't have anymore.

YS: What do you suppose happened to them?

DK: People.

YS: People shooting? People just living?

DK: We hear rumors about people who have shot bears up there, but then it's just a pretty popular spot; a lot of people go through there.

YS: When I first came to Yellowstone in 1982, I'd hear "there aren't any grizzlies in the Tetons, it's safer to camp there, safer to hike." A friend of mine was a resource manager, and in 1986 he was pulling in non-bear-proof garbage cans at night from around the park housing area, because even the staff had the attitude that they didn't have to deal with grizzly

bears. And he thought they were there. Were there grizzly bears in the Tetons the whole time?

DK: I think there were a few, not very many. Up around Berry Creek, in the northern end of Grand Teton National Park, there have always been grizzly bears. But they're adventurous and they move around, especially in a bad food year.

YS: We hear a lot today about a change in distribution of grizzlies, as well as an increase in bears. We sometimes even get told that we don't have more bears, they're just all leaving the park.

DK: Well, none of the radioed bears have left the park. We just have a big increase in bears in Wyoming—that's where they're going, that's where they've got the habitat. And Wyoming is really interested in bear management. We've lost bears on the west side [*of the park*], I think.

YS: I remember the trappers taking grizzlies off of domestic sheep grazing allotments on the west side of the Tetons. Wasn't there quite a controversy when the Forest Service tried to eliminate sheep allotments?

DK: We were really involved in that. The Gallatin and Targhee [*national forests adjacent to Yellowstone*] supervisors just didn't want to believe that grizzly bears and sheep couldn't coexist. But we got the allotments out.

YS: So sheep and grizzly bears are truly incompatible?

DK: Well, it's the *herders* that are incom-

YS: So sheep and grizzly bears are truly incompatible?

DK: Well, it's the *herders* that are incompatible; grizzly bears really *like* sheep!

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YS: Early on, were you concerned about the levels of bear mortalities, either by park managers or by hunters? They were still legally hunting bears outside the park until 1975, when the bear was listed.

DK: I didn't know; you couldn't be concerned about mortality cause you didn't know what the size of the population was. We were removing bears inside the park when they got into trouble, because we didn't know any better. It had to be done. It wasn't until about 1980 that we had a suspicion that we didn't have as many bears as we'd thought. By 1982, I had the data to show it.

YS: What's the story behind the famous "Ro Wauer" memo? [*Ed. note: Wauer, a biologist from the NPS's Washington Office, wrote a memo about the grizzlies' declining population which prompted high-level concern and resulted in the agencies banding together to create the Interagency Grizzly Bear Committee (IGBC), which still operates today.*]

DK: I was talking to John Townsley [*park superintendent from 1975 to 1982*]; he'd been listening to me since 1980, but nobody else really was—it was just like the bear wasn't listed... We had enough data to show we had a declining population. And I went to Ro and said, "Look, we're going downhill fast and we've got to do something." And I gave him all the stuff, and he wrote that memo to the Steering Committee and leaked it to the press, and got transferred to the Virgin Islands for it! He was probably happy about it. But the upshot was, they created the IGBC, and the land managers started taking grizzly bear management seriously, specifically by targeting adult female mortality, really all mortalities.

YS: When the bear population was at a low point, I remember a huge debate over "saturation trapping" versus sampling. Can you explain the alternatives we were talking about and which you would have preferred to do?

DK: Sampling was going along the way we were, getting data at the same rate we

were. With saturation trapping, you could get a whole lot of data at once, which would have been good. But you've still got 9,000 square miles of mountainous terrain to deal with, and where are you going to trap? You're not going to find the money; it's a great dream. Even now with the DNA sampling, you can't put that many baits out. And there weren't that many people working on bears at that time. We had five or six experienced bear trappers, maybe, in the U.S., and they were working for other people; they had jobs of their own. Saturation trapping just wasn't feasible.

YS: Then it became a big debate about how many female grizzlies you would trap and radio collar.

DK: That was the IGBC. It was 1983 when it began—that was the end of the Steering Committee—and IGBC took responsibility for all the bears in all ecosystems. There used to be an argument about how many bears we should trap. For a while they'd say, only trap females, so we'd only trap females and let the males go, but the next thing you know, they'd want me to make a population estimate. And I would say, "Well, you know, a population estimate includes males, and so we'd better start trapping males." Pretty soon, they let us scientists go our own way, and we did as much as we could; that's what we've always done—as much as we can with the money we've got.

YS: Were you involved in the park's effort that started about that same time, perhaps because of the memo, to write the *Grizzly Bear Management Plan*? In the paper trail, that's the first time we clearly said we have to limit bear mortalities, and we've got to get serious about some other things. We set up the bear management areas, called "human use adjustment areas" at the time, until Bob Barbee [*park superintendent from 1983 to 1994*] kept telling me to quit using that term; it just didn't sell well. What was the rationale behind the bear management areas?

DK: We had a lot of the rangers talk it over. They were some of the areas where we knew we had pretty good concentrations of bears, and those were the ones in which we restricted human use during specific times or areas—places like the Gallatin Range. It's one of our best cub-producing areas, and I was really adamant about getting that closed to off-trail traffic. People are still trying to get that opened back up. We took a field trip through there in 1993 or '94, a couple of park rangers and an outfitter and I, and we showed them what we were talking about. The wildlife there are different. When you see a couple thousand elk running away from you, in obvious panic, it makes a big impression.

Antelope Creek was an area that at the time didn't have a lot of bears but had a lot of people use, and it was an area we thought we could close off—that was the most successful thing we've ever done, that closure. Now it's a place people can go and see bears, and it wasn't that way before the park closed it.

YS: Some of the debate over grizzly bear management through the years has been about whether science and management were separate enough, or worked closely together enough. One of the criticisms from the Craighead days was that when the scientists were doing bear management, too, it affected their objectivity as data collectors and analyzers. Do you think that was true of you?

DK: No, I don't think so. I wasn't doing bear management; I was advising. We at the IGBST have always worked closely with the managers, especially the park. Some outside scientists think that when a publication would come out, the managers would have the data. I thought they probably should have access to this stuff as soon as you've got it. The quicker you use it, the better off you're going to be. I think that's been one of the big things that's been successful for the grizzly bear in Yellowstone—the fact that research and management worked closely together.

YS: Were you involved at all in the human fatalities caused by grizzlies, and did it surprise you when it happened?

DK: Well, in some of them, I was involved. It's always shocking when that happens, and in most cases, there's a rea-

son for it. But some of them, like Brigitta Fredenhagen in Pelican Valley in 1984 and the guy over in West Yellowstone [William Robert May in 1982]...boy, those were just unexplained; these were people that did everything right as far as we could tell. Some bears are just like that.

YS: You trapped how many bears in 20 years?

DK: We're at 289 or something.

YS: Were you ever in a situation where you thought your life was threatened by a bear?

DK: Well, with bear #25, which I had to kill. It was in 1977 over at Mack's Inn, in willows along the Henry's Fork at Island Park, Idaho, where many people were fishing. She had two cubs-of-the-year. Somebody living there shot her in the rear "in self-defense"—she was eating food on the porch—and also shot one of the "monster" 40-pound cubs. We knew she was wounded so we had to go check and see how badly, and see whether or not we could just leave her there, or what. Boy, she turned out to be not only fairly badly wounded, shot bad in the hindquarter, but also pretty feisty. We were only about 15 to 20 feet away and she just got up and charged us, and we didn't have any choice. You can tell a bear that's coming for you as against one that's bluffing you—in the same way you can tell a dog that'll do the same thing. You can tell if they mean business or not, and this bear was not bluffing. When they grunt like a pig, that's time to watch out, because their exertion means they are out to get you.

YS: Dick, a number of people have said that this project—your project—has the best database on brown bears in the world. That presumes that you know the most about them of anybody in the world. How would you characterize your study object? After looking at them for all these many years, what are they like?

DK: Well...they're just out there trying to make a living, like anybody else. They



are a very interesting animal; they're more fun to watch than an elk, or a deer, because they do have so many different kinds of mannerisms. And you never know what one's going to do next. There's an occasional bad apple, just like there are people—but there's probably fewer of them among the grizzly bear population, so to speak, than among people!

They're just trying to go their way and mind their own business, except that when it comes to food, that's a very *big* part of their business. And if you've got some, they'll want it! That's all. Once you understand, I don't think they're any more dangerous than any other animal.

YS: One time you told me, maybe a dozen years ago, that about the time you think you're ready to generalize about the grizzly bear, well, just wait until the next summer and they'll turn around and do something entirely different. They must be very versatile.

DK: That's right. And it's still true. They are very, very versatile. And they keep learning new tricks every year; we haven't seen them all yet. We've never had a year that was just like any other year, they're all a little bit different. All of a sudden the bears will come up with some new food item that they'll eat. And we've got some food items out there that they apparently haven't discovered yet.

YS: In the 1970s, greater Yellowstone was characterized as poor grizzly habitat. Do you still think that's the case?

DK: No, I don't think so. I think we thought it was poor because when you start looking at the lodgepole pine desert, so to speak, there's a lot of the ecosystem that isn't very productive as far as bear foods are concerned. But at times, it has a great mushroom crop and other things. Bears work mostly on microhabitats, and so there's always a bunch of little microhabitats in places, even in all that lodgepole, so they can find something to eat. Bears are learning more all the time how to use this habitat.

YS: Was it partly a matter of *our* learning, too? Did we think that bears ate berries, because that's what they were seen to do in other places, so we assumed that not having many berries made it poor habitat?

DK: Sure. I think a lot of their food habits were characterized from other places, and they'll eat almost anything.

YS: So, when one of our critics says we ought to get rid of all the elk so we can grow more berry bushes, how would you respond to that?

DK: I'd say that elk are a much better source of forage than berries. And the berries that would come back if all the elk were gone are not the kind of berries that bears eat anyway—snowberries, I mean. A snowberry is probably some of the stuff that elk are eating out; that probably hurts grouse but it doesn't bother bears any, because the elk are much better eating.

YS: I remember you saying that in the early 1980s you had seen grizzly bears stalk elk for the first time. Do you think

“You can tell a bear that's coming for you as against one that's bluffing you—in the same way you can tell a dog that'll do the same thing. You can tell if they mean business or not, and this bear was not bluffing. When they grunt like a pig, that's time to watch out, because their exertion means they are out to get you.”
