

Paul Schullery
John D. Varley

Box 65: Commentary from the GWS Office and our members

The Yellowstone Genetic Reservoir Quandaries and Consequences of Exotic Introductions in Yellowstone National Park: A Conversation Between a Science Person and a Humanities Person

Introduction

We all know that some of the most satisfying and stimulating considerations of National Park Service policy take place not in the pages of our favorite journals, but in hallways, standing next to coffee machines, or wandering down some trail with a colleague. In fact, it often has seemed to us that by the time the thoughts of our various graybeards and sages find their way into print, a lot has been lost. The spontaneity, the give-and-take, and the creative energy generated by actual conversations are pared away either by the author, who doesn't want to sound too much like a one-person encounter group, or by the author's various reviewers, who were trained in the best professional tradition of flat, emotionless prose.

The assignment of a keynote address at a recent scientific conference on exotic species in the Greater Yellowstone Ecosystem gave us the opportunity to reconstruct elements of many conversations that we have either participated in or eavesdropped on. The following conversation was delivered at the conference with a fair amount of dramatic bombast (we considered wearing costumes, but couldn't locate a pith helmet for the science person), and a gratifying amount of audience reaction. Maybe this conversational format is a good way to explore philosophically messy issues. Maybe we can start a trend.

Or not. We recognize that though

this argument and others essentially like it on a hundred other subjects occur regularly in park office hallways, we can't really achieve the perfect imitation of such talk. For one thing, people don't actually converse like this, in relatively continuous narrative with complete sentences. Most of us ramble, edit ourselves in mid-sentence, hem and haw, and get distracted by everything from doughnuts to the latest Superintendent Joke. But we do think that this little dialogue creates what we might call a reasonable illusion of such conversations. The spirit is there.

The conversation takes the form

of an exchange between a humanities person and a science person. As near as we can tell, the science person has just launched a little lecture on the complexities and perils of exotic species management, but is only a few minutes into it when he is interrupted by the humanities person. They differ, they instruct, they decide little, but somehow they seem to have accomplished something.

Or not.

Science Person: “In considering the fate of places like Yellowstone National Park, most scientists and conservationists would likely agree that the preservation of native species must be an essential goal. In Yellowstone, in fact, we like to celebrate the reality that the park is likely the only place in the lower 48 states that currently has all of the known wild flora and fauna that were here when Euroamericans began changing the face of the continent 500 years ago.

“We’re pretty proud of this, but as a celebratory claim it may be just a little too simple and a little too pat to withstand either regulatory or scientific scrutiny. Consider, for example, the complications of defining exactly what a native species truly is. Our own (NPS Management Policies and NPS-77) guidance is clear at first glance—but maybe not:

Native species. A species that occurs and evolves naturally without human intervention or manipulation. Species that move into an area without the direct or indirect aid of humans are considered native by NPS definition.

“Notice that this definition is

more or less circular—in order to define a word, they use another form of that same word. A *native* species results from *natural* processes. Now for day-to-day working purposes, most of us have a pretty good idea of what a natural process is, but it is just this sort of imprecise language that makes our most outspoken critics froth incoherently, and even makes our friends uneasy.

“Not that we have any choice but imprecision when describing these elegantly complex processes that we are *somehow* supposed to be managing. But we probably are being too easy on ourselves when we’re this vague about what we’re doing.

“There was a time when, for many managers and park enthusiasts, it seemed adequate to define success in terms of how well a park replicated its condition when it was established. This was the often-misunderstood “vignette of primitive America” approach, in which the famous Leopold Report (1963) was invoked as suggesting that we preserve biological snapshots of the parks as they were when created.

“Of course Starker Leopold and his colleagues knew it wasn’t that simple—they made it clear that we must consider ecological process and all the change it brings. Starker and his pals knew that the vignette was a *moving target*, never the same from day to day. The vignette Starker had in mind was not a snapshot but a *motion picture*, continuously playing. Starker, like all the rest of us, had his own set of ideas about how freely we

could let it play, but he knew that it must spend most of its time playing without our interference.

"But as a management goal, the vignette of primitive America haunts us and routinely demands our attention. How do you reconcile the fluctuations that characterize wild ecosystems, especially over the long haul, with our desire to protect favored native species?"

"Most of us long ago recognized that there is no magic date at which a park setting achieved appropriateness. Even the current policy guidelines, known confusingly as NPS-77, admits this. NPS-77, published in 1988, in attempting to define "historic conditions," admitted that we are attempting something very involved here by saying that historic conditions are "those ecological *processes* for which a natural or historic area is being managed." This helps some, but it still doesn't clarify the nativeness question.

"Let's turn to the opposite of native and see if there's help there. According to NPS-77, the definition for an exotic is the reverse of native:

Exotic species. A species occurring in a given place as a result of direct or indirect, deliberate, or accidental actions by humans.

"At least this definition has the advantage of not using the words "native" or "natural," but it still ties managers in some fascinating theoretical knots. Rhetorical specialists delight in dismantling this kind of simplistic statement."

Humanities Person: "So, the policy tells us that humans can introduce exotics, but can't introduce new native species?"

Science Person: "Right. That's the rule."

HP: "Well, how about humans who were here 5,000 years ago? Or 510? We can only guess what all effects the Indians might have had, either accidentally or on purpose, and how often they moved species around during their 10,000-year stewardship of the Yellowstone area."

SP: "Oh, well, everybody knows that Indians don't count in this discussion."

HP: "Why not? It looks to me like they might have had some pretty big effects. That's what all the environmental historians and archaeologists are telling us, anyway. And even if their effects were small, we don't have them any more."

SP: "No doubt about it. They probably had some big effects, and some small ones. But all that happened before we got here. It's part of the deal. Read the policy. Everything they did before we got here is part of what's defined as natural."

HP: "So Indian influences before 1872 or whatever date you choose are part of the natural setting?"

SP: "Sure, just as long as their influences happened before Euroamericans had any influences *on* those Indians."

HP: "But as soon as we Euro-trash got here, the rules changed, and everything we did was unnatural?"

SP: "Right."

HP: "But we changed the Indian cultures too."

SP: "Oh, it was a lot worse than that. We didn't just change them; we obliterated some of them. It was an unspeakably brutal destruction of millions of humans and hundreds of cultural traditions. It was horrible."

HP: "So how can you ignore it?"

SP: "I'm not ignoring it. It was humanity at our most inhumane, and it destroyed civilizations and ways of life that had been flourishing for thousands of years."

HP: "That's my point: if we changed what the Indians were doing on the landscape, how could the landscape still be natural? And, what's more, once we started establishing national parks, we *removed* all the Indians, so their influences stopped occurring! How can it be a natural system today if it lacks those influences?"

SP: "Everybody asks that. They always ask that like they've just discovered some sinister plot. You don't think that's a new question, do you?"

HP: "Well, maybe I did. But what do you say when someone asks?"

SP: "I tell them that it's not a perfect plan we have going here. I tell them that it's not *my* fault, or the fault of *any* modern manager, that we inherited a landscape and a policy with that kind of disjunction in it. I also point out to them that it's a sure thing that Indian influences certainly changed hugely over the thousands of years they were in charge here, and that their removal in no way means that the system must collapse."

HP: "Well, I guess that *might* make a kind of sense. After all, hardly anybody still believes in the balance of nature as a steady state any more."

SP: "Right. It's always changing anyway. Just because we removed the wolves and grizzly bears from Yosemite doesn't mean that the park isn't still wild. It's just different, and a little less exciting to us. It's still nature, out there being spontaneous."

HP: "You're saying that what we have is better than nothing?"

SP: "I'm saying that what we inherited from the first managers of these parks is kind of a redefined natural setting. It has pretty much everything we know how to let it have except those American Indian influences. So when people complain that the parks aren't perfect, I welcome them to the real world of conservation. Then they say—and they always think they're the first person to think of this, too—that maybe we should restore the influences of Indians to the parks."

HP: "Yeah! What's your answer to that?"

SP: "My answer is more questions. I ask them which influences, from when, over the course of the past 10,000 years, are they going to choose? Do you want people with atlatls, or people with bows and arrows? Do you want hunter-gatherers or agrarians?"

HP: "I think it's obvious that you want the people who are most like the people who were here when our greedy ancestors booted them out."

SP: “Oh, you refer perhaps to the forty-five different tribes who all claim some cultural affiliation with Yellowstone? And how are you going to decide which of them gets to have which effects? They have wonderful, informative traditions, but they can’t tell you much about how many of them visited here or lived here at any given time.”

HP: “We don’t have to be precise about that, do we? After all, *they* weren’t. They didn’t have a game management manual to tell them how many elk to kill each year. As you said, their use of the park probably changed a lot from year to year. Some tribes probably preferred elk, others bison or sheep. Some probably just gathered plants. It was all pretty loose.”

SP: “No question about it. But modern white people aren’t that easy-going about this sort of thing. Our friends in the various constituency groups, including the Indian tribes, are going to want to know how this is going to work. What is each citizen’s fair share of Yellowstone? How many elk are you going to prescribe for each of their hunting parties? How many will be left to migrate out to where the white hunters are allowed to shoot at them? And let’s not forget the atl-atls; what tools and weapons will these ‘new’ native humans use?”

HP: “Well, obviously we should have people whose technology is most like that used by the people who were occupying the park closest to our time, like 1872.”

SP: “Ah, yes; what you want is the American Indian side of the ‘snapshot’ that Starker and his pals were criticized for.”

HP: “What do you mean?”

SP: “I mean, you’re proposing to do the same thing to the Indians that the armchair philosophers want to do to the rest of the setting. You’re prescribing how it should be now, based solely on how we think it once was.”

HP: “But we want the Indian influences to resemble their prehistoric influences, don’t we?”

SP: “But the Indians in 1872 weren’t prehistoric. They were riding horses they’d only had for a century or so, and they were using firearms.”

HP: “Okay, then we go back to before Columbus got here. It makes the most sense for them to have the same kinds of influences they had before whites got here.”

SP: “Maybe to you that makes sense, but ask some Indians.”

HP: “I would think they’d be pleased to get back in the area and resume some of their activities.”

SP: “I imagine they would. I understand they’ve never completely stopped.”

HP: “So what’s the problem? Why won’t that work?”

SP: “Because these aren’t the same people. These are the great-great-great-great-great-great-grandchildren of the people you want. The complaint I hear from them in this context—and this has come up in other parks—is that we’re treating them as cultural artifacts. We’re asking them to abandon the past cen-

ture's developments in their cultures in order to fit into our little wilderness scenario."

HP: "How are we asking them to do that?"

SP: "Well, you don't want them to come in here with rifles and ATVs, do you?"

HP: "Of course not; that's not how it was."

SP: "Neither are they. Their society, like every society, has continued to evolve. In fact, and ironically, they've had to evolve so fast just to survive in the face of Euroamerican culture. They have rifles now. Why should they give them up just to suit some white guy's quaint idea of how nature ought to look? They don't feel any obligation to walk around being our personal museums of how Indians are supposed to be."

HP: "Well, then maybe we don't need real Indians. Maybe we just need volunteers who are willing to go out and pretend they're Indians. There are lots of people who would love to hunt in Yellowstone, and some of them would do it on whatever terms were offered. Or maybe we could use staff professionals trained in primitive hunting techniques to go out there and do to the animals the anthropological equivalent of what we do to the plants when we have controlled burns."

SP: "You mean replicating nature because we aren't patient enough to wait for nature to act?"

HP: "Sure! The goal isn't so much to restore Indians to the landscape as it

is to restore some semblance of their *influences* on the landscape."

SP: "Are you sure about that?"

HP: "Well, I thought I was, but I suspect I'm about to be told why I shouldn't be."

SP: "Well, by your line of argument, we don't need wolves, either. We just need a bunch of trained professionals to go out there and replicate the effects that wolves would have by hunting elk. You know—whacking the old and the young, leaving some carcasses around for grizzly bears and ravens, digesting a lot of elk meat and defecating here and there on the landscape to recycle the nutrients."

HP: "That's absurd."

SP: "So are your artificial Indians."

HP: "It's all academic anyway. When people ask about restoring the influences of Indians to Yellowstone, I tell them there's no chance. However intriguing or appealing it may be to discuss the possibility of restoring such influences, there isn't the faintest chance that we could convince the park's horrendously divisive and litigious constituencies that such a thing should be done."

SP: "Are you really sure? Sounds to me like with a little salesmanship, the re-enfranchisement of American Indians into these last parcels of American wilderness would have vast romantic appeal to the public."

HP: "Could be, but when that EIS appears on the horizon, I'm taking early retirement. It'll be in court for a hundred years."

SP: "Well, let me continue. The complications of dealing with exotic

species extend far beyond the quandaries of historical definition and cultural evolution. Though most legal authorities, conservationists, and conservation biologists agree that exotic species (by almost anyone's definition) are inappropriate in national parks, past management actions have resulted in 'gray areas' that occasionally confound current park managers.

"Let us consider what we think of as the 'accidental museum effect' that has arisen repeatedly in Yellowstone, and will no doubt surface more in the future.

"For the past few years, Yellowstone has been the site of one of many pitched battles against non-native species. These are battles that never made *The New York Times* the hundreds of times they have occurred somewhere else, but that became international news when the word 'Yellowstone' could be attached to the story. The Yellowstone battle is our attempt to save the native Yellowstone cutthroat trout in Yellowstone Lake from an introduced population of lake trout. Lake trout had been in other lakes in the park for a century or so without arousing much hostility, but the day they were discovered in Yellowstone Lake, our outrage knew no bounds, and war was declared. Some of us still harbor hopes of finding the vile miscreant who did this awful thing. The tendency among many of us has been to treat the lake trout as the villain, when it is only the tool of the real villain. In fact, the lake trout is

one of the park's most valuable non-native species. While we would give almost anything to get them out of Yellowstone Lake, there are other park waters where we would probably not get rid of them if we could."

HP: "Wait a minute. National Park Service policy is pretty clear on this. It says: "Control or eradication will be undertaken, where feasible, if exotic species threaten to alter natural ecosystems; [or] seriously restrict, prey on, or compete with native populations." That sounds exactly like what lake trout are doing. If we could get rid of them, we would. Wouldn't we?"

SP: "You're right, but, as the saying goes, something has come up. The lake trout in other park lakes, such as Lewis Lake, were put there a long time ago, and left alone. Meanwhile, back in the Great Lakes where they came from, fisheries managers and fishermen have suffered through a century's worth of disasters that pretty much ruined their lake trout populations. A few years ago they looked around and discovered that out here in Yellowstone we had this nice, safe little population, museum-pure just like they'd left it a century ago."

HP: "I doubt that."

SP: "You doubt what?"

HP: "That the Lewis Lake population is museum pure. It's had a whole century to adapt to a new environment: different water chemistry, different food, different everything. It can't possibly be the same fish it was 100 years ago."

SP: “Well, okay, it’s not perfect. Welcome to the national parks. But it’s a really good imitation of perfect, by the standards of fisheries managers. In fact, it’s terrific.”

HP: “So? What’s the problem? We give these Great Lakes guys some fish to solve their problem, and as soon as we have the technology, we nuke the rest of them. The policy says that Lewis Lake should be restored to its pristine condition.”

SP: “I don’t think you’re embracing the spirit of this enterprise. As with so many complex management situations, we don’t know enough to know what we don’t know. The Lewis Lake population of lake trout is now a unique genetic resource. There were any number of isolated plantings of fish in various park waters in the early days. Several species were involved, and they’re still out there cranking along in remote little populations. We don’t know how many of them may turn out to be significant to fisheries managers somewhere else. It’s hard to find a pure ‘original’ strain of rainbow trout in the lower 48, and it’s getting pretty hard to find a pure strain of brookie. Right now in Yellowstone, we may have some of the purest distinct strains of the legendary Loch Leven and Von Behr brown trout, both European and not at all ecologically appropriate here.”

HP: “So you’re saying that we don’t dare get rid of any of our exotics, just on the off chance that someone back home may need them? That’s mighty generous of us.”

SP: “No, I’m just saying that if we ever get the technology to wipe out some of these non-natives, we’d better ask around and make sure that what we have isn’t irreplaceable. One man’s pest is another man’s treasure.”

HP: “By that line of thinking we might as well put up a sign that says ‘Yellowstone National Species Stockpile,’ and just take everything anybody offers us.”

SP: “Don’t joke about it; there are actually people out there who think that’s a good idea. Yellowstone isn’t the only place this sort of thing goes on, and sometimes policy actually makes allowances for it. Some good examples in this regard are historic cultivars—varieties of domesticated ornamental or crop plants that may be genetically or morphologically distinct from contemporary varieties. Antique apple trees still growing at historic homestead units of the national park system come to mind. Our policy also makes allowances for ‘minor breeds,’ as they are called—rare genetic variants of common domestic species of very limited population size or range. The Assateague-Chincoteague ponies may fall into this category.”

HP: “But they’re exotic. It would be like introducing pandas to the Great Smoky Mountains.”

SP: “That’s been talked about, too. Some people would argue that if the United States has one really good piece of habitat that might ensure the survival of a genuinely threatened species somewhere else on the

planet, we'd be selfish and parochial not to adapt our policy a little bit and do the right thing on a global scale."

HP: "But where would it end? Once you break your own rule, you've got

no standard left. Anybody could get away with anything. How will you know right from wrong?"

SP: "Who said we ever did?"

Paul Schullery and **John D. Varley** are both at Yellowstone National Park.

Reminder: this column is open to all GWS members. We welcome lively, provocative, informed opinion on anything in the world of parks and protected areas. The submission guidelines are the same as for other GEORGE WRIGHT FORUM articles—please refer to the inside back cover of any issue. The views in "Box 65" are those of the author(s) and do not necessarily reflect the official position of The George Wright Society.

