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Transactions of the Eighty-Second North American Wildlife and Natural Resources Conference

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The Wildlife Management Institute
appreciates and respectfully acknowledges the special
assistance and cooperation of these partners.

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82nd North American Wildlife and Natural Resources Conference

Welcome and Opening Remarks

Steve Williams
Wildlife Management Institute
Gardners, Pennsylvania

Welcome to the 82nd North American Wildlife and Natural Resources Conference here in Spokane, Washington. I thank you all for participating and offer special thanks to our state agency, federal agency, nongovernmental organizations (NGOs), businesses, industries, and exhibitors for your financial support to help make this conference successful. In addition, Wildlife Management Institute (WMI) thanks all the special session chairs, workshop chairs, and the speakers for addressing some of the most pressing conservation challenges facing our nation. Finally, thank you Jim Unsworth for your welcome to the great state of Washington.

Once again, the federal government is in the process of transition—in this case, with a change in the political party in power both at the White House and on Capitol Hill. We recognize the recent confirmation of Ryan Zinke as the Secretary of the Interior and await a decision on the Secretary of Agriculture nominee, Sonny Perdue. It is too early to speculate about the path forward for these federal departments but the rumored budget cuts at EPA, Interior, and Agriculture demand our attention and advocacy in support of the tried-and-true conservation programs provided by these federal funds.

So many challenges face our community—sustainable funding, balancing energy development with landscape conservation, the threat of large-scale federal land transfer, agency funding levels, wildfire funding, wild horse and burro management, Endangered Species Act reform, Farm Bill incentive programs for private land conservation, active management of federal lands. The list goes on. However, two other issues are of equal or greater importance to the future success of our collective efforts.

First, is the issue of conservation relevancy. The Blue Ribbon Panel concluded that this issue must and will be addressed. In large measure, the late Dr. Stephen Kellert, a giant in the field of social ecology and a Professor Emeritus at Yale University, helped set that course. Dr. Kellert's contributions to our profession should be recognized and celebrated. He authored more than 150 publications, most focused on the necessity of humans' connection with nature. Dr. Kellert cautioned us all: "… we must remain true to our biology, which is rooted in nature," he wrote. "If we stray too far from our inherited dependence on the natural world, we do so at our own peril."

Recognizing the need to adapt to social change, agency efforts across the country have started to change the way we manage public trust resources. The Wildlife Governance Principles' workshops and presentations promise to transform how agencies serve the public. Efforts to incorporate human dimensions research into agency programs are slowly but steadily growing. Marketing and social media efforts are increasing in an effort to better understand and reach out to the public. When we recognize the advantage of incorporating social sciences and economic impacts into our programs, we will step to another level in the evolution of the 21st century fish and wildlife profession.

The second issue we must address is the strained relationship between federal conservation agencies and state fish and wildlife agencies. The tension and conflict between these two levels of government is nothing new but can be nearly paralyzing. De-escalation of this conflict is critical for the future of natural resource management. There are numerous reasons for the conflict, but I believe they center on the issues of respect, trust, and leadership. Federal and state agencies must recognize the respective commitment and expertise of their counterparts to effectively conserve our natural resources. This recognition leads to respect for each other's capabilities. Building trust among partners may be a difficult endeavor but one that is essential for collaborative work. Trust is built by developing personal and professional relationships one on one, at all levels of organizations. It takes time and a conscious

effort to understand rather than to criticize. Finally, it will require leadership at both state and federal levels to communicate the importance of cooperation and collaboration between agencies. Leaders must never falter in their mission to strengthen the relationship between state and federal agencies. It must be Job One.

WMI is doing its best to contribute to conservation relevancy and leadership. We continue to serve on the Blue Ribbon Panel and are partners in the Wildlife Governance Principles' effort. WMI has provided national leadership in the recruitment, retention, and reactivation of our nations' hunters and anglers. We are actively enhancing partnerships among state and federal agencies and the industries that support the Wildlife Restoration Program. Our work in the northeast, Appalachian, and Great Lakes regions is making habitat management relevant for private and industrial forest owners. Our programmatic evaluations have focused, in part, on the necessity of public engagement, an engagement that makes programs relevant to a larger public audience. We are committed to serving the entire profession—state and federal agencies, NGOs, and the industries that support conservation efforts.

This conference continues its commitment to the profession. We do our best to provide topical issues for discussion. The conference has again focused largely on the relevancy of conservation to the American public. Dave Case, our next presenter, will highlight the results of an unprecedented, scientific survey of the American public with respect to their understanding and connection to nature. This work, carried out in conjunction with Dr. Kellert, is extremely important to all conference participants. It demonstrates Americans' connection to nature regardless of their place of home and work, gender, race, or ethnicity. I believe it will help us connect with a broader audience and guide our agency programs for the future.

Tovar Cerulli will conclude the plenary session with a thoughtful examination of his transformational experience from an observer of nature to a participant in nature. His comments should broaden your horizon about whom you serve in your role as a fish and wildlife conservationist.

Thank you for participating in this conference—and I thank you for your dedication to fish and wildlife conservation.

The Nature of Americans: A National Initiative to Understand and Connect Americans and Nature

Stephen R. Kellert
Yale University
New Haven, Connecticut

David J. Case
DJ Case & Associates
Mishawaka, Indiana

Daniel Escher
DJ Case & Associates
Seattle, Washington

Daniel J. Witter
DJ Case & Associates
Mishawaka, Indiana

Jessica Mikels-Carrasco
DJ Case & Associates
Mishawaka, Indiana

Phil T. Seng
DJ Case & Associates
Mishawaka, Indiana

Profound changes are occurring in the American public's connections to nature, the outdoors, and wildlife. At the same time, there is a growing body of evidence that contact with nature is not just a recreational amenity but is fundamental to human health and well-being.

In 2011, DJ Case staff gathered with Dr. Kellert at our office to explore how to better understand and foster Americans' relationship with nature. As Steve Williams said, Dr. Kellert has been a leader—I would offer, *the* leader—in researching and articulating the importance of contact with nature to human health and well-being.

The result of that meeting in 2011 was "The Nature of Americans—A National Initiative to Understand and Connect Americans and Nature"—the subject of my comments this morning.

It's been an honor for the social scientists and other staff at DJ Case to work alongside Dr. Kellert, and it's a privilege to stand here before you this morning to share some of the results of this unprecedented effort.

I'd like to extend my gratitude to the partners in this initiative. Special thanks go to Carter Smith, the director in Texas; Nick Wiley, the director in Florida; former USFWS Director Dan Ashe; and Kim Sams and Beth Stephens at Disney for their early leadership and support of this initiative.

The "understanding" part of the initiative included three major research efforts conducted in 2015 and 2016: focus groups across the country with a wide spectrum of adult Americans; a representative online survey of more than 10,000 adult Americans; and interviews with 771 8- to 12-year-old children conducted via webcam interviews. For each of those children, we also conducted an online survey of one of their parents.

We have a mountain of data—actually, we have a mountain *range* of results, findings, and recommendations. This presentation is really a sneak peek at the results, if you will. Formal public release of the results will start at a later date.

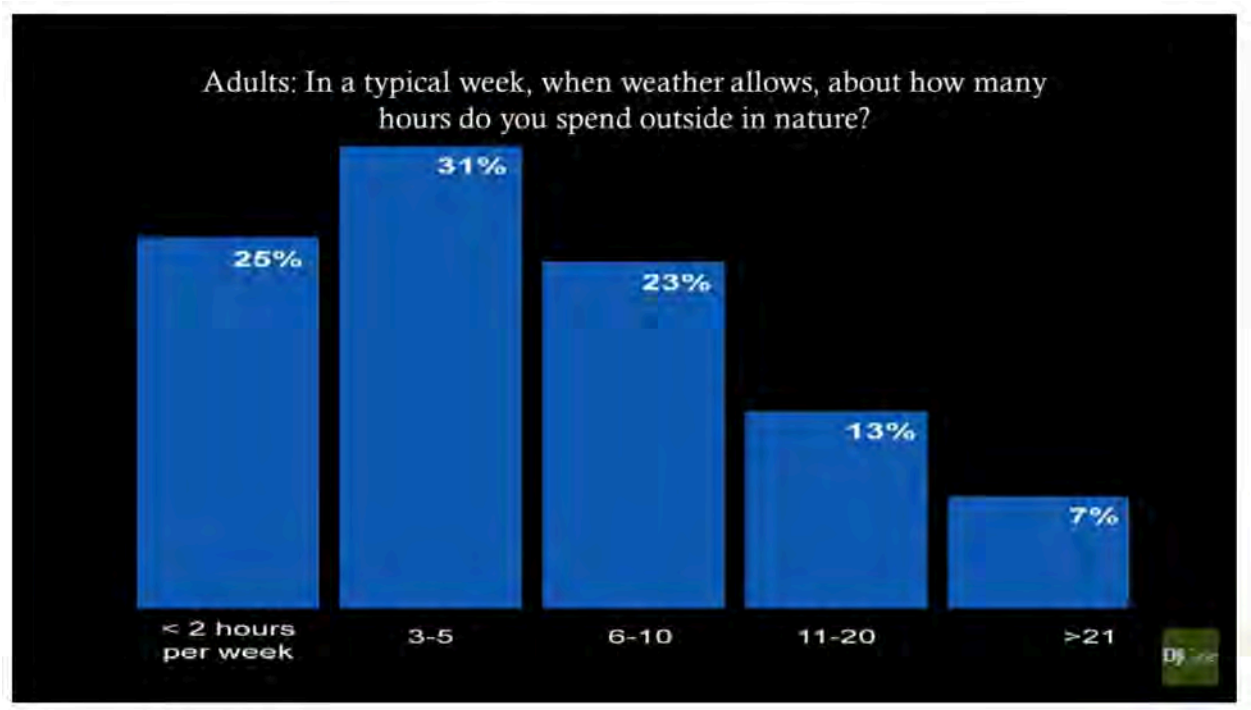
What I'm going to do this morning is: first, talk about Americans' disconnection from nature; second, contrast that to Americans' interest in nature; and finally, share five recommendations—really, almost challenges—with the conservation community.

Disconnection

I almost don't need to describe the things that disconnect Americans from nature in daily life. You see them every day in your families, in your friends, and in your communities.

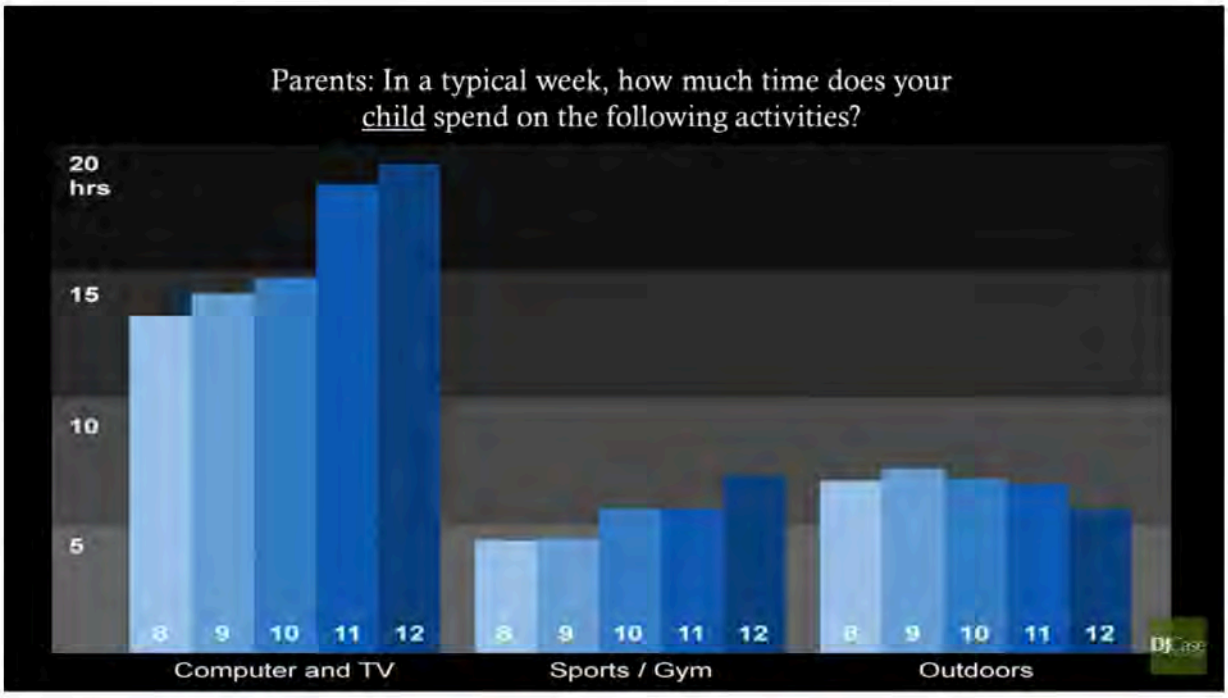
Let me describe three reasons for disconnection that the American public shared with us. The first source of disconnection is competing priorities. Americans face competing priorities for their time, attention, and money. They have children, long commutes, and exhausting jobs. The mother of a young child told us in a focus group: "Work and home, go put the kids to bed. That's pretty much all we have time for." She was not alone: almost half of the adults surveyed across the U.S. agreed with the statement: "There are more important issues in my life than my concern for nature."

One of the effects of competing priorities is that Americans spend relatively little time outside in nature. More than half said they spend less than five hours a week outside. Most Americans are spending their time indoors.



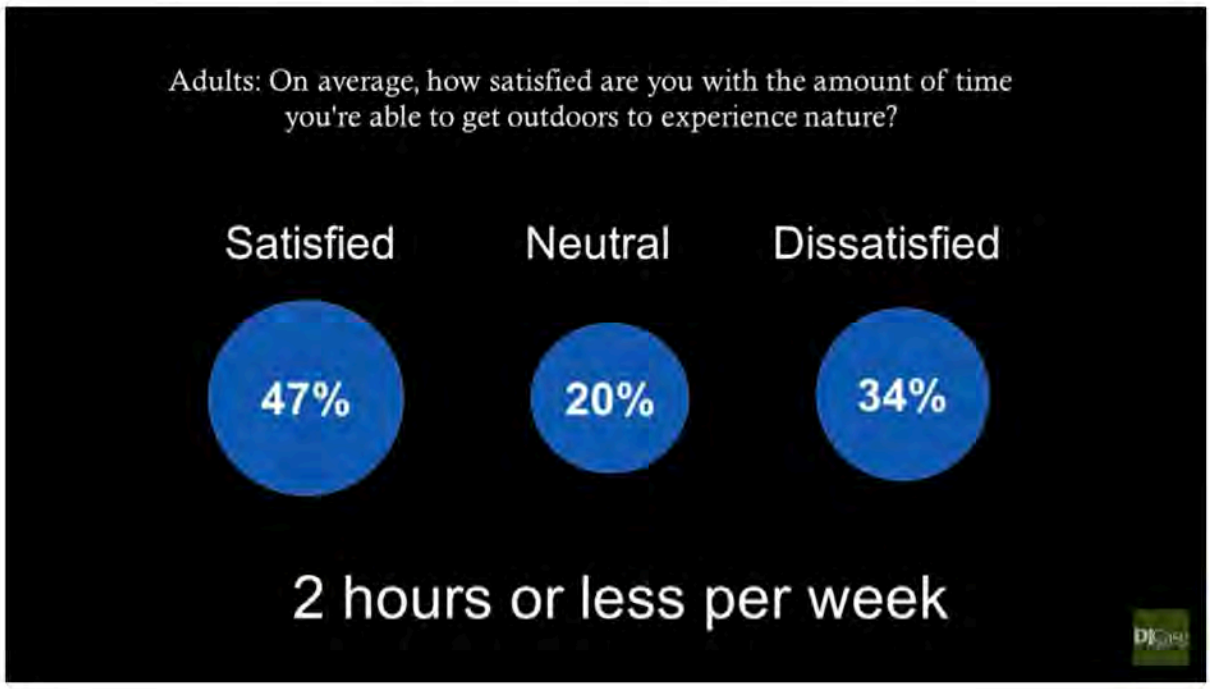
From our study, we heard about a second reason for disconnection from nature. Among adults, shared experience about what "good" connection to nature looks like have changed. Older adults observed how it used to be normal to spend time exploring, playing, and discovering outdoors. Now they worry because it's not the same for their children and grandchildren. And this was a theme we saw in all the research—that genuine concern about the disconnection, genuine concern that the younger generations are growing up without the same nature experiences that the older generations had that were so positive and important to them.

If the shared expectation used to be that kids spent most of their time playing outdoors, that is no longer the case. We asked parents: "In a typical week, how much time does your child spend on the following activities?" There was a long list of activities grouped and reported by age, as seen in this graphic.



As you can see on the left side of the chart, time on computers and TV towers over time spent outdoors, and this increases with age from 8 up to 12, while time spent outdoors decreases as children get older.

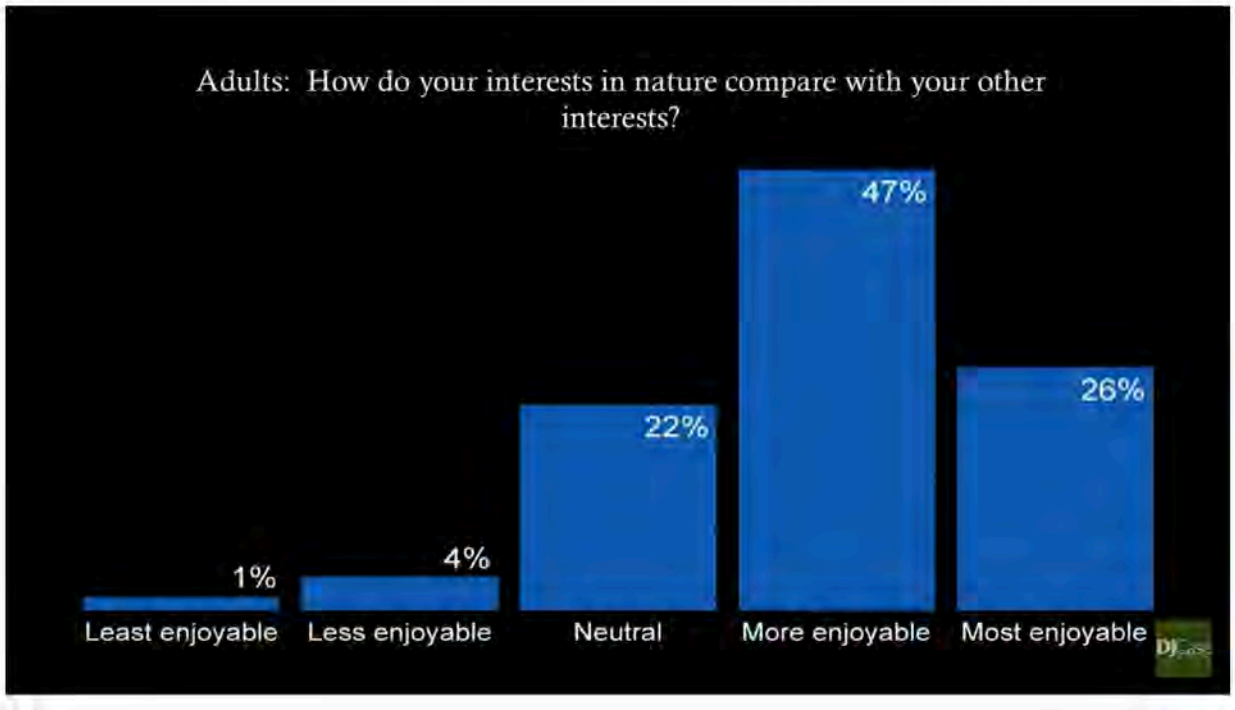
Here's a second of example of shifting expectations. Most adults in our study reported spending relatively little time outside, as we just talked about—and most were satisfied with the little time they did spend in nature. The group who spent two hours or less per week, which is not much time—nearly half of those adults are satisfied with that amount of time.



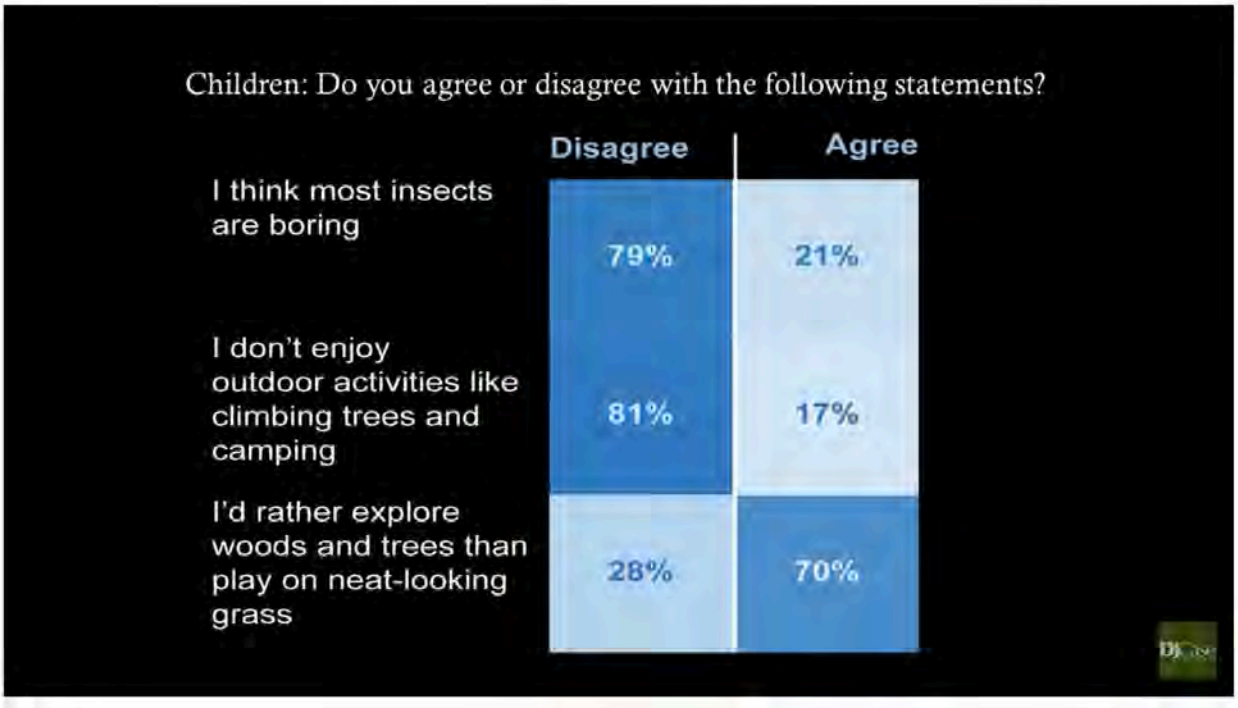
It is becoming normal in American society to spend relatively little time outdoors. So, you can't rely on shared expectations or general social norms to get people outdoors. We're going to have to be more explicit. (I'll come back to the importance of shared expectations later in the presentation, when I talk about expectations Americans hold that "authentic nature" is located in faraway places and requires great effort to reach.)

I've talked about competing priorities and shared expectations. A third reason for disconnection is the physical places where Americans live—physical spaces that discourage contact with the natural world and even representations of it. They mention the concrete jungle of cities, housing developments, and only low-quality parks nearby. Perhaps it's not a surprise, then, that so many adults (40%) say their "pastimes, hobbies, and interests are more indoors-oriented." Only one-quarter report their hobbies and interests are outdoors-oriented.

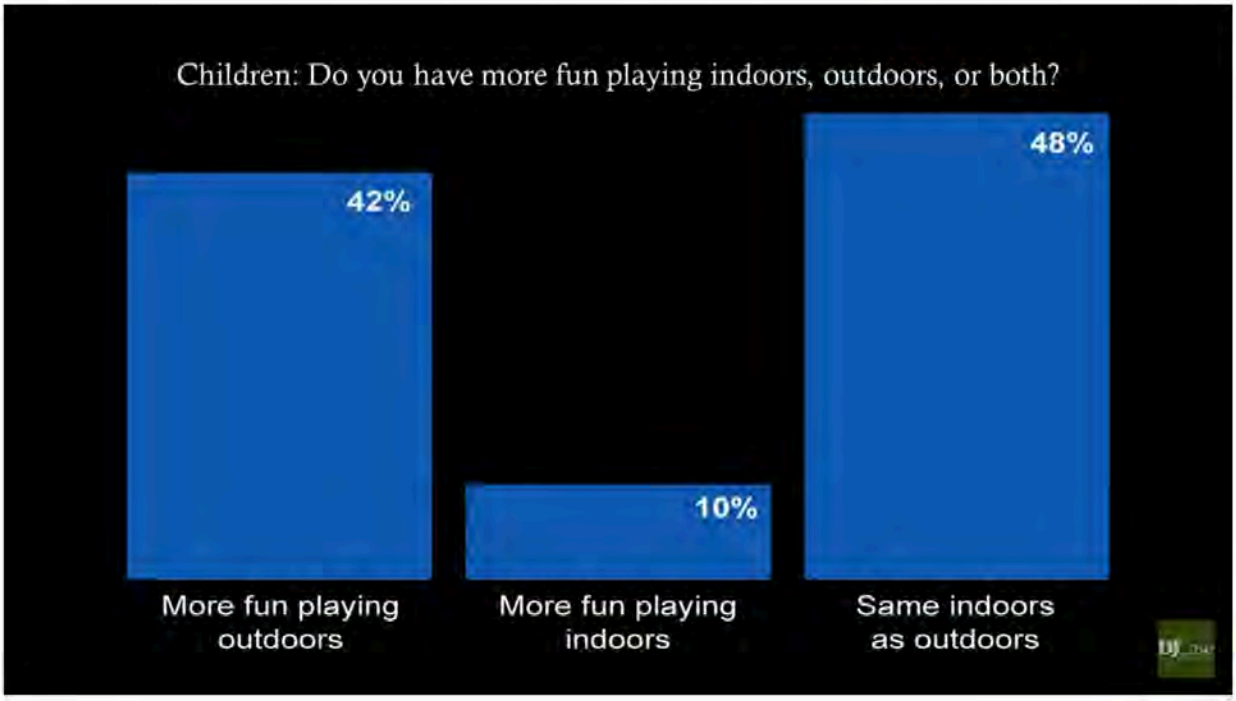
As I've described, Americans encounter a number of forces that disconnect them from nature. These are society-wide issues. They are massive, and they will require all sorts of organizations and sectors to work together. But this does not mean that the situation is hopeless. What I want to show you now is the potential for Americans to connect with nature. American adults are interested in nature. We asked: "How do your interests in nature compare with your other interests?" A quarter of adults say their interests in nature are their most enjoyable—and another half say it is among their more enjoyable interests.



Children also enjoy nature in a number of different ways. They think insects are interesting. They enjoy activities like climbing trees and camping. And my favorite—70% of the children said they would "rather explore woods and trees than play on neat-looking grass."

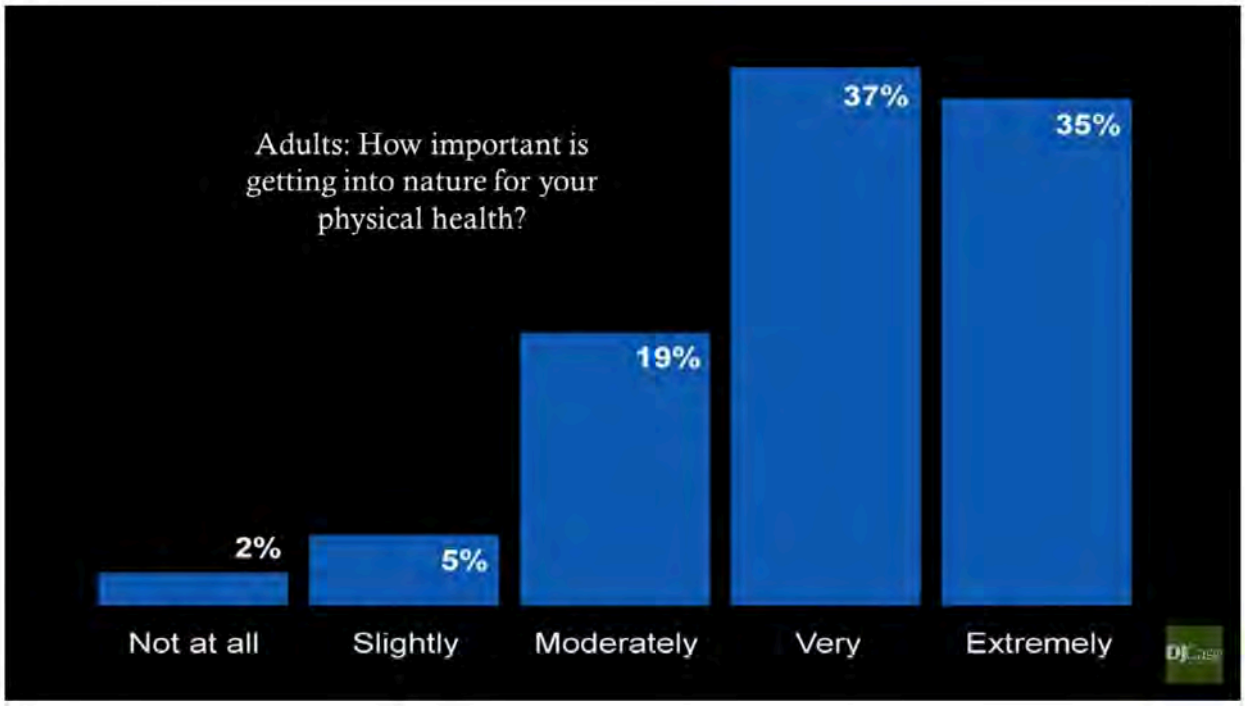


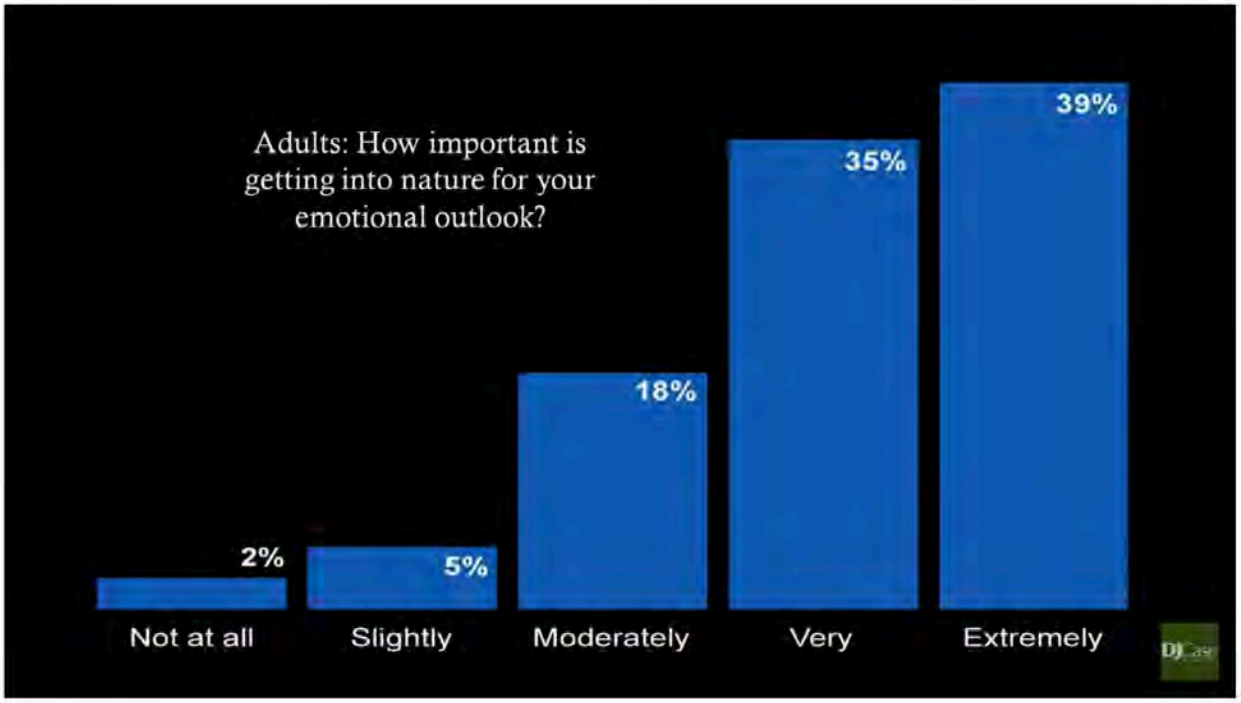
In fact, nature for children is fun. When asked: "Do you have more fun playing indoors or outdoors," only 10% say they have more fun playing indoors. More than 40% say they have more fun playing outdoors.



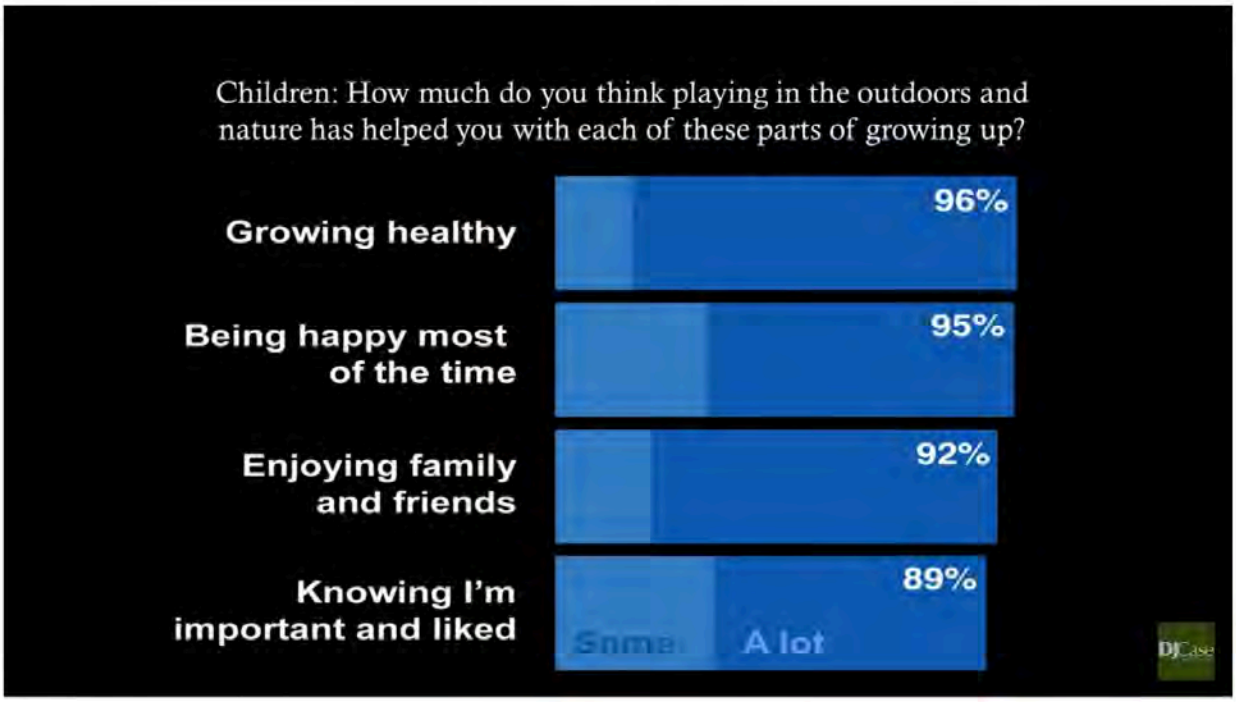
Alongside interest and enjoyment of nature, Americans also recognize nature's benefits to their health and well-being. Three out of four adults say getting into nature is very or extremely important for

their physical health. When we asked the same about their emotional outlook, the results were the same—three out of four said getting into nature is very or extremely important for their emotional outlook.

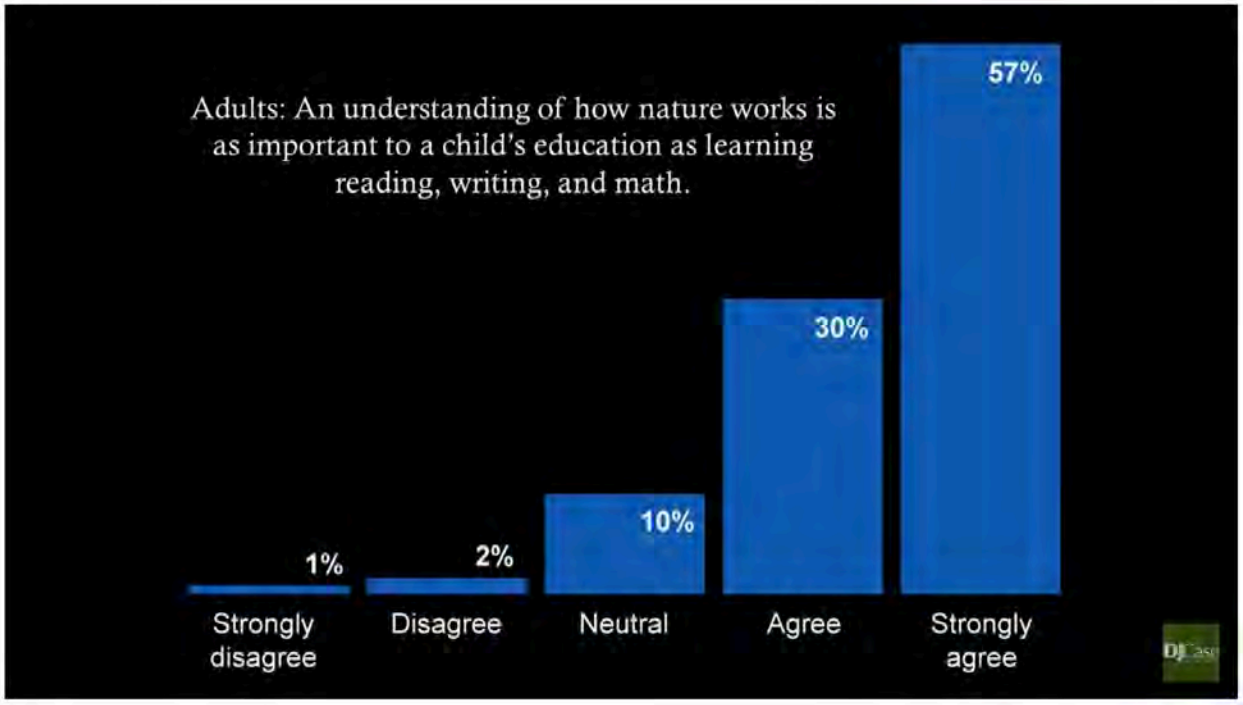




Adults are not the only ones who recognize the benefits of nature. Children also recognize that nature helps them to grow healthy, to be happy, to enjoy family and friends, and to know that they are important and liked.

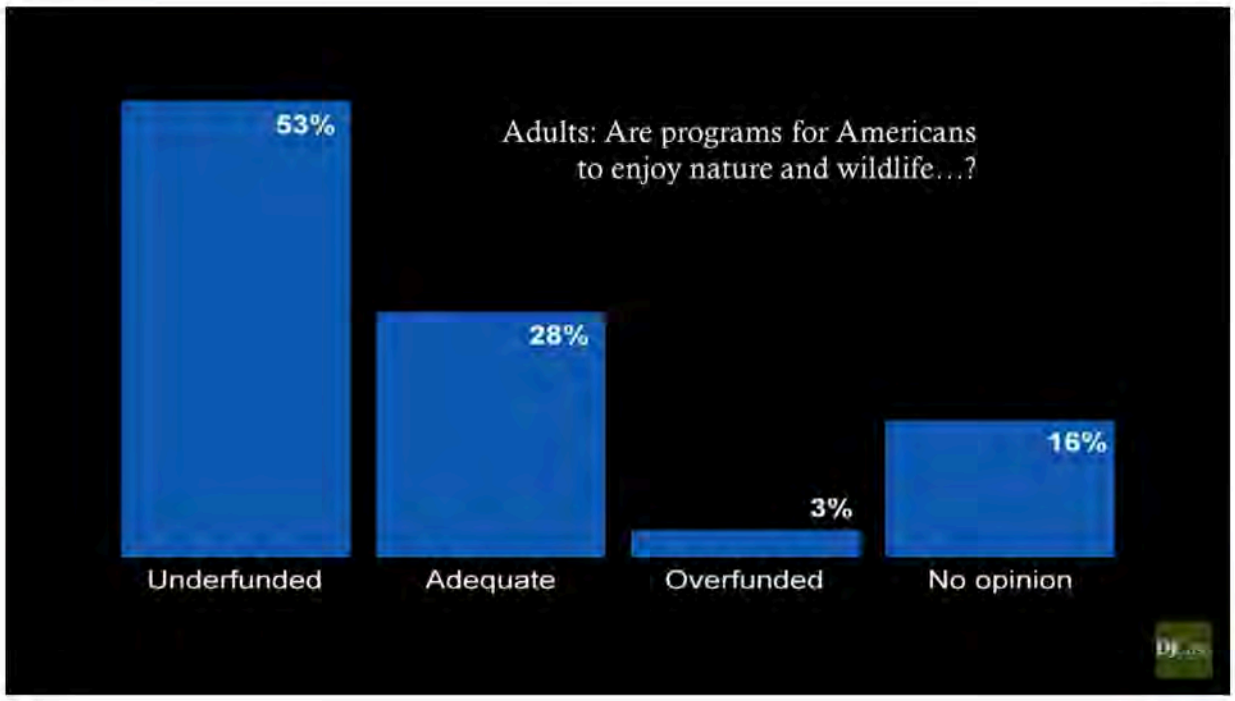


Adults see the benefit of nature not only for health and well-being but also for intellectual development. Despite the emphasis on core subjects in school, the overwhelming majority agrees that "understanding how nature works is as important to a child's education as reading, writing, and math."



It's important to point out that these last several graphics are patterns that hold up across demographics—across age groups, residential location, race and ethnicity, gender, and income. There's not much variation in the answers you see—it's a very positive story.

I've talked about enjoyment of nature and recognition of nature's benefits. Let's add one more reason for optimism—support for nature programming and funding. We asked a number of questions related to this, including: "Are programs for Americans to enjoy nature and wildlife underfunded, adequately funded, or overfunded?" Half of adults think programs for Americans to enjoy nature and wildlife are underfunded. Only 3% said overfunded.



There is hope. American adults and children are interested in nature, recognize nature's benefits to them, and support nature-related programming, funding, and conservation. Yet, those massive, society-wide barriers still exist—competing priorities, shared expectations, and physical places—and unfortunately many more, all of which all work to keep children and adults disconnected from nature.

Recommendations

So what do you, as a conservation community, do to overcome the gap between interest and action? I have five recommendations.

The first is: redefine connecting with nature. When you all here in this room think of connecting with nature, many of you think of being alone, immersed in a remote setting. Or hunting or fishing, exploring the great outdoors in solitude. Or once-in-a-lifetime trips to iconic places. And no surprise, adults in our research have bought into these expectations about what "true" or "pure" experiences in nature require. As one respondent said, nature is "the Grand Canyon. Nature at its best, when I went… It's beautiful. I'd never seen it before, like nature out there by itself."

Yet what our research shows is that the majority of Americans cannot experience nature in this way. They don't have the time or money to do it—or even if they do have the time and money, they may be able to do it only once a year or once in a lifetime.

If people are convinced that "nature" is something they can only experience at a distant refuge, park, or natural area, then they will miss out on the opportunity to experience nature's benefits on a routine, day-to-day basis.

On the contrary, our results show that children consistently place nature as local, out the back door. For children, nature's not far away: you don't need to load them in the car, yet again, to give them

times in the outdoors they will never forget or a special place to remember. (I would add here on all of the surveys, we provided opportunities for children and adults or parents to not just respond to the questions but to offer their thoughts. It's a rich set of information, very inspiring and even heartbreaking in some cases.)

So, connection to nature has to be redefined to include routine action, not just one-off events. It has to be expanded to included recreational activities that are not just nature-focused. In other words, people can engage with nature, enjoy nature, connect with nature as part of other activities in their daily or weekly lives.

Our second recommendation is to be social. Wildlife biologists, fisheries biologists, conservation professionals aren't necessarily known for being social. In fact, a lot of us got into this field because we would rather be out looking at all of those critters than dealing with people. But connection to nature needs to have a social aspect. Nature experienced alone can be a powerful thing—but this is the exception, not the primary way that American adults and children experience and interact with nature.

Americans are clear: when they talk about their most memorable moments and their special places outdoors, they nearly always talk about the people who were involved. Americans make time for nature when they have the social support to do so and when the activities involve their friends and family.

To reinforce this point, 51% of adults indicated they do not like being in nature by themselves—51% when given the opportunity agreed or were neutral when read this statement: "I don't like being in nature by myself." And these percentages grow for the very audiences you want to reach: urban residents, young and middle-aged adults, and nonwhites are the most likely to agree they do not like being in nature by themselves.

Being social means supporting mentorships of all types, inviting preexisting social groups to programs, and promoting engagement with nature as something fun to do with other people.

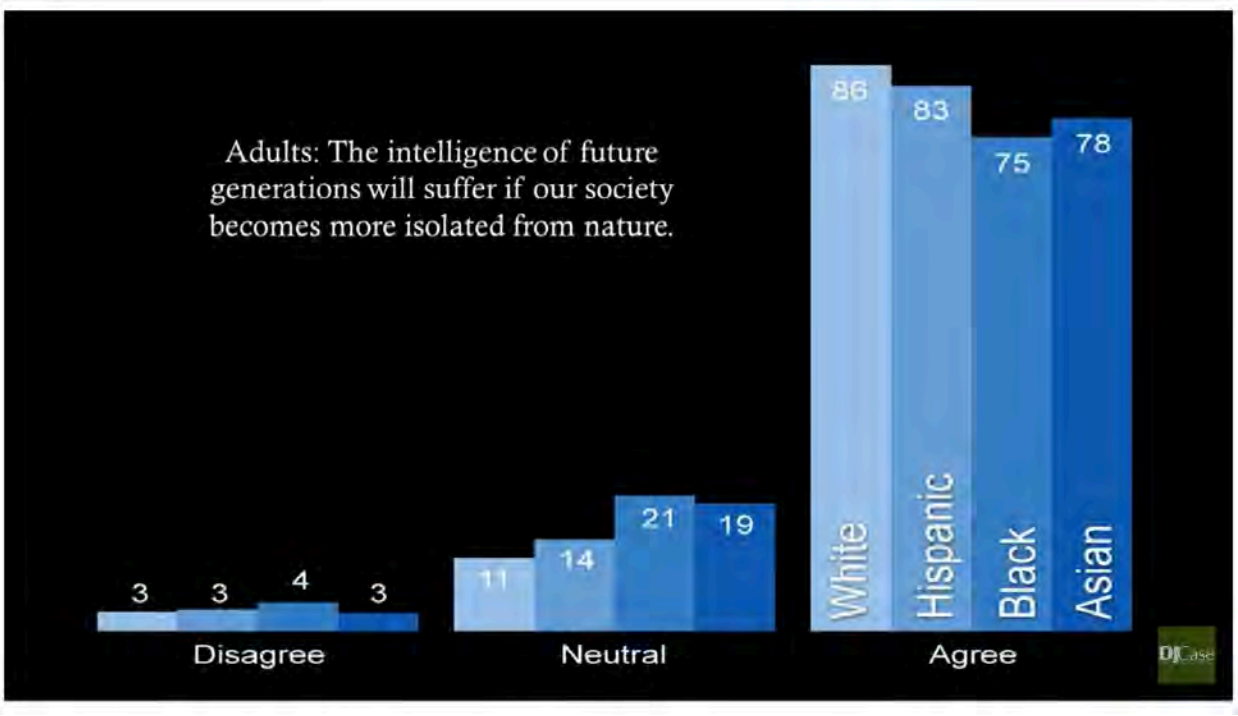
Recommendation one was to redefine connecting with nature. Recommendation two was to be social.

Recommendation three is to consider similarities and differences. Pay close attention to how Americans are different and how they are similar in their relationships with nature.

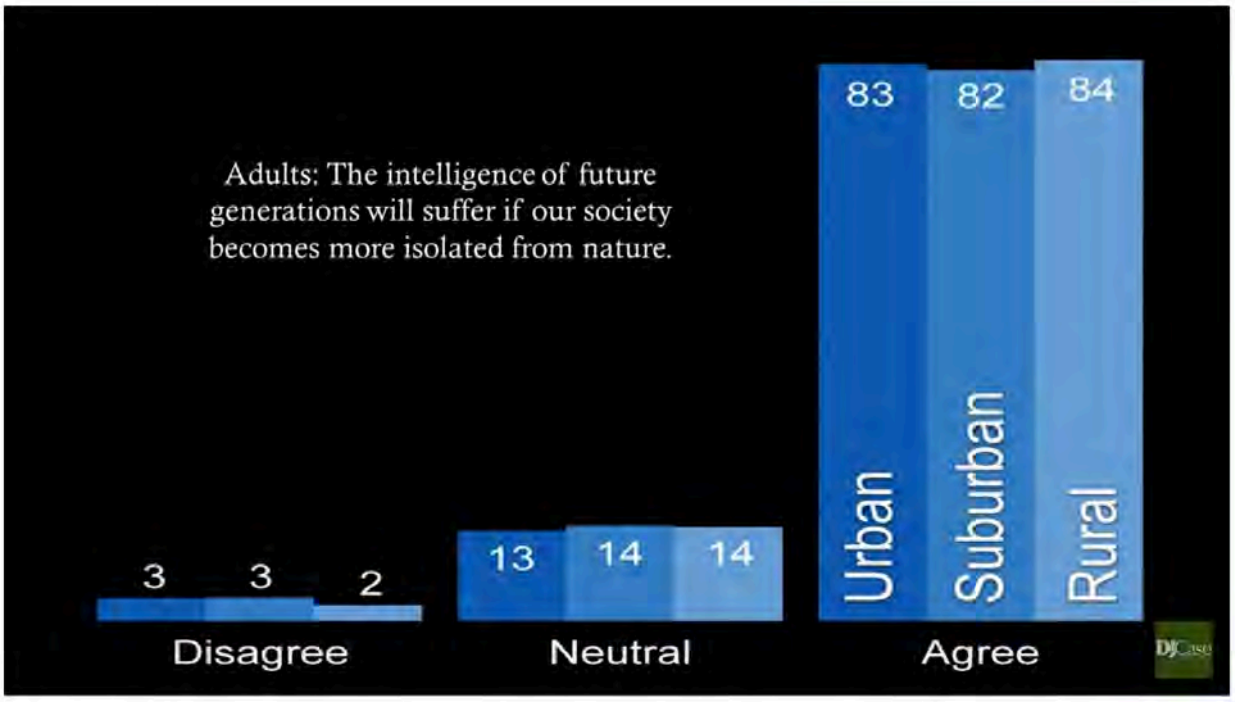
We found many similarities in Americans' relationships with nature—across residential location, race and ethnicity, political party, geographic region, and so on. Overall, Americans of all types enjoy nature, like to experience it with others, have deep affection and attraction toward it, and support programming and funding.

But we also found some clear differences, especially in how different groups' concerns about safety when they're outdoors, who is present for these activities, and the type of activities they are interested in.

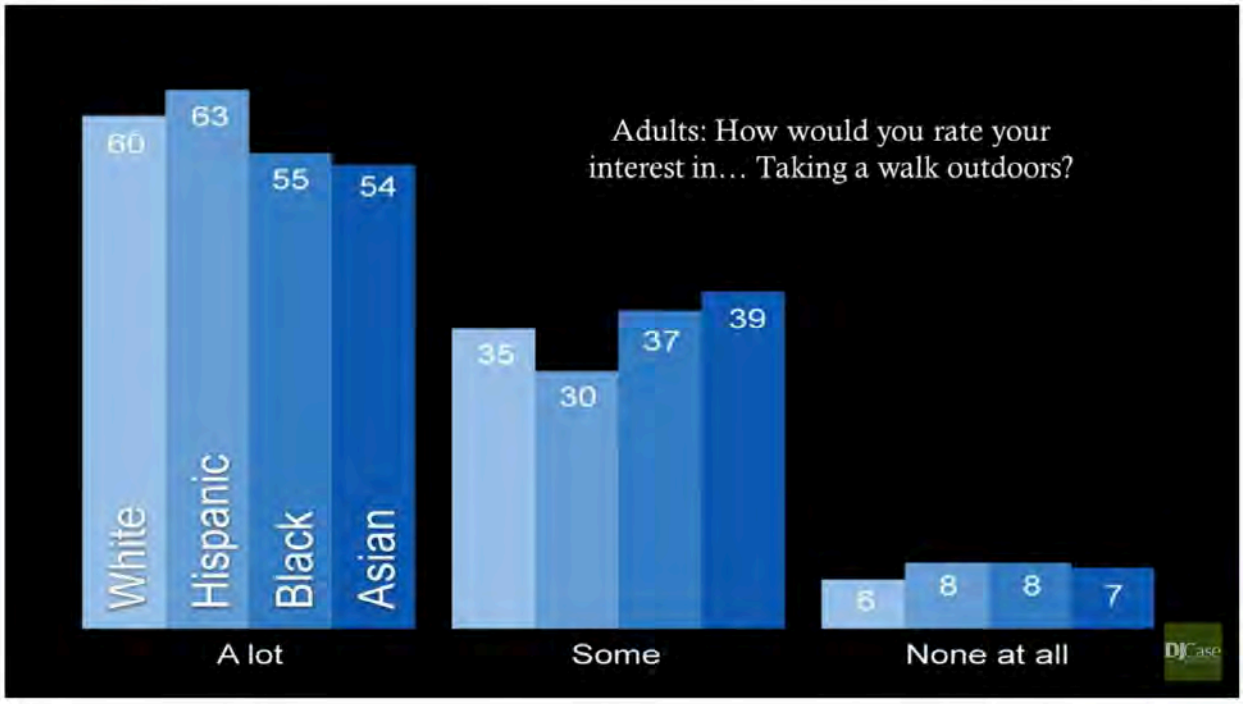
As an example of similarity, look at the ways adults agree with the statement, "The intelligence of future generations will suffer if our society becomes more isolated from nature." This graphic shows agreement across race and ethnicity. The differences are not large enough from a management or communications perspective.



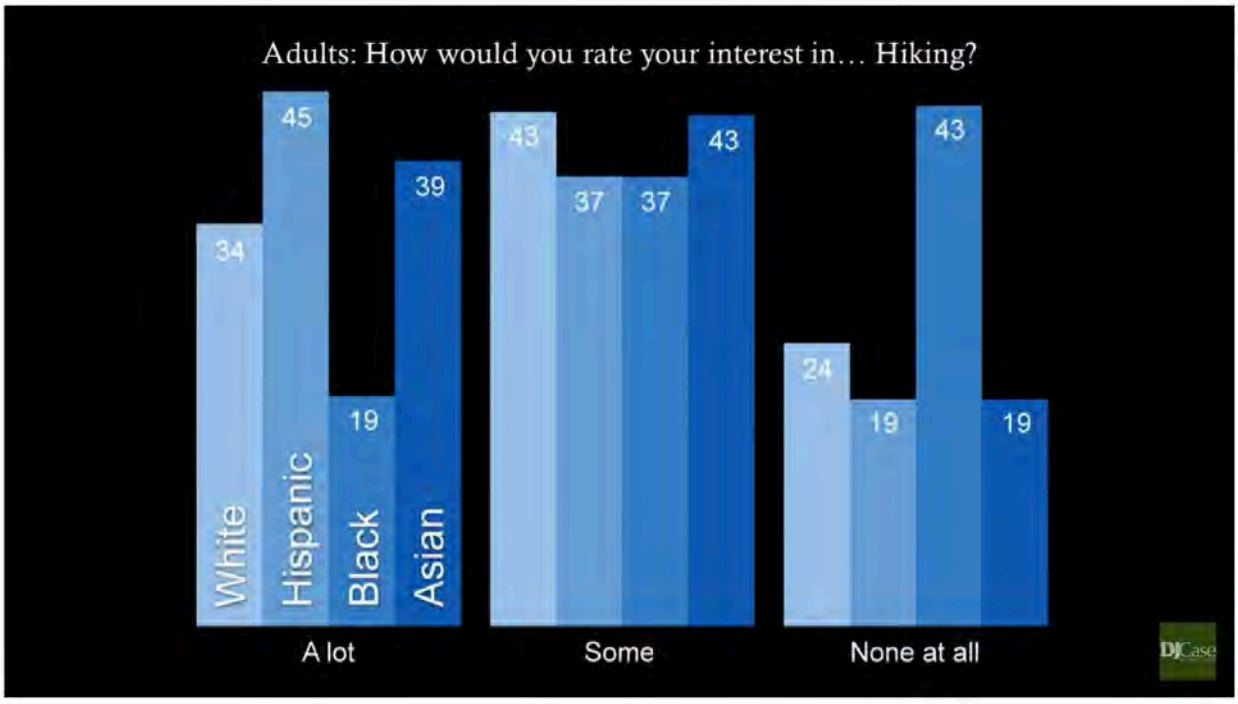
The same question offers widespread agreement across residential location, which was self-reported as urban, suburban, or rural. And we were often surprised—the patterns we were expecting to find, we didn't see.



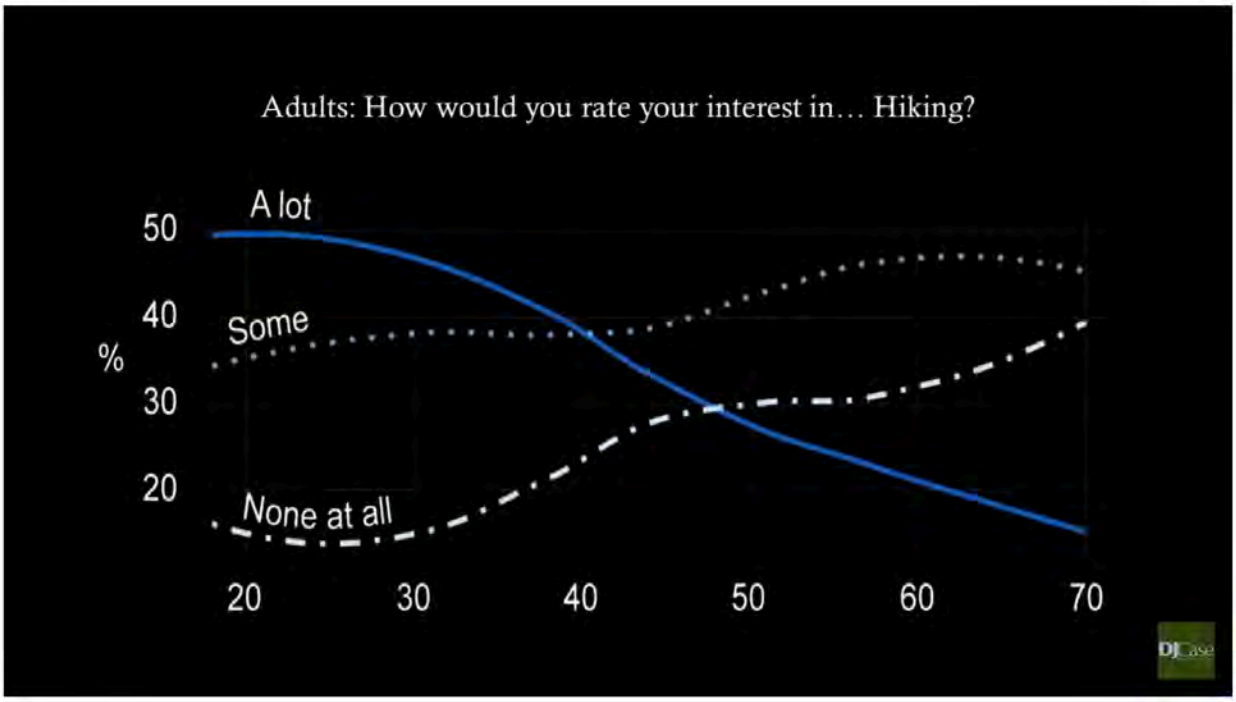
As an example of difference, though, consider interest in taking a walk outdoors. This was one activity in a long list that we asked adults. The majority of adults have a lot of interest in taking a walk outdoors; very few adults have no interest at all.



But if we contrast that with hiking and ask the same question but change the activity to hiking—walking outdoors versus hiking—it's not much of a difference to those of us here in this room, in the conservation community, but it's a large difference to members of different groups. "None at all" increases quite a bit.



Here's another example—same question but this is a look at interest in hiking among adults across different age groups. Starting at the top left of the graph, note that half of adults in their 20s are highly interested in hiking, while that interest declines steadily, until only about 10% of adults in their 70s have a lot of interest in the activity.



So, while Americans are often alike in their interests and values of nature, age, location, and race and ethnicity, along with other factors, can be important sources of difference.

I've recommended: 1) redefining connecting with nature, 2) being social, and 3) considering similarities and differences. The fourth recommendation is to promote multidimensional experiences. The conservation community often thinks and develops programs based on increasing recreation or instilling formal knowledge about the natural world. Both of these are critically important and, as you've seen, are supported by Americans. But the American public, adults and children alike, care about and experience and engage with nature in many dimensions—not just as recreation or from a knowledge perspective.

Consider the statement: "Being in nature gives me a sense of peace"—86% said they somewhat or strongly agree with that statement. They hold strong affection toward nature in different ways. Seventy percent find that being in nature gives meaning and purpose to their lives.

These questions, and a host of others, show Americans want to engage in nature in a variety of ways. When you look at these statements as conservationists, you see your values represented. I think it's really gratifying to see Americans share those to a degree most of you probably wouldn't expect.

Finally, recommendation five: claim a seat at the table. If you just talk about hunting or fishing or wildlife viewing as recreational activities or wildlife management tools (as vitally important as those are to conservation), you don't have a seat at the table where the big issues are being discussed—health care, education, transportation, urban planning. And these are the arenas in which decisions are being made that have large-scale impacts on people, on the landscape, and where those two things intersect.

If you all want to work to overcome these massive societal problems, if you want to have an influence far larger than your current budgets, then you'll need to claim a seat at the table.

Conclusion

The big question for the conservation community then becomes: How do you build partnerships with the education system and the healthcare system, with community developers and with tourism boards, so that you are expanding your impact in ways that promote socially oriented, routine contact with nature?

I spoke with Dr. Kellert for the last time on November 17, 2016, 10 days before he passed away. He was in the hospital, but during the call, we jumped back and forth talking about his medical treatment

and about the initiative. Toward the end of that conversation, Steve was reflecting on the results of the research and said, "We probed more about what it means to be a human being."

As conservationists, you are in the business of human flourishing. Is that too sweeping of a comment? Perhaps. But Steve Kellert didn't think so and neither do I. And gratefully and more importantly, neither do most Americans.

You, the conservation community, are not just in the business of providing a place for nature to thrive. You are not just in the business of overseeing recreational activities. When you conserve species and when you protect and restore habitats, you are in the business of helping Americans live happier, healthier lives. You are in the business of helping children develop socially, psychologically, and physically. You are in the business of helping create places where Americans want to live, work, and flourish.

Connection to nature and wildlife is fundamental to the economic and social well-being of our country and a critical component of American culture and history. For those of us here in this room, nature is not just a dispensable amenity. It is woven into the story of our lives, individually and as a community. We must make that a reality for all Americans, regardless of where they live or who they are.

Merging Conservation Values in the Quest for Relevance

Tovar Cerulli
Clearwater Communications LLC
Montpelier, Vermont

Good morning. It's an honor to be here with you. I'm here to paint a picture of two worlds—two worlds that some see colliding, but that I see merging.

If you had met me 20 years ago, when I had hair down to the middle of my back in a long braid, it would have taken you maybe a minute to learn that I was an environmentalist in the preservationist sense of the word. It would have taken you maybe another minute to learn that I was a strict vegetarian and that I saw meat-eaters, and especially hunters, as misguided if not cruel.

At the time, I cared deeply about the natural world we inhabit and the creatures with whom we share it. And I still do.

But now, back home in Vermont, out in my shed there's a chainsaw on the floor and a pair of logging chaps hanging from a crossbeam. In my house, there's a bolt-action rifle chambered in 6.5 Swedish and a freezer well stocked with venison.

So I stand here with one foot in each of these two worlds: the world of nonhunter environmentalists and the world of hunter conservationists. And I appreciate that the two have not always been on the best of terms.

I also stand here with respect for all of you and the work you do. My friends and colleagues include many natural resources professionals, many of whom work, or have worked, for state and federal agencies. I have great admiration for their dedication and knowledge, and for yours.

I have worked *with* agencies, but I'm not *from* an agency. I'm here to offer an outsider's view—a perspective that will, I hope, prove useful to you in your work.

The issue of relevance has been on your plate for a while now: the need to address changes in society and values, the need to engage broader constituencies, the need to ensure future support for conservation. Agencies recognize this as a critical issue and have been actively working on it. I can't speak to all the elements of what you're doing. What I can do is describe a group of people who, like me, are natural allies in the quest for relevance.

A Few Natural Allies

I'd like to start by introducing you to a few of them.

First, I'd like to take you a couple miles up the dirt road where I live in Vermont, to where our friends Greg and Michelle and their 11-year-old son Keenan live. They are active in the outdoors. They enjoy hiking and mountain biking. They are interested in wildlife; they enjoy watching wildlife, seeing tracks, looking for sign. At 11, Keenan has already expressed interest in wildlife biology as a potential career. Their values are very much pro-environment, pro-ecology.

They do not hunt. But they are supportive of ethical, sustainable hunting. Last fall, Greg and Keenan helped me drag a whitetail out of the woods. They enjoy venison and for years have been coming to the game dinner my wife Catherine and I host each winter.

Next, I'd like to take you a hundred miles east into Maine where my friend Jenna lives. She is also active in the outdoors. She snowshoes and hikes and canoes. She's a professional forager and teaches others how to gather wild edibles, with emphasis on an environmental stewardship ethic. Conservation is the distillation of everything she cares about—she feels protective of, and responsible for, plants, animals, clean water, clean air.

A few years ago, she took up hunting. She started with small game and this past fall took her first deer. As she steps from one world into the other, from the world of the nonhunter environmentalist into the world of the hunter conservationist, she recognizes that what's important to each is largely the same. We use different language. We have different images of who we are. But she finds it strange that people

don't see the overlap, or don't want to see it, and prefer to pick teams. As she recently said to me, "I don't want to pick teams."

Now I'd like to take you a thousand miles south, into South Carolina where my friend Drew lives. He's been a birder since he was in second grade. He's now a professor of wildlife ecology. He studies forest management and human views of nature, among other things. He's also black and, in addition to his many other contributions, brings an invaluable perspective on the intersections of race and conservation or, as he puts it, "coloring the conservation conversation."

He was raised in a rural farming community, reliant on natural resources. His parents were science teachers. He grew up with a love of wildlife and nature. And, as it happens, he started hunting when he was 24.

Millions More

These people represent millions of others. We are different from wildlife agencies' traditional constituencies. We come from different backgrounds. We have different perspectives. On average, we are socially and politically more liberal.

But we already care about many of the same things. And we are already active in the outdoors; that is not a barrier for us.

Jenna and Drew taking up hunting in their 20s certainly gives them a broader perspective. But that's not why they are important. It doesn't matter whether Keenan or anyone in his family ever hunts. What makes them all important is that they are interested, they are engaged, and they care.

We may seem like strange creatures, these environmentalists who support ethical, sustainable hunting and fishing, some of whom even hunt and fish. But we are not that unusual. We represent something much larger.

The challenge and opportunity lies in learning how to recognize this larger something, in learning how to make it part of the institution. The danger lies in failing to do this, in remaining as divided as we are now, or becoming more so.

A Merging of Two Worlds

What relevance looks like to me, in part, is a merging of these two worlds.

I imagine Let's Go Birding programs being as common as Let's Go Fishing programs, reaching kids of all colors—urban, rural, and suburban—inspiring the next generation of conservationists. I imagine wildlife agencies as institutions where my people's views, values, and interests are just as central as those of traditional constituencies.

I imagine us no longer being thought of, or described, as separate groups and teams—no longer "your people" and "my people," but "our people," "our team." I imagine us recognizing that we are in this together. I imagine us being more invested in what pulls us together than in what pulls us apart, focusing on common ground—our common values and also the literal ground beneath our feet that we seek to conserve.

I imagine us speaking up for what we might once have thought of as "the other side's" interests but that we increasingly recognize as our shared interests, including wildlife habitat and sustainable, broad-based funding for our *shared* wildlife agencies.

The Idea of "Consumptive" Versus "Nonconsumptive"

Among other things, the quest for relevance involves listening to new constituencies and understanding them more fully. As we do that, I'd like to offer a few examples of the kinds of things we need to watch for, things that can work against us.

One is the idea of "consumptive" versus "nonconsumptive" uses and users.

There are flaws in how this idea categorizes activities. It suggests that some activities consume wildlife and nature, while others do not. In fact, sustainable hunting does not consume or harm wildlife populations or ecosystems. And so-called nonconsumptive activities often have impacts of their own.

But the more serious flaw lies in this idea's categorization of people into separate interest groups. This is not an accurate description of reality. It is an idea that we have imposed upon the world, an idea that segments people into imaginary groups and then shapes our perceptions of and thinking about those groups.

Jenna and Drew and I and millions of other hunters hunt, but we also spend time—in many cases, much more time—engaged in other outdoor activities. It makes no sense to say that the three of us shifted from one group to the other on the day we took a hunter-safety class, or bought a rifle, or took a deer. Our identities, values, and interests have not substantially changed.

It makes no sense to say I'm "nonconsumptive" 50 weeks out of the year, but "consumptive" during the two weeks I hunt deer. Am I consumptive only if I get a deer? What if, as all too often happens, I go to the woods with a rifle, but do nothing more than watch wildlife and consume nothing but the snacks in my pockets?

And what about all the people—Greg and Michelle and Keenan, most of my family, many agency and NGO staff and volunteers—who support sustainable, ethical hunting and fishing, and may eat wild game and fish, but don't hunt and may not even fish?

These categories—"consumptive" and "nonconsumptive"—don't account for any of us very well.

If we ditch this binary idea, and start to think in more accurate and insightful ways, we will be one step closer to relevance, to bridging and merging our worlds. If not, if we hang on to it, it will continue contributing to the familiar, divisive nightmare.

Almost 90 years ago, a report to the American Game Committee—written by Aldo Leopold—told us that we must "insist on a joint conservation program, jointly formulated and jointly financed." Just last year, the Blue Ribbon Panel report told us that we need "strong and diverse grassroots support" and a system that makes "every American an investor" in the crucial work of wildlife conservation.

If the categorical division between "consumptive" and "nonconsumptive" isn't really about our activities, but rather about who finances the system—and if sustainable, broad-based funding really is our aim—then the categories themselves are an obstacle to getting where we want to go. It's high time we remove that obstacle, toss it into the dustbin of history where it belongs, and clear the way for the kind of system we want and need.

The Idea that "Hunters are Conservationists"

Another idea we need to watch out for is the notion that "hunters are conservationists."

When we say this, we are talking, in part, about history, about the heroism of hunters like Roosevelt and Grinnell and Darling and Leopold. And this history is true, if more complex than that. We are also talking about funding, about who foots most of the bill for the work done by state wildlife agencies. And this is also true.

But we need to think about this idea and message more carefully.

The hunters in this room, and many others, *are* conservationists. You are carrying that torch. But not all hunters do what you do. Not all hunters care as you care.

The fact that I, as a driver, pay vehicle registration fees, license renewal fees, and gas taxes—all involuntary—is good evidence that I want or need to drive. But that money says nothing about my values. It doesn't make me an advocate for highway and safety improvement. The dedicated bicycle commuter I pass on the road may care just as much, but she is not compelled to pay.

The fact that I pay hunting license fees and excise taxes—all involuntary—is good evidence that I want to hunt. But that money says nothing about my values. It doesn't make me a conservation advocate. My nonhunting, birdwatching neighbor may care just as much, but he is not compelled to pay.

Those of us not from agencies' traditional constituency can honor the history and the contributions made by hunters.

But when we hear that "hunters are conservationists," we may doubt the truth of the message. It's obvious to us that not all hunters care. We see shot-up road signs. We see unethical and illegal activity. We see and hear attitudes that are inconsistent with a conservation ethic.

We may also doubt the wisdom of the fiscal arrangement. Does paying for state wildlife work almost entirely with hunter dollars help us think in terms of whole ecological systems? Does it help agencies fulfill their public trust responsibilities? Does it make sense for conservation to be funded by nonhunters who buy firearms exclusively for target shooting or self-defense, but not by avid birders who buy $10,000 binoculars?

Worse, we may feel excluded. Hearing that "hunters are conservationists," we may feel that we are not welcome. We may feel that our concerns and efforts and contributions are, and will remain, unacknowledged.

If agencies broaden their thinking and message about who's a conservationist, they will be one step closer to being more broadly relevant, to merging and bridging these worlds. If not, if we continue to tout hunters and anglers as the sole heroes of conservation, we will continue to alienate some of the people we most need to reach.

A Lack of Clear Distinctions

In both cases—the idea of "consumptive" versus "nonconsumptive" and the idea that "hunters are conservationists"—we have long thought in terms of oversimplified categories. We need to shift away from that kind of thinking, toward more accurate and helpful distinctions. We need to bring as much clarity and precision to people and ideas and values as we have brought to wildlife species and their habitats.

When we ask, "Who's a conservationist?" the answer should not be based on whether you are a hunter or an angler or on whether you are compelled to pay. It should be based on whether you care, on whether you are willing to be involved.

Instead of thinking about this question in either-or terms, we could think in terms of a spectrum that includes everyone, both hunters and anglers and nonhunters and nonanglers.

At one end of the spectrum, some people care and are actively involved in a variety of ways. Some, like most of you, dedicate their careers to conservation. Some people's lifestyles revolve around conservation. Some donate time and money to conservation. Someone who has never hunted but contributes time and money to their local bird refuge belongs here at the active conservationist end of the spectrum.

One step over, some people care but are not actively involved. We often talk about apathy, about people saying that conservation matters but not doing much. If we're going to make this charge, let's assign it evenly and fairly. A hunter who buys a license and ammunition, but does nothing else for conservation, should be recognized as apathetic.

Another step over, some think about conservation only in terms of the personal benefits they accrue. Did I get game in my bag? Did I add that bird to my Life List? Did I get to see the view I wanted?

And, at the other end of spectrum, some people simply don't care.

If we draw clearer distinctions, we will be able to communicate more clearly. We will be able to help people understand what conservation is. We will be able to welcome more people into conservation and help them see a role for themselves in it. We will be one step closer to relevance.

If not, if we perpetuate either-or ideas and continue to think in terms of oversimplified categories, we will perpetuate misunderstanding. We will perpetuate exclusion.

Agency Values and Assumptions

I imagine it's evident—in these examples and in the work you are already doing—that relevance involves looking not only outward, seeking to understand other perspectives, but also inward, cultivating insight into our own values and assumptions, as individuals and as institutions.

In this vein of looking inward, I'd like to offer one last example of the kind of thing we need to be aware of. We often say that wildlife policy and management are "science-based." It's often implied that science tells us we *should* or *must* do such-and-such. But science does not dictate our aims.

Hunting and game management, for example, are founded on preexisting values, including the idea of "sustainable use" for current and future generations. We use science to apply this idea to some species and not others. Why don't we have a season on bald eagles? Or on American robins? Why don't we manage these species for sustainable use? Because we have other values that guide our thinking and actions in relation to them. Science doesn't determine the goal of sustainable use. It shows us how to achieve it.

Threatened and endangered species recovery is likewise founded on preexisting values, including the idea that species have "an inherent right to exist." We use science to apply this idea to some species more than to others—more to so-called "charismatic megafauna" than to smaller, less lovely members of the community. Science doesn't dictate the goal of species recovery. It shows us how to achieve it.

It is vital and necessary that wildlife agencies bring science to bear on wildlife conservation. It is also vital and necessary that agencies recognize the values involved—their own and others'—and the roles these values play.

In talking with other groups, if we come in claiming that our approach is "right" because it is scientifically informed, we are overlooking our own values. We are not hearing or recognizing other values and views. And we risk alienating the very people we need to reach.

If agencies identify and recognize their own values, they will be positioned to communicate those values and to see how they relate to, and intersect with, other values. If not, we risk not seeing intersections in values. We risk missing opportunities to act on those intersections.

State agencies carry a hundred years' worth of values, ideas, and assumptions. Identifying values is an opportunity to filter out those which remain relevant today and those which are baggage that burden the institution.

Actionable Directions

So how do we *do* relevance? How do we make this actionable?

I imagine that strategic planning will yield specific tactics appropriate for specific agencies and states. Addressing all of you from across the continent, I cannot speak at that level of specificity. I don't know your particular opportunities and challenges.

But I'd like to think with you for a minute about two main fields of action.

The first field of action involves showing people that agencies are *already* relevant to them. There are, of course, many ways of doing this.

The second field of action involves agencies *becoming* more relevant. Doing this raises questions—relevant to whom and in what ways? Is relevance simply an add-on to the work agencies are already doing? Or does it involve a deeper realignment of mission? One direction here involves making a deeper commitment to the so-called "human dimensions" of wildlife conservation, a commitment that makes agencies' information and education work a two-way street. This work becomes not only about being understood but also about understanding others. It becomes about overcoming barriers to understanding and communication.

Wildlife conservation is, after all, a thoroughly human endeavor—an institution of people, by people and for people.

In our scientific approaches to natural systems, we seek to understand them by working and thinking in disciplined, rigorous ways. If we do the same with human beings, it may help us overcome our unfortunate habit of assuming that we know who those people are, what they think, and—worst of all—what's wrong with what they think.

Divisiveness and Unity

We have inherited a divisive mess. Both sides have contributed to the deepening divisions of recent decades. In this kind of divisive mess, the most extreme tactics and attitudes are often the loudest and most visible. Yet there is great potential and power in the middle.

Our shared values, and our shared belief in our conservation heritage, can be a unifying force. We see that happening right now with conservation organizations of all kinds and all political stripes coming together in defense of public lands and coming together to resist drastic cuts in funding for federal agencies.

We don't have the luxury of waiting for someone else to cultivate that middle ground for us. We don't have the luxury of waiting until our country is less politically divided than it is right now.

We are standing at a critical juncture in the history of conservation. We are facing challenges every bit as important and at least as complex as those faced by conservationists in the late 19th and early 20th centuries—and the challenges aren't just out there, in the field, or in the halls of power. The challenges are right here, in this room, among us. The challenges are right here, in our own hearts and minds.

If we have enough courage and cultivate enough humility and respect to listen—to find out who other human beings are and what they value and want—then we can be relevant and helpful to one another. Then we can see how our values are related, who we are or could be together, and what we can achieve together.

Thank you.

Special Session One.
Making Relevance a Reality

Welcome and Audience Survey

Ann Forstchen
Florida Fish and Wildlife Conservation Commission
Tallahassee, Florida

Good morning! As you get settled in, please pull out your cell phones and navigate your way to the website shown on the screen. Don't do anything yet—you'll get instructions in a few minutes. I'm Ann Forstchen with the Florida Fish and Wildlife Conservation Commission and I am very pleased to welcome you to our special session: "Making Relevance a Reality."

The people attending this conference during the last 10 years have had the opportunity to hear from researchers, experts, and peers about changes needed in the wildlife conservation institution in the U.S. Special sessions, workshops, and more recently, plenary sessions have encouraged the conservation institution to open up the tent, broaden goals and programs, and engage with a broader base of stakeholders to create a much larger universe of beneficiaries who recognize the value of conservation and the work of conservation organizations to their interests and those of future generations.

My colleagues and I have been in front of North American conference goers fairly regularly, hoping to help you understand and think your way through the challenges of change and to envision the path forward to adapt to contemporary societal needs and expectations. The cumulative effect of such changes, occurring nationally, is the transformation to a conservation institution that is more relevant, more highly valued, more strongly supported, and, therefore, more effective for conservation. This was recognized in the Blue Ribbon Panel report last year in which one of two recommendations is to increase relevancy of the conservation institution. The question remains, however: how does the institution make relevance a reality? This is the topic of our session today.

Our speakers are going to address what relevance means in the conservation context by first defining some terms, then summarizing what we know, what we don't know, and would like to know about how Americans think about conservation and its relevance to them. The potential roles and responsibilities of various institutional actors in ensuring that conservation is relevant will be outlined. Although we will be told that no single set of step-by-step instructions is available for every conservation organization in every situation, we will be given some suggestions drawn from outside and within our institution that can be adapted to many contexts. And for assurance that change is doable, we will learn how several organizational actors within the institution have taken some innovative steps to increase relevancy to more citizens. We will close the session with a panel to help us interpret the results of a one-question poll you are about to take.

The relevance of wildlife conservation to society poses a novel challenge for wildlife stewards who recognize that without public interest and support, we cannot fulfill our conservation responsibilities to current and future generations. Our ability to adapt to a changing social-ecological context is crucial to the future of the wildlife resources we are entrusted to sustain. With such questions in mind, this session explores the concept of relevance in the context of wildlife conservation.

I'd like to bring up Gina Main, director of professional development at the Association of Fish & Wildlife Agencies and executive director of the National Conservation Leadership Institute, who will help us with our one-question poll.

Opening Remarks

Sara Parker Pauley
Missouri Department of Conservation
Jefferson City, Missouri

Thank you for the opportunity to be here this morning and to be part of an incredible lineup of speakers at this special session on relevancy in conservation. While I will be engaged in many conversations over the next few days in my role as director of the Missouri Department of Conservation, this topic of relevancy and having our conservation story really resonate is one that is near and dear to my heart. It's personal—just as I know it's personal for each of you in this room.

But there's the hard work ahead of us and the big question we are all looking for the golden ticket to: How do we make it personal and passionate and purposeful and part of the everyday life for everyone else (all of those outside this room)? How do we break through the noise of thousands of messages every day to connect them with conservation? How do we resonate with people sometimes so different from us that we don't even know where to start the conversation? Simply put: How do we make people care—not later, but *now*?

I'd like to start the conversation with a personal story. I have a good friend who came over for dinner one evening, and as we were catching up by the warmth of the fire, she began to open up about the struggles she was having with her teenage daughter. Her daughter, who had always been like her shadow and sidekick growing up, had significantly pulled away from her in the last year. Instead of sharing every detail of her life, she now communicated in one-word answers or silence. Instead of long-flowing braids down her back, her hair was shaved on both sides and dyed midnight black to match her lips, nails, and too many rings in her ears. Instead of being part of the family, she spent all her time in her room alone, door shut, focused on her phone.

I remember my friend's exact words that night. She said, "I can't tell you how much my heart breaks that we no longer have a connection. I have invested a lifetime of work, heart and soul, into being her parent. I feel so stuck. I don't know how to make it better or proceed, but I feel like I'm running out of time to make a difference." As you can imagine, we talked well into the night. I listened mostly, but we did brainstorm ways for her to get back in the fight, strong and sure, and keep working on that relationship with her daughter. While I was preparing my opening remarks for today, I kept thinking about my friend and her story. It seemed like such a parallel to what we're unpacking today in this session.

I think one of the first steps we can make toward relevancy is to not let ourselves be defensive or fearful about the need for change. For most of us, we have spent our entire careers, decade after decade, working tirelessly to protect our valuable natural resources and wildlife in this country. It is not a job. It is a calling. One filled with an intense passion for the mission, countless hours of burning the midnight oil to make things happen, and brainstorming sessions on state and national levels to solve problem that often seem insurmountable. We are moving mountains here! We've got plenty of success stories to prove it. We even have new research coming out very soon from a Kellert and Case study showing that Americans have a widespread interest in nature and support conservation program and funding. YES! And yet—and yet—there is lots of research out there showing the opposite accord. One source telling us our loyal audiences—who really know us and support us—are shrinking, while the audiences who have no idea about who we are or what we do, including kids, are quickly growing in number. Stephen Kellert points out some startling statistics in his book *Birthright: People and Nature in the Modern World*:

- 96% of adults report the outdoors was their most important environment during childhood while 46% of children today acknowledge this importance.
- The average 8-year-old's home range, or the area where the child plays outside on his or her own, has decreased by 90% during the past half century.
- Children today spend 90% of their time indoors. 90 PERCENT!

Just like my friend, heartbroken and sad about her daughter, we must understand that these staggering statistics do not mean that we have failed as natural resource professionals. We must continue the strong work that has been the foundation of our mission—work that has kept wild places wild—but we must also not be so defensive or fearful of change that we forget to listen carefully or remain open-minded to new approaches. Without ego. Without criticizing. Without dragging our feet. We must adapt to new ideas, especially thinking outside the box, or run the risk of becoming obsolete all together. Society is changing and so must our approach.

Which brings me to my second point: we must also start to connect (with as many touch points as possible) with people who look different than us or are different from us. My friend didn't recognize her daughter, now in a Goth phase of all black from head to toe, and became fixated on all the differences between her daughter then and her daughter now. It was a staggering change, one completely out of her control, but it kept her from connecting and nurturing that relationship.

The demographics of outdoor recreation are white, middle class, and aging, but the world we live in looks a lot different than that. It is full of people made up of differences in age, ethnicity, education, background, language, resources, even how they spend their time. We must recognize the importance of not separating them into categories we create or only we feel comfortable with—consumptive versus nonconsumptive, permit buyer versus nonpermit buyer, urban versus rural. We must be willing to engage and serve a broader audience, even if it comes with a steep learning curve, in order to resonate and connect. We must diversify in a big and intentional way, with a focus on all people, including starting right in our own houses by looking closely at who is delivering the conservation message for us. Do we all look the same? Do we all speak the same language? Or do we look diverse like the world around us? Tough questions, I know, but also a vital part of the relevancy equation.

A third element of relevancy has to do with sharing our story. We must be gifted storytellers. I cannot emphasize this enough! It is almost impossible to move people from complacency into action without a compelling message. We fight a lot of other noise out there—celebrities, politics, advertising, consumerism—so sharing our message where people are most active, as well as being creative in our sharing, is critical. Our message must always be strongly tied to the important aspect of people's lives—quality of life, health and wellbeing, clean air and water, personal safety, economic impact, and the list goes on. With more and more people connected less and less to the land, we must figure out how to speak to them in a way that resonates, in a voice they understand, versus our traditional academic approach.

We must also use all the communications channels in our toolbox to tell our story, including technology. Especially technology. People consume their information right in the palm of their hand with their smartphone and consume hours of video content every single day. Just a few years back, we used to make 30-minute videos retelling our whole conservation history with a warm reception from audiences. Today, we post a one-minute, amateur smartphone video of 100,000 ducks and geese at a conservation area in Missouri and it goes viral within hours with a reach of 3.37 million, including 13,000 spirited comments all lending their voice about conservation. While it was a short message on the post, the incredible visuals of robust wildlife sold the story. It also allowed people to feel like they were a valuable part of the story because they could share their thoughts and opinions. We listened and interacted. They went from a spectator to feeling ownership—from a me and mine to an us and ours.

The last part of relevancy, and maybe the most important, is acting now. I don't think we can stress enough the sense of urgency—or the pivotal point we are at as agencies—for people to know us, support us, and be a part of our vital conservation efforts. My friend hit the nail on the head when talking about her daughter, but it also relates to us as well, when she said, "I feel so stuck. I don't know how to make it better or proceed, but I feel like I'm running out of time to make a difference." The years are short with teenage daughters. They are also short for us connecting people to conservation. While our conservation organizations, practices, and behaviors are well structured for a conservation organization in the 1970s, are we aligned to address conservation in 2017? What about in 2027 or 2050? We need to get moving! Because the world is moving at warp speed and clamoring for new and shiny things, which means the flavor of the week becomes overshadowed by the steadfast wildlife work spanning decades. Change is hard for all of us, but we cannot stay stuck in decades past. Immobilized. Unchanging. We

must be change agents and difference makers right now. We must take these transformative ideas we will all be working on together this week and begin. I fear for our collective future if we don't.

As I told my friend after our long talk by the fire, which may be the only words of wisdom I imparted that night: Do not lose hope. She had done all the hard foundation work as a parent, but her daughter had changed and grown, and my friend needed to figure out the best way to change without fear, anger, or guilt. She needed to immediately share with her daughter how much she cared in a way her daughter could understand, not just the way she had always communicated as a mother, and to convey they were in this together. She needed to meet her daughter where she was at—because being a team matters.

As we continue with our discussion on relevancy today, I want to share the same message with all of you. Don't lose hope. You've been working so hard and built an incredible foundation, but we must be open and honest with ourselves about how the world has changed and, maybe the hardest part, how we need to change, too. Urgency is of the essence because we need a large, collective community on our team—a conservation army, as Collin O'Mara (National Wildlife Federation) would say—all working together for long-term success. And in a world of people stressed to the max, they also need the incredible benefits of our natural resources for long-term health and success. It's a symbiotic relationship. As John Muir once said, "Everybody needs beauty as well as bread, places to play and pray in, where nature may heal and give strength to body and soul." We need each other. We really do.

Thank you for being here today and being a part of the vital conversation. Please join me this morning in welcoming our exceptional group of speakers for this special session who will shed more light on relevancy and what's on the horizon. Thank you.

Conservation Relevance: What Does It Mean To Us and For Us?

Cynthia A. Jacobson
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> It's that nexus—between what nature needs and what people want—where we may be able to find important opportunities for effecting large-scale and socially durable conservation outcomes. The process for change can be the same regardless of what motivates the action, but it needs human systems to support (Morrison 2016b).

Increasing concern about the relevance of conservation to society poses a novel challenge for the Conservation Institution (CI). The assumption is that conservation is becoming irrelevant to society as reflected by acceptance (implicit or explicit) of the continued degradation and loss of species and habitat; a growing perceived and behavioral disconnect between society and the "natural" environment; and a lack of behavioral transformation needed to curb growing threats to the well-being of our social-ecological systems. Those within the CI are beginning to recognize that if society does not deem conservation important, the fish, wildlife, and other natural resources we manage and advocate for will become increasingly compromised. With a collective interest and responsibility to promote conservation of natural resources for current and future generations, it is imperative that the CI addresses these issues. This paper articulates a draft vision for a desired future condition (DFC) for consideration of the CI. It also explores the concept of relevance in the context of conservation, the role of conservation relevance in achieving the DFC, the types of behaviors needed to achieve the DFC, and considerations regarding ways to influence those behaviors.

Desired Future Condition

Humans have a distinct and profound impact on the systems of which they are a part and on which they depend. Further, people receive benefits from these systems such as clean water and air; buffers from storms and erosion; and food, medicine, and recreational opportunity. To continue to receive benefits, these social-ecological systems need to remain healthy. To achieve healthy and sustainable social-ecological systems, conservation of the ecological component of those systems must be valued by the society with which it is interconnected. Many scholars agree that conservation relevance will be achievable only when society sees itself as a part of—not apart from—the natural world, understanding not only how humans affect the environment but also how the environment affects humans (Chapin et al. 2010; Manfredo et al. 2017). Societal recognition of the interconnectedness and interdependence of systems is an essential first step in developing a widely accepted stewardship ethic that will lead to behavior that will benefit conservation (Chapin et al. 2009).

To understand fully why conservation relevance is important, it is important, first, for the CI to articulate a general vision for the DFC of our social-ecological systems, recognizing that if we don't collectively agree, even in general terms, on what we want to achieve, how can we begin to know how to achieve it? We acknowledge that this articulation of DFC reflects our professional opinions. We suggest that it would be useful for the CI, initiated by the Association of Fish & Wildlife Agencies (AFWA), perhaps, to begin the process of developing and adopting a DFC. The DFC we use for the purposes of this paper is: "A healthy environment that forever sustains and benefits people and wildlife alike." Conceptually, we believe a vision for the DFC must be adequately broad to reflect all people and all

wildlife; it must speak to the interconnectedness and benefits that the components of the systems provide and it must have a goal to which people can relate.

Conservation Relevance

To achieve the DFC, conservation must be sufficiently important to society. It has been suggested that conservation of the "natural" environment is not valued appropriately by society, given the threats that a compromised environment poses for human well-being (Martin et al. 2016). Some authors contend that conservation is valued, just not to the same extent as are other priorities such as a strong economy, health, liberty, and protection from harm (Novacek 2008). This makes logical sense and has always been the case; for the most part, humans value what is most relevant—i.e., according to the dictionary, what is "bearing upon or connected with the matter at hand"—to them. Often, but not always, environmental conservation loses in this scenario. Securing basic human needs will always be prioritized higher than any environmental issue, and many believe that conservation of the environment is in direct conflict to ensuring these needs are met (Martin et al. 2016). For example, environmental policies—such as the Federal Lands Policy and Management Act or Endangered Species Act—are perceived by some to compromise individual rights to develop or otherwise use land or other natural resources. Manfredo et al. (2017) notes that core societal values adapt humans to their social-ecological context and have been fairly consistent over time. The authors note that value shifts happen only over generations and because of consequential matters such as globalization, warfare, or environmental devastation.

Although some scholars maintain hope that a societal value shift in favor of conservation can occur, others consider that it is unlikely in the short-term and stress that the way to influence conservation behavior is to work within existing societal values as these are the precursors to more specific norms and behaviors (Martin et al. 2016; Manfredo et al. 2017). In essence, if the CI desires to affect societal behavior change for the benefit of conservation, it will have to find opportunities to make connections within contemporary, extant core societal values. Morrison (2016a) suggests that society does not have to value biodiversity, per se, for conservation outcomes to be achieved. For example, actions taken to promote healthy living (e.g., creating parks or improving water quality) also have conservation benefits. The author suggests that conservationists must be more innovative in finding alignment with efforts synergistic with preserving biodiversity versus trying to change core societal values. A recent study demonstrates that society does generally have positive attitudes towards conservation (Kellert et al. 2017). The reality is, however, that those positive attitudes often do not lead to collective behaviors in support of conservation (Morrison 2016a). The contemporary interest in increasing conservation relevance suggests that the CI assumes that relevance (a belief) is the factor that could potentially turn those positive attitudes into conservation behaviors. When we refer to conservation relevance, we refer to: a broad societal belief that natural resources conservation is important to human well-being. And well-being is linked directly back to our core values—health, happiness, and prosperity. Morrison (2016b) emphasizes that conservation is relevant when society recognizes that conservation results in these key benefits.

Assuming we can demonstrate to society that conservation is in fact relevant, has the DFC been achieved? Positive attitudes about conservation and beliefs that conservation is relevant, alone, will not get us there. There is a key step missing and that step is conservation behavior. What we are ultimately seeking to do is inspire society to participate in behavior supporting conservation. In his discussion of conservation relevancy, Morrison (2016b) stresses that "it is not enough for conservation to benefit people. . .we need them to help us change policy and practices so that they continue to receive what is benefitting them."

Conservation Behavior

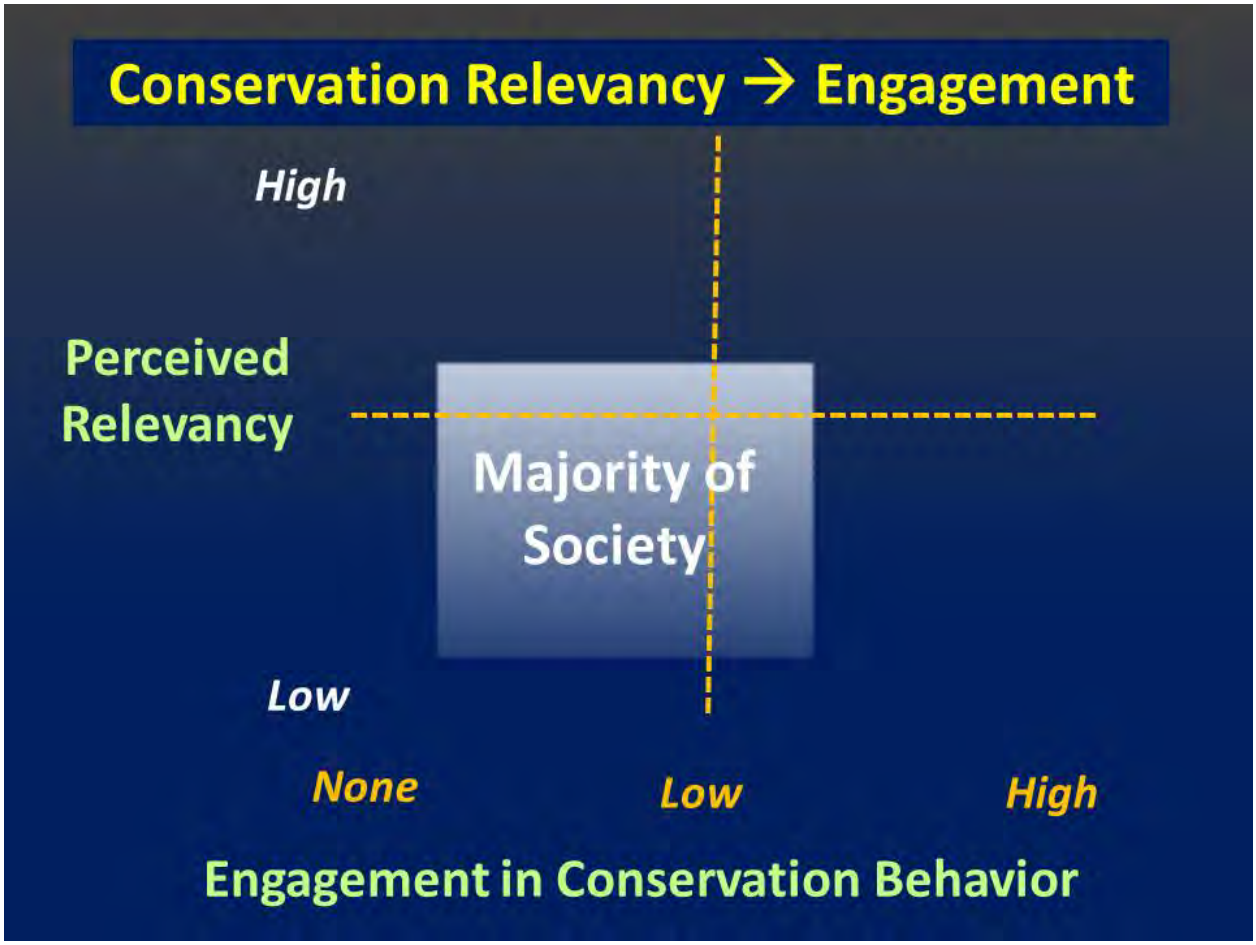
Schultz (2011) defines conservation as a behavior that humans either choose to do or not to do depending on prioritization among competing potential outcomes resulting from that behavior. Morrison (2016b) notes that conservation behavior is most likely to occur when people realize the benefits of the

outcome of such behavior. When there is a continual societal awareness of conservation benefit and subsequent mobilization of conservation behavior, conservation would be considered mainstreamed within society. Social scientists agree that values, attitudes, beliefs, and norms motivate behaviors (Fulton et al. 1996; Manfredo et al. 2003). In terms of achieving the DFC for conservation, societal positive attitudes and beliefs (e.g., conservation is relevant) regarding conservation are necessary but not sufficient elements. Schultz (2011) notes: "Conservation is a goal that can *only* be achieved by changing [people's] behavior." Essentially, to really have a conservation impact, attitudes and beliefs must compel society to act in favor of conservation. The reason this distinction is important is that it requires a recognition by the CI about the need, not only to influence societal attitudes and beliefs, but also to influence its behavior. The truth is that this is nothing particularly new in this assertion; the CI has always been in the business of trying to influence behavioral choices in favor of conservation. Consider the programs in which the CI invests heavily, such as hunter education, watchable wildlife, and citizen science. These programs provide information, tools, and incentives for behavior change. That is, the CI wants the public to invest (e.g., resources, political support, their time) in behaviors supporting conservation. So, this is familiar territory, even if not explicitly stated as such.

Conservation behavior can be defined simply as an action in support of conservation. Behavior comes in a variety of forms ranging from low engagement to high engagement and everything in between. Examples of low engagement might include conservation voting or purchasing a conservation stamp or license plate. Examples of high engagement behavior could include serving on a state wildlife regulatory board or commission, becoming a landowner conservation partner, or serving as an officer or board member of a conservation nongovernmental organization. Note that conservation behavior can be intentional (i.e., "I am performing this action to achieve a desired conservation outcome") or unintentional (i.e., "I am performing this action to achieve outcome X, regardless of whether or not I achieve a conservation outcome"). Our focus is on intentional conservation behavior, where the outcome desired is in support of conservation (whether or not it actually does is another topic).

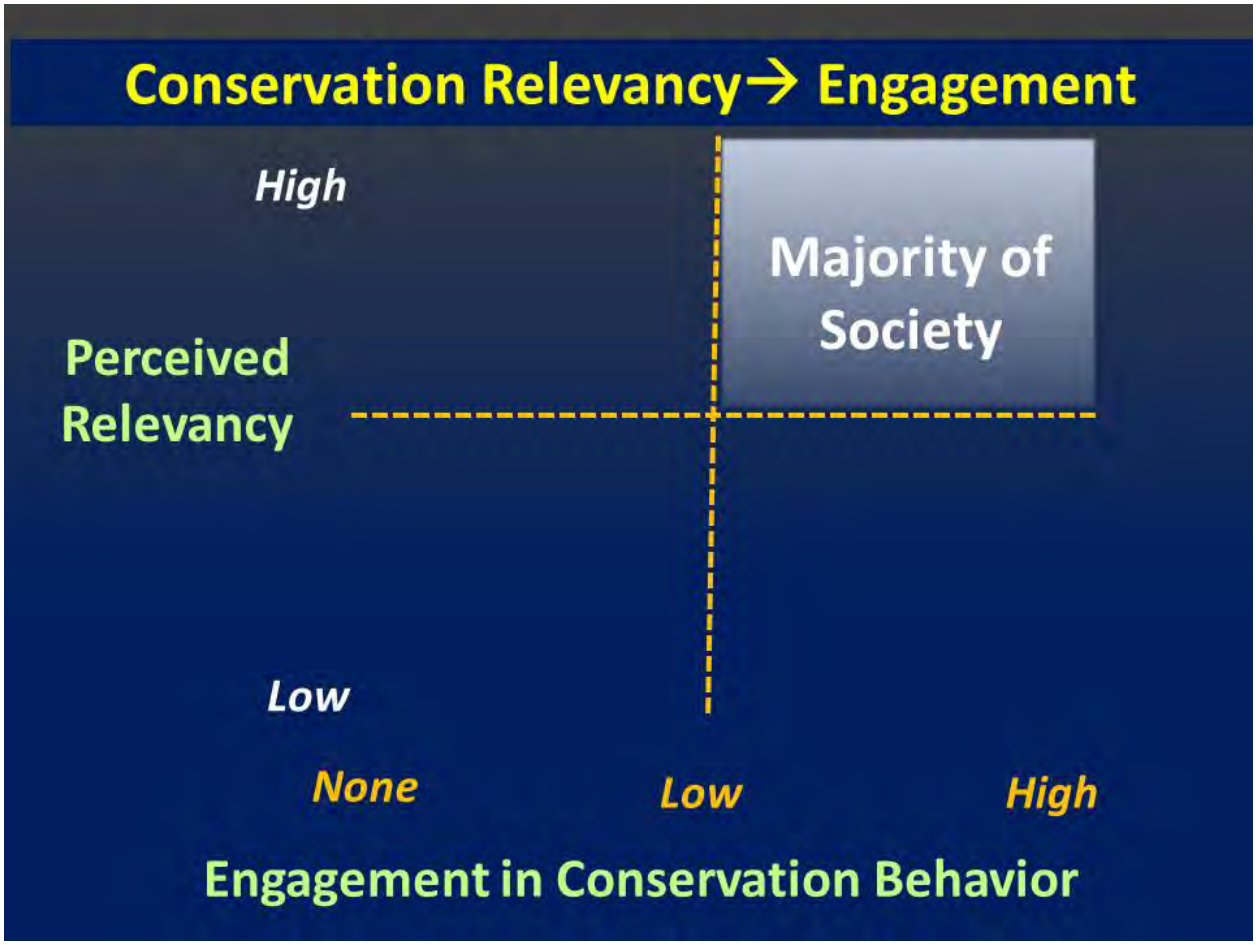
We know that attitudes and beliefs motivate behavior, so it follows that the belief that conservation *is* relevant should be a key factor in motivating conservation behavior. Of course, other factors such as cost and time influence decisions to engage in conservation behavior as well. We can think of the contemporary situation as depicted in Figure 1.

Figure 1. Current situation: level of perceived conservation relevancy by engagement in conservation behavior.



Compared to other issues, conservation relevancy is low for most of society and engagement in conservation behavior is similarly low. Where we want to be is in the upper right quadrant (Figure 2), where conservation is relevant and, subsequently, there is some public engagement in conservation behavior, ranging from low to high.

Figure 2. Desired situation: level of perceived conservation relevancy by engagement in conservation behavior.



The point is that relevancy can be an important factor in helping motivate people to engage, even at low levels, in conservation behavior. By focusing on behavior—ranging from low to high engagement versus merely attitude change—we seek to offer perspective that will help the CI design more effective actions to increase conservation relevancy and engage society in conservation behavior.

Some Considerations for Influencing Behavior Change

In order to achieve the DFC, conservation behavior at low-investment levels must be mainstreamed within society. Broad conservation relevance is a precursor to mainstreamed conservation behavior. Conservation exists along a continuum of behaviors that require some type of prioritization and engagement on the part of the individual. Engagement can range from low to high and refers to the immediate behavioral action and makes no predeterminations about the outcome of said action. Based on the social-ecological trends discussed above, we can assume that, although society has generally positive attitudes towards conservation, a majority of people are not engaged or are minimally engaged in conservation. Further, we assume that if the CI is successful at increasing conservation relevancy within society, people will become more interested and engaged in conservation behaviors. The initial question for the CI to address then is: What are the target behaviors (ranging from low to high engagement) it is seeking to influence that will result in desired conservation outcomes (Stern 2000)?

Influencing behavior change is nuanced and involves thoughtful planning and evaluation. Communication efforts are unlikely to have an impact on people's core values, but if crafted carefully to relate benefits of conservation action to those values, communication can be effective by activating beliefs about those benefits, thus resulting in subsequent behavior change. In other words, the CI needs to invest in understanding what people really care about, particularly at regional and local levels, so we can better: (1) connect our conservation work to those things *and* (2) adapt and broaden *our* behavior (e.g., programs, messages) to better address society's interests and needs. Manfredo (2017) stresses that efforts to change attitudes, beliefs, norms, and ultimately, behaviors will focus on programs and messages that help society achieve its priorities, not necessarily compel it to change its core values. Novacek (2008) suggests a multipronged strategy to influence conservation behavior. The approach involves three key objectives: (i) improved understanding of the specific, diverse public audiences we seek to engage; (ii) drafting of messages appropriate for each audience; and (iii) enhanced delivery of those messages to elicit recipient engagement. Building on these objectives, the following are some considerations for the CI in thinking about the role of conservation relevance in influencing behavior change.

If we are serious about increasing the extent to which conservation is considered relevant in society, we need more balance in our programs and messaging. We invest a great deal of resources in targeting a small percentage of the population (i.e., hunters and anglers) and other efforts to inspire high-engagement conservation behaviors, but not nearly as much on efforts to connect to the majority of citizens who are not, nor will ever be, highly engaged. That is not to say that continuing to strive for people to value conservation and be highly engaged in conservation behavior should be abandoned, but we need to thoughtfully balance and target our programs and messages to have a broader reach, including influencing specific conservation behaviors. We may be more successful in doing so by connecting with popular pre-existing programs such as community wellness, afterschool programs, and hiking or biking clubs. To be effective in achieving the DFC requires: a cultural broadening of the CI, a willingness to accept other ways of thinking about the world, and becoming leaders in finding conservation's role in that reality.

Finally, we could all probably admit that we do not tend to invest in evaluating whether our programs or messaging is working, using behavior as the ultimate metric. This takes some time and resources but is essential in determining if we are making a difference. If we are truly going to make inroads on building a relationship with the broader society—leading to increased support for conservation and what we do, we are going to need to try some new things based on what we learn. These new programs, in addition to our traditional outreach efforts, need to be evaluated and adapted or abandoned if found to be ineffective.

Conclusion

To achieve healthy and sustainable social-ecological systems, society must engage in conservation behavior, ranging from low (e.g., conservation-minded voting) to high (e.g., representing conservation interests on local planning committees) engagement. Since the beginning of the conservation movement, the CI has hoped that society would value fish, wildlife, and habitat as deeply as it does, but an abundance of evidence has demonstrated that it will not. The good news is that deep-rooted value for the environment is not a necessary condition for low-investment conservation (e.g., conservation voting, recycling) to occur. We offer the suggestion that if society believes that conservation is relevant to human health and well-being, it will engage at least minimally in low-investment conservation behavior—most importantly, demonstrable support for conservation policy and policymakers—to the extent needed for the broadened CI to achieve desired social-ecological outcomes. That is not to say that continuing to strive for people to value conservation via participation in conservation-related activities such as hunting, viewing, and getting kids outdoors should be abandoned. But if the CI considers that there are limited resources to invest in these efforts and that there is little data to support return on investment, the CI should consider a strategic focus on achieving the social outcome (i.e., relevancy versus valued) that is

more likely attainable and may be more likely to provide societal support needed for the CI to facilitate achievement of a DFC that benefits both humans and wildlife alike.

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Moving Wildlife Conservation Forward: Let's Get Real About Relevancy

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Echoing the beliefs of many leaders in the wildlife conservation community, last year the Blue Ribbon Panel report declared wildlife conservation in the U.S. is experiencing a crisis of relevancy and recommended that state agencies "broaden stakeholder representation to ensure fish and wildlife conservation remains relevant and supported by people from all walks of life" (Association of Fish & Wildlife Agencies (AFWA) 2016). The panel members speculate that "shifting demographics and changing attitudes about nature are affecting the relevancy of fish and wildlife conservation" (AFWA 2016). Collective support for wildlife conservation programs does not seem to match the generally positive attitudes Americans hold toward wildlife. Though public opinion research consistently reveals that interest in and concern about the environment is widespread in America, we know that Americans frequently behave in ways inconsistent with concern about the health and sustainability of the natural environment, generally, or support for wildlife conservation, specifically.

We don't have a definitive answer about why this is the case. The explanations are likely diverse. It may be that Americans by-and-large just don't care deeply about some wildlife conservation issues (e.g., the extinction rate of amphibians). Perhaps many don't make a connection between their quality of life, including their outdoor recreation pursuits, and environmental quality or wildlife conservation (e.g., the relationship between owning a beachfront vacation property or using motorized vehicles on beaches and conservation of coastal wildlife or ecosystems). It may be that some grasp the seriousness of conservation challenges, but because of the daunting scope and scale, they feel that some environmental problems (e.g., threat of plastic pollution to seabirds) are insurmountable (Wilcox et al. 2015). Some threats to wildlife conservation (e.g., global climate change) may simply be unfathomable to substantial segments of society. Researchers in the fledgling field of conservation psychology are trying to fill in the information gaps for specific issues and in specific contexts (Clayton and Brook 2005; Clayton and Meyers 2015). This kind of inquiry takes time, however, and the sense of urgency to increase relevance of wildlife conservation is running high within the conservation community.

Understandably, some are not waiting for the results from more research; they are taking action today. In the absence of a solid foundation of social science research, we can expect concerned individuals, organizations, and government agencies to invest in efforts that appear to make sense (e.g., efforts to recruit, retain, or reactivate hunters) but may be too narrow to cultivate a broad base of support. For now, we as wildlife professionals need to examine our operating assumptions candidly and try to figure out how best to move forward.

In this paper, we explore how to make wildlife conservation relevant and, better yet, of value to more people. We share a theoretically grounded but highly interpreted perspective about a strategy for building relevancy for wildlife conservation. We point out possible reasons for discrepancies between

what people say and what they do with respect to conservation. We look beyond surveys about conservation attitudes and into what people value generally and whether conservation can ride the coattails of higher priority interests and issues. We discuss how the wildlife conservation community might exploit salient attitudes common among Americans to encourage proconservation behaviors.

Let's Face Reality

If we are going to make progress in this relevancy conundrum, we need to accept reality. Frank Luntz seemed to hit the nail on the head in his 2009 book, *What Americans Really Want … Really*. Luntz notes that people talk a good game, but when it comes to environmental concerns, the actions of most people are inconsistent with their words. As Luntz (2009) points out:

> Americans are quite good at supporting "bold action" for the greater good, but their actual record of personal participation and self-sacrifice is spotty at best. Our collective intentions are clear, but our follow-through is inconsistent. Nowhere is this more evident than in issues involving the environment.

The American public demands tangible evidence that environment damage is being repaired, "…but that doesn't necessarily translate into a personal willingness to pay for it, sacrifice for it, or change their daily lifestyle for it" (Luntz 2009). What does that mean for the relevancy problem? Well, if we want wildlife conservation to be relevant, we need to connect it to something that is "really" important to a larger segment of the population. That means we need to understand what makes something really important to most Americans today.

We believe the dominant, overall goal that motivates behavior of the vast majority of society is simply this: *Ensuring the well-being of one's self and significant others*. For some people this includes future generations. This assertion is not profound; likely this goal has been driving people's behavior for millennia. *The trick is to identify what "well-being" means in the contemporary context of American society.* Thus, to understand what makes something *really* important to most Americans today, we have to identify their priority needs, interests, and concerns.

Our synthesis of the literature leads us to conclude that to be relevant, valued, and a priority, a topic has to have salience to people's: (a) basic needs and (b) compelling aspirations, which are commonly reflected in their recognition or expression of needs, interests, and concerns. Basic needs are safety, security, health (physical, mental, spiritual), and affiliations of various kinds (with family, friends, community of place or community of interest, etc.) (Maslow 1954; Kasser and Ryan 1996).

Aspirations include comfort, convenience (e.g., lifestyle improvement, material success), recognition, and intergenerational improvement (Kasser and Ryan 1996). Among these aspirations, we think that a very high priority is comfort and convenience—elements of the "good life" many people aspire to. When asked, Americans may agree that conservation is important, but as a society, we seem pretty consistent in placing lifestyle considerations ahead of most everything else. So understanding which needs, interests, and concerns (NICs) are salient to lifestyle goals of segments of society may provide clues to strategic associations between conservation and NICs. Restating the challenge, we can ask: To which coattails can conservation attach if our aim is to raise conservation as a priority?

Relevance-to-Value Logic

Figure 1 represents our view of the connections between the American public's needs, interests, and concerns and the proportion of Americans who find the programs of wildlife agencies relevant and important. We conceptualize different paths that can lead Americans to a place where they value the work of wildlife management agencies—or not.

Depending on whether people believe wildlife and habitat are essential, optional, or unnecessary, conservation of these resources (i.e., wildlife and the ecological systems on which their survival depends) has potential to be perceived as valued, relevant, or irrelevant or perhaps even inconvenient. When you add to the figure whether or not the act of conserving wildlife and habitat addresses or not, affects or not, or impedes or not NICs salient to people, the outcome is programs and agencies or NGOs being regarded as relevant or irrelevant, valued or not, and perhaps even unwanted and opposed. The figure basically suggest Americans fall into three categories: core supporters, peripheral supporters and nonsupporters.

Core supporters. A segment of American society believes that conservation is essential. They highly value the ultimate goals of conservation (i.e., sustained health of wildlife and wildlife habitat). They ascribe high priority to wildlife conservation compared to other interests (expression of value in personal and societal actions—e.g., consumer behavior and public policy) because they believe that conservation impacts current and future generations. They come to hold themselves and others (including wildlife agencies) accountable for conservation and support wildlife agency conservation programs. If they believe that wildlife agency programs are contributing to wildlife conservation, they regard those agencies and their programs as relevant and valuable. A portion of people in this category, though deeply concerned about wildlife and the environment, do not value wildlife agencies; these people don't believe those agencies are addressing their central concerns.

Peripheral supporters. Some individuals see conservation as relevant but comparatively unimportant. In turn, they find the work of wildlife agencies relevant (because they hold some concern about the health of the natural environment), but they don't highly value it; they regard wildlife agency work as desirable but optional. That work just doesn't address their most important needs, interests, and concerns. Some kind of intervention would be needed to "convert" a portion of these individuals into supporters of wildlife agencies. Programs to encourage wildlife-dependent recreation don't interest this segment of the public and likely won't change their beliefs about the value of wildlife agencies.

Nonsupporters. A portion of the American public does not perceive wildlife conservation as relevant or important, and some of these people even find wildlife conservation an impediment to achieve their needs, interests, and concerns (e.g., conservation of threatened species may conflict with their land use or livelihood). Americans in this path are unlikely to support wildlife agency programs; some will actively oppose those programs.

How Can We Get More Americans on the Route to Relevancy?

Much of the discourse about conservation relevancy focuses on how individuals come to regard conservation as relevant to them. That perspective leads to analysis of what influences people to create conservation relevancy in their minds. Analysts and leaders hope to discover the "route(s)" to relevancy so they can design interventions that put more people on the bolded paths depicted in Figure 1. It seems fair to say that much of the discussion about the roots of and the routes to relevance has been based in the personal experience of wildlife professionals.

Let's consider how many people in the wildlife conservation community tend to look at the problem. What logic is being applied to conceptualize it? Based on our observations, the prevailing logic goes something like this:

> If more folks felt about wildlife like we do, they would support conservation. We developed our passion for wildlife early in life when enjoying the outdoors under tutelage of a mentor; therefore, similar *experiences* will lead others to develop affinity for wildlife, too. And for those who may not have opportunity for outdoor activity involving wildlife, greater *knowledge* about the ecological importance of wildlife will draw them into the proconservation fold.

This perspective reveals common assumptions about "formulas" for interventions to improve relevancy.

While this logic is, well, logical, it also constrains thinking, often limiting analysis to two questions when it comes to addressing relevancy: how do we get people to feel as we do about wildlife? And how do we get people to know what we know so they will behave as we believe they should? This leads to three models/formulas for interventions leading to relevancy and value:

- Individual + mentor + outdoor experience → conservation relevance recognized
- Individual + mentor + information → conservation relevance recognized
- Individual + mentor + [outdoor experience & information] → conservation relevance recognized (combined model)

Let's explore these simple models and their underlying assumptions. You will recognize these are evident in many programs that encourage people to appreciate conservation relevancy. We also offer another model we believe will help us move forward based on a very different assumption. As we flesh these models out, consider whether they are the bases for competing alternatives or the foundational, complementary components of a comprehensive approach to increasing relevancy. We think they are complementary and together offer a general conceptual framework for moving forward with a multipronged effort for achieving greater relevancy and, more importantly, greater conservation impact. We describe each model generally, identifying the apparent operating assumption for each and issues associated with each.

Mentor/Experience-Deficit Model

This model is grounded in personal-life experience extrapolation of traditional wildlife and environmental education communities. Its analytic question is: Why are they different from us? It reflects a spiritual and instrumental relationship between humans and wildlife—primarily, wildlife centric. The answer consistent with this model is that people have a deficit in guided, outdoor experience. The mentor/experience-deficit model rests on the following implicit assumption: Everyone should enjoy recreating outdoors and then they will love nature, natural areas, and wildlife like we do, leading to relevance of conservation (and our conservation efforts)—aka, "If other people only *felt as we feel*…" The simplified version of this model goes as follows:

Mentor/Experience-Deficit Model

If we get people outside to enjoy nature and nature-dependent activities with guidance of an experienced mentor, they will appreciate nature and wildlife, come to desire wildlife conservation, and recognize agency programs as relevant to their desire for wildlife conservation, contributing to societal value and support for agency conservation programs and increasing the likelihood that wildlife conservation outcomes are achieved.

Inconvenient truth. Guided experience in activities like hunting, birding, and nature study undoubtedly can cultivate in some folks a conservation ethic and motivations to take proconservation behaviors. But we must admit that not everyone exposed to the outdoors and nature-based activities goes on to exhibit proconservation behaviors or become conservationists. Think about people you know, even close relatives (children and siblings), and chances are good you have observed this yourself.

Mentor/Knowledge-Deficit Model

This model also leads members of the traditional wildlife community to frame analysis with the question: Why are they different from us? The answer under this model is that people have a deficit in knowledge and lack an intellectual influence in gaining that knowledge. The need to be met is improvement in knowledge that results in a wildlife-centric scientific and instrumental understanding of the relationship between humans and wildlife. The mentor/knowledge-deficit model rests on the following implicit assumption: Everyone should know how important wildlife is to biodiversity and that

wildlife is indicative of or is a sentinel for a healthy environment, and then they will value wildlife, leading to relevance of conservation (and our conservation efforts)—aka, "If other people only *knew what we know*…" The simplified version of this model goes as follows:

Mentor/Knowledge-Deficit Model

If we raise people's awareness of and knowledge about wildlife and the natural world, we will create in them a sense of wildlife's instrumental value, which will instill in them a desire to conserve wildlife and natural resources, and they will recognize agency programs as relevant to their desire for wildlife conservation, contributing to societal value and support for agency conservation programs and increasing the likelihood that wildlife conservation outcomes are achieved.

Inconvenient truth. People process "information" through values filters that can result in very different beliefs, attitudes, and behaviors, even if exposed to what we might agree is objectively the same information. Given that experts disagree on the meaning of data, there is no reason to expect laypeople to be any different. While making information available that can inform beliefs is important, it should not be considered sufficient. We know that simply giving people more information about a wildlife issue is sometimes not enough to stimulate behavioral change that would reduce human-wildlife conflicts (e.g., Baruch-Mordo et al. 2011; Gore et al. 2008). Environmental education research has shown that "injecting" American youth with information can raise their awareness of environmental issues, but that environmental knowledge accounts for only small amounts of variation in pro-environmental behavior (e.g., Kempton et al. 1995; Maitney 2002; Morrone et al. 2001; Siemer and Knuth 2001; Stables and Bishop 2001). Americans are not unique in this regard; for example, research also has shown that an information-deficit approach was ineffective in promoting pro-environmental behavior change in Britain (Blake 1999).

Evidence exists to suggest that mentored wildlife-related activity involvement and carefully crafted, long-term environmental education efforts can develop wildlife conservationists and support for conservation programs. We have no doubt that the interventions based on these two models have created many proconservation-oriented individuals in American society. But growing evidence is showing these models are not reaching everyone, nor are they transforming all of those they do touch into wildlife conservationists. This is why we need to add a model or formula that pays attention to the needs, interests, and concerns that are already of high priority for society.

Needs, Interests, and Concerns (NICs)-Association Model

The day-to-day lives of most people play out several steps removed from nature and the essential natural resources required to sustain their lifestyles. Arguably, most modern Americans largely do not see, do not feel, and do not know the many ways their lives (livelihoods and well-being) are connected to nature. Nature is an intangible "thing" (concept or condition) for many people—a notion, an option. Even for most people who express concern about the well-being of wildlife and indicate support for actions enabling wildlife conservation, if you scratch the surface, you often find their sentiments are based on a notion of conservation being a *preferred option* rather than recognition that a healthy environment (functioning ecosystems with the ecological services provided) is an *essential need* to sustain their way of life.

Certainly their behavioral choices suggest that impacts of environmental degradation and loss of wildlife are not regarded by most individuals in our society at a level of concern that outweighs their desires for the comforts, conveniences, and physical security afforded by their lifestyle. In the hierarchy of issues worthy of personal and collective action, apparently healthy wildlife and quality habitat is low on the list compared to other issues contributing more obviously to the lifestyle goals of most Americans. Until larger segments of our society regard conservation as essential to meeting their goal of leading the good life (i.e., ascribe tangible value to conservation) or they miraculously elevate wildlife and nature conservation to a higher position in their hierarchy of needs and interests, expecting a change in priority

for wildlife/nature conservation is unrealistic. The NIC-association model is needed to guide communication with this large segment of American society.

A NIC-association model is not wildlife centric. It does not assume wildlife is the primary motivation for finding conservation relevant. This model instead recognizes and accepts that for many people wildlife interests will not compete with other issues for top billing in relevancy, valuing, and support. It leads us to consider different approaches to garner public support for actions that have conservation outcomes. Basically, it leads us then to identify high-priority NICs to which wildlife can be attached (i.e., to ride the coattails of these higher priorities). By exhibiting a particular behavior, both an individual's salient NICs and wildlife can benefit. Examples:

- By supporting creation of storm water retention ponds, you help maintain clean drinking water in your community, reduce the risk that homes will be flooded—*and also benefit wildlife*.
- By supporting conservation of natural features of a coastal area, you reduce the human and economic costs of severe weather events on yourself and your community—*and also benefit wildlife*.
- And moving upstream, by supporting conservation of local upland vegetative cover, you maintain water quality, flood reduction, and access to safe open spaces to enjoy with your family—*and also benefit wildlife*.

The NICs-association model has positive outcomes for conservation as the goal, not simply relevancy of wildlife, conservation ideals, and agencies. The NICs-association model rests on the assumption that people have many competing demands for their support. For the vast majority, the well-being of wildlife alone won't rise to higher levels of priority that result in valuing wildlife over other NICs; therefore, a strategy for wildlife conservation is not to focus on improving relevancy of wildlife, per se, but to identify higher priority NICs to which wildlife can be attached (i.e., ride the coattails of these higher priorities). If people's actions have positive conservation effects, it's irrelevant whether they feel like us or know what we know about wildlife.

The basic steps in the NICs-association model are as follows: inventory and describe salient NICs for American society, identify connections to wildlife and conservation, focus effort on demonstrating contributions of healthy wildlife and quality habitat to selected priority NICs, and demonstrate how wildlife conservation contributes to those interests. If we can collectively achieve these steps, substantially more Americans will find agency programs relevant and support those programs, leading to achievement of conservation outcomes. Possibly greater valuing of wildlife and habitat develops in this process, but this is not necessary for conservation to happen. Again, the crux of the issue is that people place highest priority on basic needs, quality of life, and lifestyle goals. Understanding how to make wildlife salient to the needs, interests, and concerns of people is bound to be more fruitful in the short-run than trying to get wildlife, per se, onto the top of the priority list.

Complementary Routes to Relevancy and Value

To be clear, we are not saying throw out the experience-development and knowledge-development models. They have always been—and will continue to be—successful formulas for developing some citizens into wildlife conservationists. But we are encouraging the wildlife conservation community to expand its approach to include the NICs-association model. That formula may be more effective in gaining desired outcomes from many people in the near term.

Making wildlife conservation relevant and valued simply means attending to more of the diverse interests found in our society that can be associated positively to conservation of wildlife. Most people—if they do not have what they consider to be more pressing concerns (e.g., food security, health, physical safety)—can see the connections between wildlife conservation and quality of their lives if these are explained clearly, but it seems that few make time for this purpose. Some people will respond to an idealistic notion of a conservation ethic, motivated by their sense of the intrinsic value of wildlife and

their propensity for altruistic behaviors. These people can be motivated to action just by the thought (and images) of wildlife under duress, even if the situations in need of conservation attention are remote and their personal relationships to them nonexistent. Other people, seemingly a majority, can be expected to respond only to a more pragmatic approach, appealing to instrumental motivations that result in conservation being relevant and valued. These people will respond to reasons for action that are affecting them in what they consider important, tangible ways (health and safety, financially, lifestyle impacts) and likely will be more responsive to perceived needs that have an effect on the spaces/places where they live, work, or recreate.

The perspective that people's needs, interests, and concerns motivate their behavior suggests that the connection between concern for the well-being of humans and the well-being of wildlife or the quality of the environment (i.e., wildlife and habitat conservation) would be strongest if the focus of concern is tangible, proximate, and urgent with respect to basic needs and compelling aspirations. It seems that without those characteristics—*tangibility* (i.e., readily observable and affecting a high-priority interest), *proximity*, and *urgency*—people largely do not attend to conservation messages or engage consistently in proconservation actions. The universally action-inducing, not-in-my-backyard phenomenon, for example, seems to be a manifestation of relevancy (tangible and proximate) leading to action based on a desire to preserve a salient interest or alleviate a concern, coupled with a perception of urgency.

Conclusion

Clearly long-term strategies that develop deeper appreciation for wildlife and conservation are badly needed. They are preferable and they may prevail in time—but the crisis is now. Therefore, it seems that outreach efforts to gain support for conservation need to start with a foundation of understanding what is most important to society. We think that conservation leaders contemplating interventions to increase relevancy are wise to take heed of Luntz's (2009) practical advice to focus on people's priority interests and allocate significant time, effort, and funding to ensure their portfolio of actions focuses on those interests. Expanding our playbook to include the NICs-association model—or something akin to it—may be more effective in gaining desired behavioral outcomes from the multitudes in the near term.

Acknowledgments

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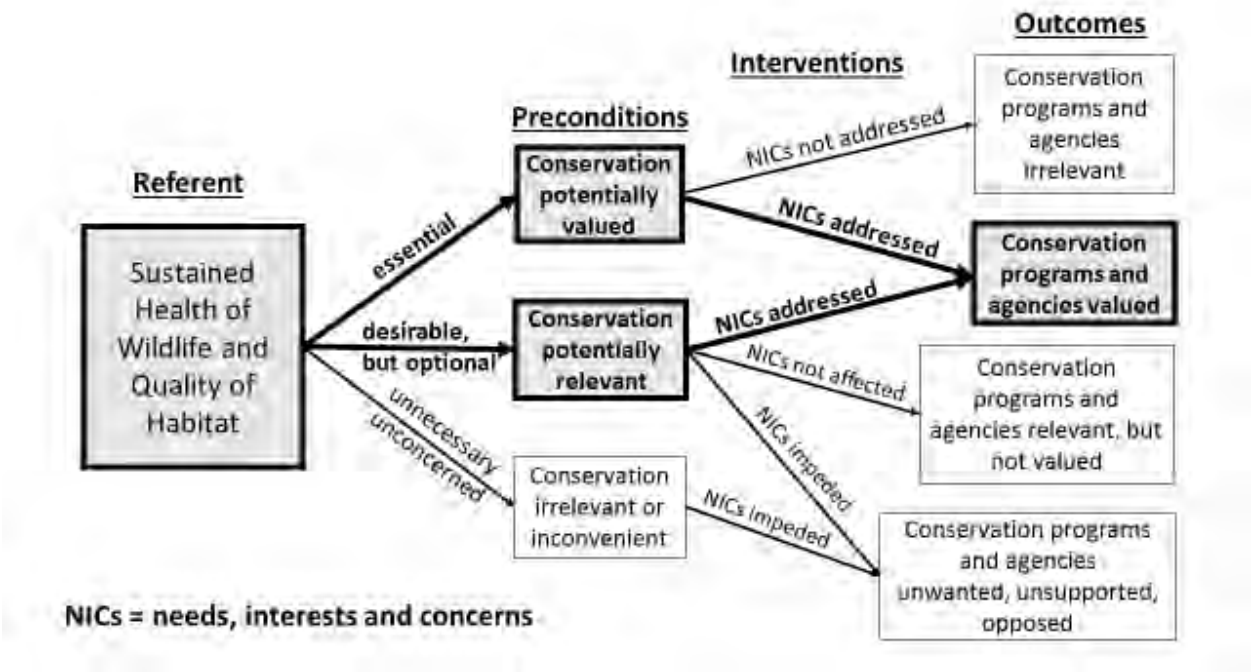
Figure 1. Relevance-to-value logic model.



Connecting Nature and Society to Increase Conservation Relevance: A Case Study of the Monarch Butterfly in Urban Areas

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Introduction

Connecting people with the outdoors and the natural world remains a recurring challenge and priority for the conservation community. Relevance refers to the quality or state of being closely connected and, in the context of conservation efforts, conveys the proposition that conservation is valued and supported by society. Expanding conservation relevance and achieving conservation objectives means listening and working alongside urban conservationists and community-based organizations; it also means reassessing what is meant by the "conservation community." These lessons are at the heart of many contemporary environmental efforts, including the case study discussed in this paper: a collaborative effort to develop a conservation design for monarch butterflies in urban areas and to understand the contribution cities can make to conservation objectives. This conservation design's process and products help to inform and guide decisions regarding the best places and the most effective ways to create habitat at the local scale. Both the process and the products represent a first step toward assessing the collective impact of actions in urban areas across the monarch's midwestern migratory path. The products, aimed at municipal decision-makers and conservation practitioners, include an *Urban Monarch Conservation Guidebook* and accompanying spatial planning tools that can help cities to develop strategic monarch conservation plans. A focus on the monarch has helped draw our attention to connections that city residents make between culture and ecology and to the great potential of these connections to make conservation more widely relevant and thus more effective.

In this paper, we explore the issue of conservation relevancy through a case study of collaboration between U.S. Fish & Wildlife Service, The Field Museum, and other partners on an urban conservation strategy for monarch butterflies. We briefly review why monarchs are a conservation focus and the ways of thinking about cities and conservation that we have found most useful in this context. We then describe our research design and results—and how we are applying these results in products and planning tools that inform on-the-ground action. We conclude with a discussion of the lessons learned in this project about urban landscapes and conservation relevance.

Background

The monarch butterfly and other pollinators are in trouble. Just in the last decade, the Eastern migratory population of monarch butterflies has declined by approximately 80% (Semmens et al. 2016). Habitat, including milkweed host plants and nectar food sources, has declined throughout most of the

United States and observed overwinter population levels in Mexico have exhibited a long-term downward trend. Recent efforts led by the U.S. Geological Survey suggest that conservation strategies should include all land-use types in order to stabilize monarch populations at levels necessary to adequately minimize extinction risk; this is often referred to as an "all hands on deck approach" (Thogmartin et al. *in review*).

Four out of five Americans live in large metropolitan areas and these urban lands teem with innovative and effective local-scale monarch recovery efforts. The role cities can play in monarch recovery—and in providing habitat for pollinators and other wildlife—is more important than previously recognized (Hall et al. 2017; Derby Lewis et al. 2015; McDonald 2013). Our recent work to develop an urban monarch conservation design reveals that a large metropolitan region such as Chicago has more than 18 million stems of milkweed already on the ground and, through strategic outreach with different land users, this number could double. While the prospects for adding milkweed stems will vary from city to city, the potential is clearly there for cities to make a difference in monarch conservation.

With a national focus on monarch butterfly and pollinator conservation, along with a variety of urban initiatives, the U.S. Fish & Wildlife Service joined with The Field Museum in Chicago to help develop a specifically urban conservation design and guidebook for monarch conservation efforts. The museum's location in the city of Chicago; its interdisciplinary team of ecologists, social scientists, and geospatial analysts in the Keller Science Action Center; and its understanding of the important role of partnerships and networks positioned it to work with the U.S. Fish & Wildlife Service to connect the ecological and cultural pieces to make monarch conservation relevant and effective in urban areas. As the project developed, new networks between practitioners of urban monarch conservation in central North America were forged, and an advanced understanding of how the tools work in the landscape of Chicago was expanded to include other metro areas in the monarch flyway, including Minneapolis-St. Paul, Kansas City, and Austin, where local teams of researchers added to the study's ecological and social scientific knowledge base.

The project is rooted in an analysis of which urban land uses—and the engagement strategies for each land use—are likely to lead to the greatest increase in milkweed stem production. It relies on the best possible locally available land-cover and land-use data and a land-use specific understanding of stakeholder priorities and community engagement techniques obtained via surveys, interviews, and local inventories. Taken together, this information can help guide decisions regarding the best places and the best ways to implement pollinator habitat in a strategic way at the local level.

What Does "Urban" Mean?

We seek a rich definition of the "urban" that reflects a deep sense of how nature and culture are presented in the view of both urban as a site as well as urban as a process. Our work is informed by sociological definitions of the "urban," as there is a longstanding and rich discussion around this term within the field. At the foundation of sociology's understanding of urbanism is the idea of cities as 1) large, 2) heterogeneous, and 3) densely populated (relative to rural areas) (Wirth 2004). Since these three key qualities of the urban were posited, much has been written and debated on the topic of urbanism. Contemporary scholarship (e.g., Walks 2012) focuses on urbanism (and suburbanism) as a process or a set of "flows." Walks (2012) argues that urban and suburban flows have different characteristics but rely on one another to exist; in other words, there is no "urban" without "suburban." In this analysis, urban, suburban, and rural areas are characterized by general tendencies; boundaries between these types of populations and landscapes are messy and porous. This is also the approach of geographers working within the field of urban political ecology, who are more interested in the urban as a process than as a site (Angelo and Wachsmuth 2014). These ways of thinking influence our social scientists' approach to studying monarch conservation, which is attentive to processes, relationships, networks, and practices. However, we simultaneously maintain an interest in the material life of the city and in engaging with cities as sites that can be mapped and quantified in various productive ways.

Community-Based Conservation

The project team is also guided by the principles of "community-based conservation," which has emerged in the last few decades as an umbrella term for a wide-ranging set of practices that involve people in the sustainable management of their local, natural environment (Mulrennan et al. 2012; Western and Wright 1994). These more participatory forms of environmental governance were taken up in response to the shortcomings of top-down, exclusionary models that positioned people in opposition to nature and sought to separate the two. Not only were the top-down approaches incompatible with principles of autonomy and democracy, they were also often ineffective in achieving conservation goals (Mulrennan et al. 2012; Western and Wright 1994). Community-based approaches, on the other hand, are more likely to succeed because communities often have a deep investment in and knowledge of their local environment (Brosius et al. 2005; Lemos and Agrawal 2006). These approaches help broaden the field of conservation action to include peopled landscapes. The Keller Science Action Center's team working in the rural Andes-Amazon region in South America has found this to be true; they have seen firsthand the benefits of involving people in participatory research-to-action projects that advance both biodiversity conservation and community quality of life.

An *urban* community-based conservation approach considers the ecology of a region along with the social fabric and wide diversity of people, social groups, stakeholder interests, and land-use types to gain an understanding of how these aspects interact and collectively shape the urban landscape—and how this wide range of actors might be brought to the table. This knowledge base helps to identify ecological assets that already exist in an urban region and guides best practices for how to engage different stakeholder groups in conservation efforts. What's more, community-based conservation offers us the tools to expand what we mean by the "conservation community."

Understanding the Ecological and Social Landscape of Urban Monarchs

Ecological Landscape

A common characterization of cities we have heard is that they are completely developed and almost entirely devoid of green space. This misconception is reinforced when land-cover data such as the National Land Cover Database (NLCD) is used to characterize urban regions. These Landsat-based data sets have a 30-meter resolution and provide national coverage, which is most appropriate to use when studying county-level units or larger. But applied at more local, intrametropolitan scales, the NLCD's 30-meter high-, medium-, and low-density "urban" land-cover classes essentially categorize the entire geography as "developed." To get a more accurate characterization of land cover at these larger scales, a finer resolution data set is needed.

For this project, high-resolution data based on the Urban Tree Canopy data set was used because it can scale down to the submeter level and pick out the grass/shrub layer of the urban landscape (referred to in this project as "potential plantable space" for pollinator habitat) at a very fine resolution. This method allows for a "monarch's view of the city" by identifying the multitude of opportunities for habitat that occur at different scales and on various land-use types. Examples of urban habitat opportunities include locations such as city parks and gardens, churchyards, schoolyards, corporate campuses, cultural institutions, residential spaces, parkways, boulevards, and other rights-of-way along transportation corridors. Taken together, these opportunities can and do play an important role in providing habitat for a variety of wildlife, including birds and pollinators.

In order to better understand the ecological landscape as it relates to monarchs and other pollinators, we assessed how much milkweed is currently on the ground and quantified the potential plantable space for pollinator habitat (i.e., the amount of grass/shrub land cover) in the four pilot cities. Next, we looked at potential plantable space by land-use type as a way to provide a more detailed characterization of the urban landscape. For example, in the Chicago region, we found that residential land had one of the highest amounts of potential plantable space among land-use categories (second only to agricultural land).

Examining habitat opportunities through a lens of land use also helped to assess opportunities for pollinator habitat across different stakeholder groups. It provided a structured way to consider where the biggest prospects exist and to consider which conservation-related organizations may already be working with these stakeholder groups. Land-use classification varies among cities; some cities have a highly detailed classification framework while others work with a set of more basic land-use categories. We found that a consolidated set of 16 categories provided a common denominator to facilitate comparison between cities. Land-use categories with similar stakeholder engagement practices were clustered together, an important step that sets the stage for integration of social science data into the spatial planning tools (protocols for how to do this can be found in the Urban Monarch Conservation Guidebook Appendix accessible online). The detailed methods for developing the urban monarch spatial planning tools—and the results for the amount of current and potential milkweed in urban areas—are in preparation for publication. However, early estimates indicate that more than 18 million stems of milkweed already occur in the Chicago region, and through strategic outreach with different stakeholders, that number could more than double.

Social Landscape

Another misconception regarding cities is that people are completely disconnected from nature and that conservation is irrelevant to the everyday lives of urban dwellers. However, we know both from the literature on this topic and from our own past research and engagement work that this is not the case. Conservation programs have been shown to bring social benefits to participating communities, such as emotional well-being, community cohesion, and beautification of the landscape (MEA 2005; Miles et al. 1998; D'Amato and Krasny 2011; Ohmer et al. 2009; Nowak and Dwyer 2007). When Field Museum researchers talked to communities in Chicago during an ethnographic study for the Chicago Climate Action Plan (see the "Chicago Community Climate Action Toolkit" on The Field Museum website), we found people acting as stewards of their environment and engaging with nature—and experiencing the cobenefits of conservation—through art, educational programs, and local economic development initiatives, to name a few (Hirsch and Winter 2014).

We know, too, that monarch butterfly conservation has the potential to resonate with people and to bring significant cobenefits. In The Field Museum's climate action research, we found the monarch butterfly has great cultural resonance, especially as a symbol of immigrant rights among the Chicago's Mexican-American population (Chicago is home to many people from Michoacán, Mexico, where the monarch overwinters). In terms of cobenefits, a survey of National Recreation and Park Association membership showed monarch conservation promotes education in the science, technology, engineering, and math (STEM) fields (Dolesh 2014). What's more, monarch conservation brings people together: as Gustafsson et al. (2015) explains, the charismatic monarch functions as a "boundary object" around which diverse interest groups congregate. Boundary objects are "concrete or abstract phenomena situated on the borders between distinct social worlds" that "enable communication and collaboration among actors who share few common reference points" (Gustafsson et al. 2015). New networks may arise as actors align themselves with the boundary object's meanings. For example, Gustafsson et al. (2015) describes the wide range of groups represented at international monarch conferences: government agencies, farmers, indigenous groups, citizen scientists, teachers, scientists, and others. The connections that happen around monarch conservation may have benefits for a range of species beyond the monarch, as well as benefits for the conservation community.

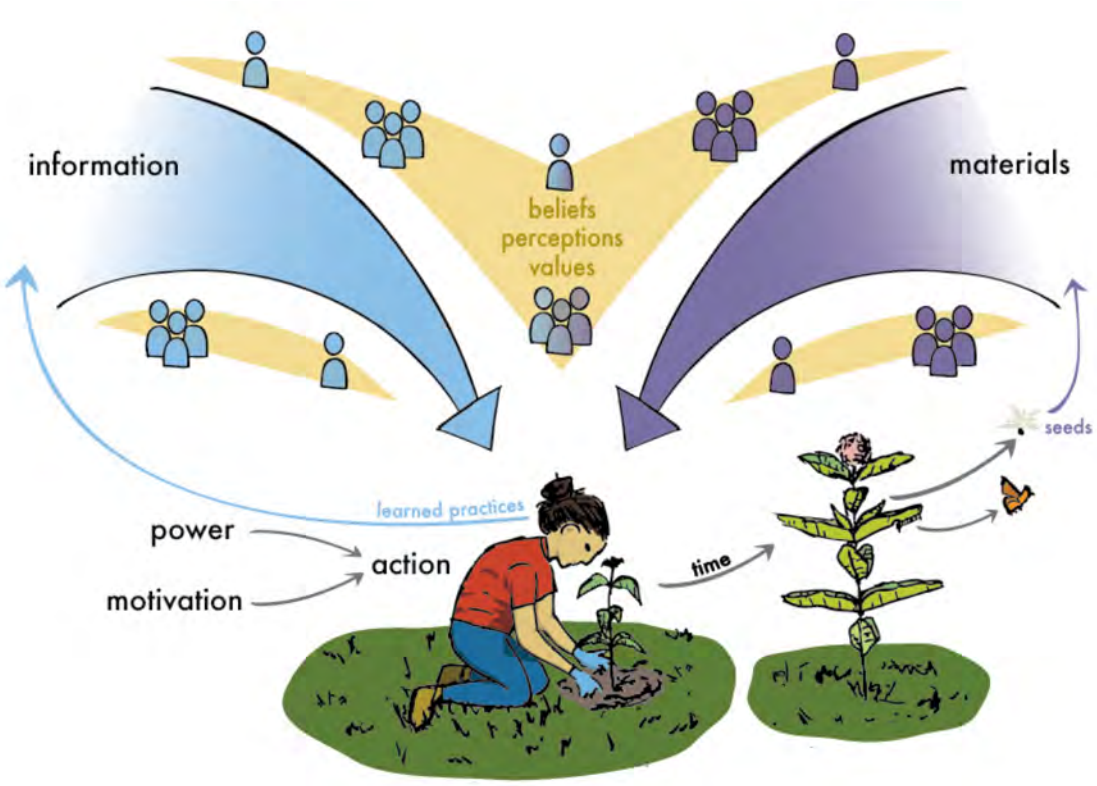
Social Science Research Design

The Keller Science Action Center began its research with knowledge that people in cities do care about monarchs and are already acting on their behalf in a variety of ways; in support of the project, the next step was to more systematically understand this social landscape and its potential contribution to monarch conservation. To this end, we surveyed and interviewed people in four midwestern cities about their conservation practices: what motivates them to act on behalf of the monarch, what challenges they

face, and what strategies are most effective. The study was not limited to those working directly or explicitly on monarch conservation; individuals engaged in some kind of environmental practice that might benefit the monarchs and other pollinators, even if they did not refer to it that way, were also surveyed. This included, for example, active gardeners, elementary school teachers, and natural area managers. Following political ecology's emphasis on practice and process discussed above, we focused more on what people do rather than on how they identify. This made sense in a context where people are often involved in multiple projects at once, some of which are informal.

Indeed, there is a wide range of practices that affect the success of pollinators: Figure 1 shows how we initially mapped out the various actions and factors that go into monarch habitat creation. This diagram represents areas of both research and intervention—i.e., through research, one might identify a barrier in the flow of materials and then develop a strategy to overcome this barrier. For the purposes of this project, we divided that wide range of actions encompassed in the supply chain into the following four categories of key environmental practices: 1) planting and/or managing land, 2) selling plants and/or designing landscapes, 3) educating the public and/or promoting environmentally-friendly practices, and 4) studying/monitoring the natural environment. Once divided this way, we set targets for interview and survey numbers for people engaged in each of these practices, plus targets for study participants from each of the land-use categories determined by the project's geospatial team.

Figure 1. A monarch butterfly "supply chain": What does it take to "produce" a monarch butterfly? Flows of information and materials, mediated by groups and individuals, make monarch conservation actions possible. These flows and exchanges are shaped by the individual and cultural values, perceptions, and beliefs that people bring to their participation in networks. Values, perceptions, and beliefs—which are particularly diverse in cities—motivate people to act on the monarch's behalf. People must also have the power to make decisions about a given piece of land in order to take action to make it more habitable for monarchs.



Social Science Research Results

The project's four-city social science team surveyed more than 700 people and interviewed 76. Study participants represented a range of sectors and interests including: faith organizations, universities, elementary schools, community gardens, garden centers, parks and recreation departments, utility companies, Boy Scout troops, conservancies, departments of transportation, citizen scientists, home gardeners, land managers, landscape designers, and more. Researchers employed snowball sampling[1] through their organization's conservation community connections and, thus, reached a population more conservation-inclined than the general population. Still, it is notable that across multiple land-use types and categories of practice, our researchers encountered a great deal of enthusiasm and knowledge about the monarch butterfly, its life cycle, and migration path. Passion for the monarch abounds, as Figure 2 illustrates.

Figure 2. A word cloud of text from responses to the survey question: "Why have you become involved in monarch conservation?" The words mentioned most frequently appear the largest.

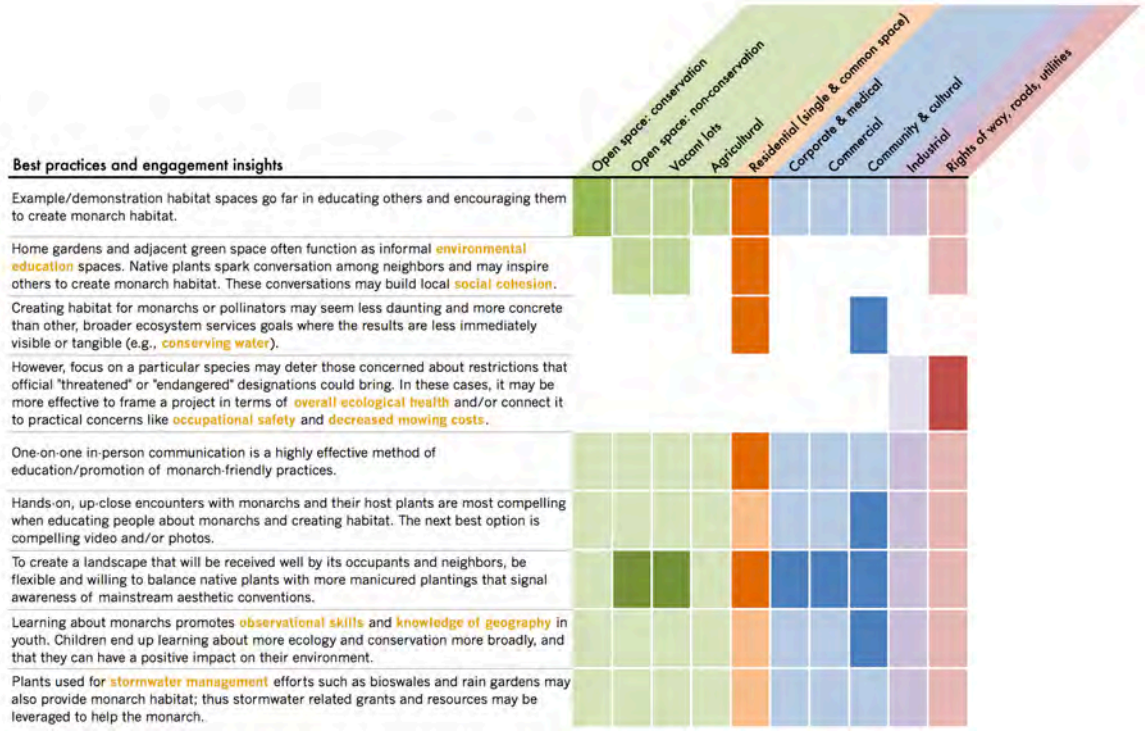
In addition to understanding what causes someone to become involved with monarch conservation, we learned about the many co-benefits of creating monarch habitat in urban areas. These include, to name a few, beautification, formal and informal environmental education, community cohesion, storm water management and water conservation, overall ecological health, and decreased mowing costs. Depending on the stakeholder, land-use type, or particular situation, it may make most sense or be most effective to lead with the co-benefit rather than with monarch conservation itself. For example, one might start with a storm water management initiative that involves rain gardens that retain water (and thus, decrease runoff) and connect it with milkweed and other native plants that provide habitat for monarchs.

Our researchers encountered many people drawing these and other fruitful connections. To better connect these findings with estimates developed in the parallel mapping component of the urban conservation design, we also asked participants the land-use type(s) with which their work is associated. This approach deepens our understanding of a range of projects and strategies and how they apply in various land-use types across the metropolitan area. Some findings appear to be true throughout the

[1] "Snowball sampling" is a method by which researchers find additional research participants through referrals from interviewees.

geography, while others apply only to certain land-use types (Figure 3). The insights and best practices found to promote monarch conservation in urban areas that are summarized in Figure 3 can be used as a starting point to assess which strategies may be most effective when working with stakeholders who own or manage different land-use types.

Figure 3. Best practices and engagement insights by land-use type. Darker shading indicates the finding applies more strongly in this land-use context and/or that this was the land-use type where we most frequently encountered the approach. Lighter shading indicates that the finding applies but may not be as widespread or as much of a "rule." Cobenefits of various monarch conservation actions are called out in gold text.



These best practices and strategies can be employed to overcome the challenges to monarch conservation that our research uncovered. Participants most often cited lack of funding and/or time as the key challenges their projects met. It takes time for milkweed and other native plants to become established and for monarchs to arrive at newly created habitat; there are no overnight results. Time is also needed for the ongoing maintenance of spaces, even when plants are native and thus well suited to their environment. From a social perspective, it takes time to build and maintain the relationships that sustain programs and partnerships. Study participants recognized the importance of partnerships and collaboration; no single group can do it all, and it helps that cities offer ample opportunities for potential partners to find one another and collaborate.

One final challenge was the existing cultural norms around what a garden "should" look like. Milkweed and other native plants may not align with these conventions, which value clean lines and bright, bold annuals over "weedy-looking" native flowering plants. Holding such beliefs about garden design does not preclude someone from being conservation inclined; there may be some wiggle room to work with here. In fact, several study participants reported success in incorporating native plants into designs that also satisfied aesthetic landscape conventions. In addition, we heard from our respondents that these ideas about garden appearance are slowly shifting as people become more familiar with eco-friendly gardening.

If culture can be a barrier in terms of aesthetic conventions, it also can be an important asset in outreach and bringing people into the fold of monarch conservation work. We found that butterflies have associations with ancestors, spirituality, peace, and tranquility; these associations came up with both residential gardeners and those creating butterfly gardens on hospital grounds and other shared spaces. A faith-based organization we spoke with incorporates the monarch butterfly into their migration storytelling program, where people share their own or their ancestors' migration stories and often find common threads across their different cultural backgrounds. These stories are then connected to the North American migration of the monarch butterfly and monarch conservation actions.

We also spoke with student volunteers at a Chicago university's Latino cultural center who incorporate milkweed into their Heritage Gardens throughout campus. These students also keep a seed library, make seed paper, and dry herbs for culinary and medicinal use in ways that connect to their heritage. As they make these items, they discuss societal issues and student life issues. This is one way the center connects physical and social healing. The garden and the products that come out of it mediate the connection between those two forms of healing; thus, milkweed comes to play a role in social justice, which we might not necessarily expect. The monarch can be seen in the artwork in this student cultural center and in murals and Día de los Muertos celebrations in the nearby neighborhood of Pilsen, a hub of Mexican-American heritage and art in central Chicago. In all of these cases, we see that culture is an asset and that monarchs have great relevance when we highlight the way they are woven symbolically into people's stories, concerns, and aspirations.

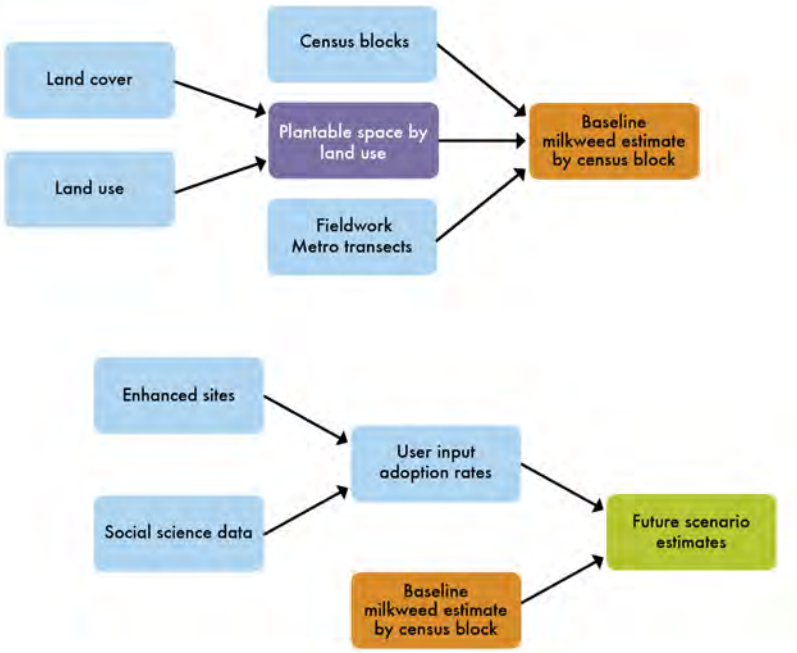
Products and Planning Tools

The social science results are integrated with the ecological sampling and spatial mapping to create the Urban Monarch Conservation Design Guidebook. The guidebook invites the user to consider the city as a social and ecological whole in order to appreciate and leverage the broad range of opportunities and partners for monarch conservation that exists in cities. It includes best practices for engaging a diverse set of urban stakeholders, as well as the mapping tools and specific real world scenarios for how and where the tools can be applied. The guidebook and spatial planning tools are available for free download, as is the step-by-step instruction manual for map analysts using geographic information systems (GIS). The guidebook includes programs and resources users can plug into, learn from, or adapt for use in their own city, along with a series of appendices with detailed discussions of how the tools were developed and scenarios of how they can be applied. Examples include the urban monarch social survey and interview guide (provided in English and Spanish), a tutorial on how to define and consolidate land-use categories, and an urban milkweed sampling protocol.

What are the spatial planning tools? There are two mapping tools for setting goals and priorities for monarch conservation in a metropolitan area. The first is the Urban Milkweed Baseline Tool that provides an estimate of existing milkweed density and stem count for a metropolitan area. The second is the Urban Scenario Planning Tool, which allows users to interactively model anticipated increases in milkweed density and total stem count for any subgeography based on user scenarios across land-use types. Since these tools use small geographic units (census blocks) as their basis, they can be combined with other data layers (e.g., public parks, vacant lots, utility corridors, planning project areas, etc.) by staff trained to use GIS to give area and project-specific estimates.

How do the tools work? The flowcharts below describe the conceptual basis of the tools. In the first chart showing the Urban Milkweed Baseline Tool, land-use data and high-resolution land-cover data are combined to create plantable space, which represents existing and potential pollinator habitat areas. Land cover is important since any "grass/shrub" space could be seen as an area that could be converted to pollinator habitat or that already contains monarch habitat. Effectively this removes buildings, roads, and forested areas from habitat conversion consideration. Outputs from the Urban Milkweed Baseline Tool are combined with fieldwork information from ecological sampling and social surveys and interviews to estimate future milkweed abundance in the Urban Scenario Planning Tool.

Figure 4. Flowcharts of input and output data in the monarch conservation planning tools.



The approach and tools we have developed can be used to provide a good characterization of the metropolitan landscape that is relevant, both ecologically and socially, to monarch conservation. The guidebook and spatial planning tools can be used to find strategic opportunities for on the ground habitat implementation. It can, for example, be used to predict outcomes of planting efforts and set realistic goals to maximize pollinator habitat in a prominent land-use category. Users can run this spatial exercise across all land-use types to assess where the greatest potential increases in milkweed habitat can occur—and to get an idea of what the collective impact could be. Once a decision is made regarding what land-use type(s) to focus on, they can use the guidebook to identify best practices to engage the particular stakeholder group(s), targeting specific activities and co-benefits valued by these groups.

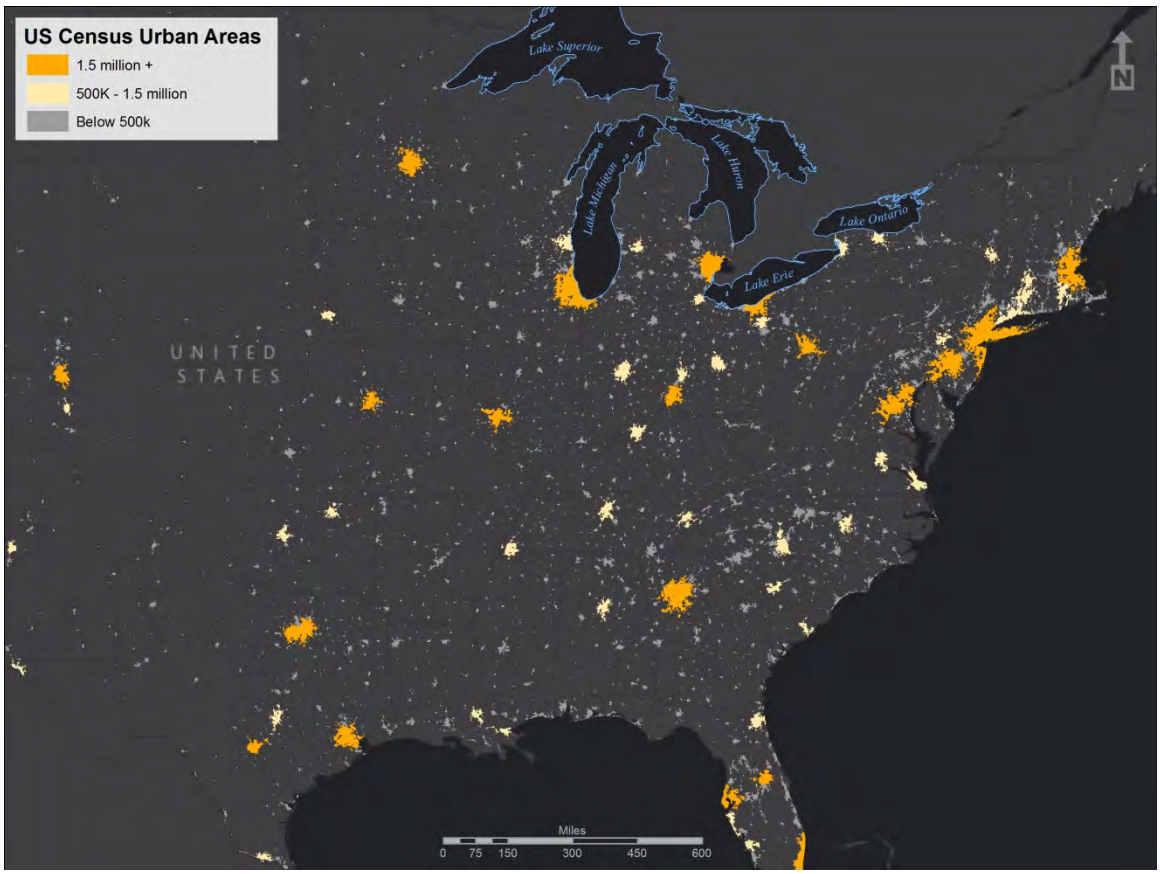
The spatial planning tool may also be run on a localized area, such as a floodplain or specific community, and dovetail with existing data sets. As we discussed above in the social science research results, one co-benefit of monarch conservation action is storm water management. So a useful example of the planning tool's applications is to look at opportunities for pollinator habitat from the perspective of urban flooding. Since flooding is a major concern for many cities and residents, funded efforts are often already underway to mitigate the issue. The tool enables cities to combine spatial data on issues such as storm water/flooding with other green infrastructure goals, such as habitat corridors for pollinators and other target species. Using data on flood prone areas or planned infrastructure projects, users can create project-specific estimates of the number of existing milkweed stems and, more importantly, estimate the potential increase in milkweed stems if pollinator plantings are included in the project. Moreover, integrating pollinator habitat into current storm water management efforts increases the likelihood these projects will be approved, get public support, and receive funding.

Lessons Learned and Discussion

Efforts to stabilize North American monarch populations show us the potential of urban areas to contribute to larger conservation efforts. Cities are not devoid of nature—nor are they devoid of conservation-compatible beliefs and practices. This study shows the current and the potential amount of

pollinator habitat in urban areas is of consequence to monarchs. Just considering cities with a population size of at least 50,000 in the geography east of the Rocky Mountains, there are nearly 48 million acres of potential pollinator habitat. By extrapolating what was found in the Chicago region to this geography, there is an estimated 700 million stems of milkweed already on the ground—and potential to add close to 300 million more stems (Figure 5). Put in the context of the national conservation goal to add 1.6 billion stems of milkweed on the ground in order to stabilize the monarch population, we find urban areas may well be able to contribute 20% toward that goal (Pleasants 2016). This offers a dramatically different view of the role cities can play in conservation. Instead of characterizing the urban opportunity as only representing 3% of the land mass in the United States—and thus, not a geography where conservation efforts should be prioritized—we should be considering the variety of ways ecological and social landscapes of cities can and do impact the larger landscape in which they are embedded.

Figure 5. Map of urban areas in the eastern United States. There are nearly 48 million acres of potential pollinator habitat in cities with a population size of at least 50,000 in the geography east of the Rocky Mountains. By extrapolating what was found in the Chicago region to this geography, there is an estimated 700 million stems of milkweed already on the ground—and potential to add close to 300 million more stems. This potential represents nearly 15 to 20% of the national goal to increase milkweed stems by 1.8 billion.



Not only do cities offer an opportunity to engage millions of people in conservation efforts, but cities also have the potential to put functional habitat on the ground in areas that suffer from major habitat loss. Creating habitat within and between U.S. cities will help connect the dots for monarchs, other pollinators, and birds along the migratory pathway from Mexico up to Canada and back.

Acknowledging there are different ways in which heritage and history shape how people experience the natural world or see nature as a part of their lives is a first step in broadening who is considered part of the "conservation community" (Campbell 2015). But if we truly want to make strides toward increasing conservation relevancy, we need to seek out and identify the different entry points where conservation goals include input from urban partners and overlap with community values and concerns. By embracing and viewing community values as assets, we not only create more opportunity for habitat but also foster meaningful and lasting new partnerships.

Monarchs in many ways are the ideal species to engage the public on conservation because they are captivating and charismatic and represent a powerful cultural symbol that can get many people—who would not otherwise be doing so—talking about conservation—and to each other. As such, we refer to monarchs as a convener: a species and a story able to connect people across a continent, who witness the stunning migration in their own backyards. Through this project, we are beginning to discover just how much monarchs are relevant to our conservation future.

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Renewing Ducks Unlimited Canada's Brand: Finding the Supporter of Tomorrow While Engaging the Supporter of Today

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Overview

Ducks Unlimited Canada (DUC) has one of the most recognized brands in the country. Beyond its signature "greenhead" logo, DUC is widely known for delivering wetland habitat conservation. DUC was established in 1938 by a small group of hunters who recognized the need to conserve and restore wetlands in order to re-establish struggling waterfowl populations. Since DUC's inception nearly 80 years ago, much more has been learned about the value of wetlands—beyond providing essential habitat for waterfowl. DUC science has shown that wetlands provide a host of environmental benefits including water filtration, flood and drought mitigation, and carbon storage. Today, DUC is supported by a conservation community of 130,000 people (including hunters and nonhunters) and is active in every province and territory in the country.

Despite the long-standing history, disconnect exists between the Canadian public and DUC. During an informal survey conducted in 2015 on the streets of Winnipeg, Manitoba, people were asked what they knew about DUC. Beyond recognizing the logo, few could articulate the organization's mission. Misconceptions about DUC's relationship with North America's hunting community were prevalent.

In light of Canada's highly competitive charitable sector and the public's growing interest in environmental issues, DUC recognized that there was both a challenge and an opportunity in front of them: finding new ways of engaging people with DUC's mission. In an effort to harness the power of the DUC brand—and to deliver on the conservation value it represents, DUC engaged in a comprehensive brand renewal project.

The central question of the brand renewal project was: how to find the supporter of tomorrow while engaging the supporter of today. This question acknowledges the need to attract new people to DUC's community, as well as the need to steward those who are already supporting the organization. Answering this question demanded that DUC explore a number of related topics including: how to bridge traditional support into a broader community by making DUC more accessible; how to deliver compelling messaging to the right people, at the right time; and how to honor DUC's waterfowl hunting traditions while promoting its conservation mission to other nonhunting audiences.

Throughout the brand renewal project, DUC pledged to remain firm and true to its mission. The purpose of the exercise was not to debate or modify how the company operates, but to clearly define DUC's identity and why its work matters to all Canadians.

Results were both enlightening and affirmative. Research showed that DUC was not only looking for change but expecting it. DUC directors, staff, and supporters were keen to find new ways of broadening DUC's base and investing in new technology and tools to reach diverse audiences. There was a strong desire to promote the DUC brand and its ties to pressing environmental concerns such as water quality, climate change, and invasive species. However, all parties agreed that shifting toward these brand values would not be done at the expense of DUC's heritage. Rather, it would be done strategically through highly targeted activities that acknowledge the interests, needs, and motivations of individual audiences.

DUC continues to live this brand renewal project—striving to answer the project's central question of how to find the supporter of tomorrow while engaging the supporter of today in all of its business dealings. What follows is a brief description of the process that has guided DUC's brand renewal project up until this point.

Methodology

Research and Engagement

It was essential that DUC achieve full support for the brand renewal project from its stakeholders. Key to this group was a very engaged board of approximately 50 directors, as well as approximately 370 staff members located across the country. Previous brand exercises had failed as a result of these groups—particularly the board—feeling that they had not been adequately consulted or engaged. Finding creative and effective ways of bringing these stakeholders into the process was the art to success.

DUC bases all of its conservation decisions on sound science; therefore, the other essential element to the brand renewal project was ensuring the process was rooted in high-quality research.

By working with an external communications, marketing, and research firm, DUC designed a layered approach to its brand renewal strategy. Phase one included reaching out to those stakeholders who directly impact organizational decisions around adopting the renewal: the DUC board, senior management, and staff.

Phase 1: Research

One-on-one telephone interviews were conducted with board members to establish the high-level priority areas for the brand renewal project and to ensure buy-in to the process. Board members were asked to provide feedback on their personal involvement with DUC, how they felt about the organization's current state, areas of opportunity and growth for the future, and ultimately, what a successful brand renewal looked like from their point of view. The participation rate and support was overwhelmingly positive—a total of 46 interviews were completed, representing 96% of the board.

Using insights gained from the board interviews, a survey instrument was developed to then capture the views of DUC's senior leadership. Many of the same questions were asked and responses were in close alignment to those provided by the board. In all, 32 managers completed the survey, representing 86% of senior leadership.

The third component of internal stakeholder research was conducted with all DUC staff. A special employee website was designed to engage staff in a critical discussion about the brand, while providing opportunities for them to share ideas on how to move forward. Staff members were able to cast their vote on particular topics, engage in conversation through a chat forum, and provide feedback on the organization's brand values. The website provided a platform for the whole organization to deliberate and share ideas surrounding the DUC brand renewal.

Following these extensive consultations, key components of DUC's brand and work were brought to the general public and supporters for testing. Six areas of focus were explored including: DUC's impact on clean water, DUC actions related to the environment, DUC education programs, DUC work related to wildlife, the scientific research that DUC undertakes, and DUC's traditional connection to hunting.

A comprehensive survey tool called Choicebook™ was developed for both the supporter and general public audiences. One at a time (and presented in a random order), a chapter of context and questions were presented for each of the six areas. At the end of the six chapters, participants were asked to rank these six areas from most to least important for DUC to focus on. The Choicebook™ provided a careful exploration of DUC's brand and a broad-focus comparison to other conservation organizations. In total, 722 existing DUC supporters participated in the supporter Choicebook™ and 3,986 Canadians participated in the general public Choicebook™.

Phase 2: Assessment

The assessment stage involved examining the results of the research to evaluate DUC's brand positioning, messaging, and corporate communication efforts. DUC and the external firm looked at the data to help determine what aspects of DUC's work align and resonate with audience perception.

Results showed that Canadians are most interested in water as a key area of focus for DUC. This is particularly prevalent among hunting, rural, and older Canadians. Urban and younger Canadians, as

well as people living in Ontario, place slightly more emphasis on the environment but rank water as a close second. Although Canadians place conservation education ahead of wildlife as the number one priority, more Canadians list wildlife in their top three areas of focus. Hunting is consistently placed outside of the top three by most Canadians—and only 13% of hunters rank it as the top area of focus for DUC.

The most impactful key messages for DUC relate to water and wildlife, followed by those on the environment. The top five messages overall were:

1. DUC's work improves water quality.
2. DUC's work improves the overall health of the water we use for recreation.
3. DUC reduces the impacts of invasive species that could otherwise displace and harm native species.
4. DUC works with industries to help them conserve wildlife habitat.
5. DUC conserves and protects the environment in your community.

Phase 3: Engagement

Coming out of the research and assessment phases, DUC hypothesized that a connection to water quality and wildlife is a pathway to explore in order to reach the goal—namely, to find the supporter of tomorrow while engaging the supporter of today. Elements of these themes work across a broad spectrum of audiences. This includes groups of Canadians who have supported or would support DUC and those people who are on the fence and need more information before supporting DUC, as well as people who have been traditionally out of scope for DUC.

The strategy for engaging these audiences is rooted in narrowcast messaging and segmentation. DUC and the external firm segmented respondents from the general public into four audience tiers. The tiers identified the group's willingness to donate to DUC, as well as its familiarity and opinion of DUC. These tiers provide an opportunity to identify Canadians with similar attitudes, particularly those who may lend support to the organization.

Grafted onto these tiers are targetable demographics and key message structures. Each audience tier is profiled by age, postal code, and gender. These demographics can be used to purchase refined advertising aimed at interlocking subgroups. The key message structure is layered onto the tiered audience and broken out by targetable demographics. From there, focused marketing and communications campaign can be created.

DUC began by creating a focused digital marketing campaign around water quality. Strategic, targeted digital-based advertisements, which employed the most successful key messages related to wetlands and water, were placed on social media and other websites. These ads directed people to a special website to learn more about aspects of DUC's work related to water. The website contains a collection of videos, short articles, infographics, and other content. The goal is to take people through a journey from clicking the advertisement to learning more about DUC and ultimately making a supporting action (e.g. signing up for e-communications, making a donation, etc.).

Conclusion

There is a pathway to new growth that is forming. In many ways, it is rooted in the social sciences—understanding audiences, who they are, what resonates with them, and what will motivate them. Gaining this insight and understanding through the brand renewal project is equipping DUC with new tools and knowledge. DUC continues to employ elements from this research and engagement strategy to test conservation messages and issues with the Canadian public and measure resulting real-world action. DUC is currently basing its public service announcement strategy, as well as its media engagement strategy, on results from the brand renewal project by employing targeted messaging to key audience groups. The brand renewal's central question—how to find the supporter of tomorrow while engaging the supporter of today—has become a guiding principle for all of DUC's communication and

marketing activities. DUC has embraced brand renewal as an ongoing, ever-evolving process that's essential to remaining relevant in today's world.

Moving Towards Conservation Relevancy Together

Dave Chanda
Recreational Boating & Fishing Foundation
Alexandria, Virginia

I was asked to join this session to discuss how we might move together towards conservation relevancy. The challenge in front of us is too big and complex to do individually within our organizations—we must work together. I consider the issue of relevancy to be the biggest crisis facing state fish and wildlife agencies. Certainly, lack of funding and capacity to complete our important conservation challenges are critical, but if we were relevant, sufficient funding would not be in doubt.

We heard about the sense of urgency from Sara Parker Pauley (director of the Missouri Department of Conservation). If nothing changes, we will continue to witness the loss of species and habitats and a reduction of the benefits they provide to people. If this were to happen, we can also expect an erosion of support for conservation organizations.

Achieving conservation relevance to all Americans will not be solved with a new, flashy outreach campaign or a narrowly focused programmatic approach to get people to care about what we are passionate about. There will be no quick fixes. It will require innovative, thoughtful, and inclusive approaches. It will also require changes in agency norms and practices. We know change often instills fear in people, so we need to plan for and alleviate those fears. Also, increasing our relevancy to all citizens should not be considered a threat to existing conservation interests and our well-supported and valued traditional programs and services. Conservation relevancy is not a threat to anyone but an opportunity for all.

So how do we move forward? As we heard from Cindi Jacobson (USFWS), achieving conservation relevancy is about us (the conservation community) taking actions that will cause people to change their current behaviors to behaviors that support fish, wildlife, and habitat conservation. Dan Decker (Cornell University) suggested there are multiple routes that we can take to affect those behavior changes, some of which we are working on already. As Abigail Derby Lewis of the Chicago Field Museum and Nigel Simms of Ducks Unlimited Canada demonstrated, there are existing successful practices and programs that we can learn from. We don't have to start from scratch.

We all work in very different ecological, social, and political environments, so a one-size-fits-all approach will not work. However, there are experts across the country who have been studying, testing, and developing methods that are ready to help us better understand diverse conservation interests and help us connect conservation to other important aspects of people's lives. We need to take advantage of this opportunity and their expertise. In the conservation community, we are aware of the need for broader relevancy, we understand the urgency and potential impacts if we do nothing, and we have knowledge to address the issue. We need to act—now.

Recall that conservation relevancy is when *all* citizens, not just our currently engaged stakeholder groups, are aware of and appreciate the benefits that fish and wildlife conservation provide to them. Conservation relevancy will be achieved when all citizens value and actively support the organizations that help provide those benefits. We will know if we are relevant when conservation is not only clearly connected to aspects of people's lives that are important to them, such as their own and their family's quality of life and well-being, but also to other important aspects such as health care, education, the economy, transportation, energy use, and development. And we will know when conservation is relevant to citizens when we see them consistently behaving in ways that show they value and support conservation.

I started my career in 1980 in the education arm of our agency. At that time we focused our attention on teachers, as we knew they would touch the lives of thousands of children over the course of their careers. Occasionally, I would provide programs for school kids and was always amazed at their response when I asked them if it was conservation to cut down a tree. Invariably, I would receive a resounding "no," even though they were holding a wooden pencil, sitting at a wooden desk, and attending

a school built of wood. Clearly, at that time, they had not made the connection between conservation and the many aspects of their lives that it impacted.

Another example of conservation relevancy also occurred early in my career when I gave regular wildlife education programs to a variety of civic organizations such as the Kiwanis, Rotary, and Lions International. These organizations were comprised of men and women who were leaders in their community. Even back then, our agency recognized it was important to discuss the significance of natural resources to their lives and the need for professional management of these resources. It was not that we were trying to build up numbers of hunters but to create support for professional management of the wildlife resource and an understanding of why it was important.

So how do we get started?

This is perhaps the hardest part. Any kind of effort of this scope and magnitude requires guidance and coordination. I suggest starting with a guiding coalition (following the eight steps outlined in John Kotter's book *Leading Change*). This coalition should represent a broad diversity of leaders from state conservation agencies and all of their sister agencies. The coalition should also include diverse voices from the nongovernmental organization (NGO) conservation community, outdoor-related industry, private landowners, and academia. You will note that this resembles the structure of the Blue Ribbon Panel on Sustaining America's Diverse Fish and Wildlife Resources.

The purpose of the guiding coalition will be to activate a call-to-action across the conservation community, bringing traditional and nontraditional groups together to build or renew their relationships and to help them find common ground so they can begin to work together on common conservation goals. The guiding coalition will develop a national vision and strategy to engage and serve broader constituencies, in both the short- and long-term, through the transformation of our programs and practices.

The guiding coalition would be supported by a transformation working group—a group of people from state and federal conservation agencies, NGOs, and academia who have decades of experience and insight in helping state agencies seek out, understand, and engage with new audiences and become more relevant to more people.

For us to instill conservation behaviors in others, we (state conservation agencies) must also change. Although we are already implementing some strategies to broaden our constituencies, we need to broaden our thinking on this even more. We need to reflect on what changes are needed and make strong commitments to change. We will need to communicate clearly, both internally and externally, and often about what is changing, the reasons for making the changes, and what will be the intended impacts and benefits from the changes. We also will need to provide the resources to design, implement, support, and evaluate their change efforts. This is no different than any other ecological-based program in which we engage. And similarly, these resources may include investment in new technologies or skill sets.

We will need to communicate to our local, state, and nationally elected and appointed officials and to our sister agencies so they understand the reasons for our change efforts and understand how they can support and will benefit from changes in our programs and practices. We should ground these new practices on the foundations of our public trust responsibilities (all wildlife for all citizens) and to meet the expectations of good governance (being fair, transparent, and accountable).

We need to celebrate our short-term wins to maintain our momentum. We need to recognize and reward efforts that are innovative and inclusive, even if they are not wildly and immediately successful. This demonstrates our commitment to improving our practices and behaviors and empowers staff to take further action to affect behavioral changes in citizens. Finally, just as we practice adaptive management in the field, we need to evaluate if our efforts are achieving the desired, improved conservation-related behavior changes in our citizens. If not, then we need to modify and move forward.

As I noted at the beginning, it is essential that we move towards conservation relevancy *together*. We need to leverage our collective knowledge and skills and move forward with a common voice and purpose. The Association of Fish & Wildlife Agencies (AFWA) and the AFWA executive committee have a strong coordination and communication role in this effort. They can be the voice to communicate the collective change, vision, and strategy developed by the guiding coalition. AFWA must sustain the

issue of relevancy and this initiative as a priority by including topics on conservation relevancy as regular agenda items on executive committee meetings and national and regional conference plenaries and symposia and must communicate success stories via the *Director's Line*. AFWA and its executive committee can continue to support partnerships that are so critical to conservation and especially those that focus on and result in improved and increased conservation behaviors of all citizens.

Our conservation partners also have a critical role in helping state agencies design and implement programs that increase conservation behaviors in citizens. They have a long successful history of reaching out to new audiences, affecting behavioral change, and garnering broad support. The conservation community needs to leverage this expertise and the unique operating mechanisms that many partners use to work on common goals to increase conservation relevancy. We need to recognize the public and private sector constraints, capacities, and opportunities that each of us bring to the table, while also recognizing these will be different at different scales and locations across the country.

Citizens also have a critical role in working towards conservation relevancy. They must help us understand their interests and concerns relative to conservation. They must begin to recognize and then, hopefully, value the many tangible and intangible benefits that fish and wildlife conservation provides to them and their families.

However, the conservation community needs to help them recognize those benefits. For example, water quality protection in New Jersey is the result of trout water classifications our agency has conducted during the past 50 years; yet, as an agency, we did very little to help citizens make the connection to our state's water classification and the clean water they enjoy. Whether they fish or not, we must help them understand that the conservation benefits they enjoy and use largely rests on their behaviors individually and collectively. The conservation community cannot do it for them—they need to actively participate and engage with us. This is part of their public trust responsibility under our fish and wildlife conservation trustee framework but also part of their responsibility as a citizen in our society.

All of us in the conservation community have a need for conservation relevancy and we all must play our part in achieving it. Let's move forward to conservation relevancy together. If you agree with me and believe that a guiding coalition and transformation working group are a good place to start to move toward conservancy relevancy, speak up! Talk to your director and the AFWA executive committee members and let them know your thoughts. Let them know that we can't wait any longer—we need to start moving together now.

Closing Comments

Nick Wiley
Florida Fish and Wildlife Conservation Commission
Tallahassee, Florida

Part of my job is to close the session by emphasizing points you heard from previous speakers, but I want to particularly emphasize the point made by Sara Parker Pauley (director of the Missouri Department of Conservation) when she said we have much reason for hope.

I want to remind you of the opportunities and possibilities that we have for helping all citizens understand the value they get from conservation and how each of them can support conservation. You heard several speakers note that the conservation community, as a whole, has the responsibility to lead society along the road to relevance—where relevance means being valued, supported, and a priority in people's minds. State agencies have a particularly important role in this work.

First of all, we are working and making progress on helping all citizens understand how they benefit from the conservation of fish and wildlife and how they can contribute to conservation.

- As the Blue Ribbon Panel funding legislation rolls out this year, communications will focus more public attention on the need for stable funding to conserve all fish and wildlife species.
- We don't have our head in the sand and we're clearly recognizing the need for increased relevance to society (being valued, supported by, and a priority for society) in addition to our traditional stakeholders and supporters.
- We're broadening our skills and capacity by hiring professionals in communications, education, economics, marketing, etc.—and not asking a biologist to do this.
- We're increasing our use of social science information to better understand citizen concerns and interests and using that to inform decision-making.
- We're doing much better at leveraging technology to improve our science *and* communication about our science to more people.
- We have increased collaborations with nongovernmental organizations (NGOs) to increase our capacity to learn more about diverse stakeholder interests (e.g., RBFF).
- We have an unsurpassed network of federal and state public lands and partners to provide access to private lands. This is a major tool in our relevancy toolbox that can provide benefits and connections to all citizens.
- We're increasing the quantity and quality of our public-private partnerships. There is tremendous opportunity to leverage private-sector expertise and practices for good conservation outcomes.
- The interest in cool, urban wildlife species—like peregrine falcons, bald eagles, monarch butterflies, and even moose and brown bears—in Anchorage is growing. These kinds of charismatic species help us make connections with city-dwellers to wildlife conservation. How many of you have logged into live internet streaming of webcam videos of nesting bald eagles or peregrines?

Secondly, the conservation community is taking action to make sure that conservation is relevant, valued, and a priority for citizens.

- We've increased collaboration between states, federal agencies, industry, and private landowners, which has resulted in recognition of broader sources of science, more robust management planning for imperiled or candidate species, and more consistent and credible species status monitoring across state boundaries that is leading to decisions where federal species listing is not warranted, such as the New England cottontail or the greater sage-grouse.

- We are continually working to strengthen the connections between state and federal agencies to deliver cooperative conservation services that are more responsive to and aligned with local interests and values.
- Conservation leadership programs are building our pipeline of future conservation leaders in government, private sector, academia, and NGOs (NCLI, CLfT, TWS, etc.)—more voices from different audiences is critical to our success.
- Improved collaboration between our professional societies (e.g., TWS, AFS) leverages our collective influence across our profession and they can speak publicly on our behalf.
- Continued state agency support for and engagement in AFWA and the regional associations increases our cross-jurisdictional communication and collaboration.
- We're looking across landscapes to improve conservation outcomes.
- We have increased partnerships with private landowners—recognizing their critical role in fish and wildlife conservation.
- We're thinking more globally and range-wide for species management.
- We are taking a more systems approach than a single species management approach.
- We're partnering with NGOs to leverage their capacity in activities that are hard for government agencies to do.
- We continue to work cooperatively to manage millions of acres of land and water to benefit fish and wildlife and the people who wish to access and enjoy these resources.
- And we continue to thoughtfully add special places to our inventory of public lands under appropriate protections to conserve those places and the wildlife they support for future generations.
- We continue to have success recovering species such as bald eagles, marine turtles, grizzly bears, black bears, manatees, red-cockaded woodpeckers, grey wolves, California condors, elk in the Smokey Mountains, and sea otters, just to name a few.
- Our oceans are getting more attention—40 marine fish stocks have been rebuilt since 2000. The number of stocks that are undergoing overfishing and being overfished are near record lows, although some interests continue to suggest the sky is falling when we know it is not.
- Increased participation in paddling sports, shooting sports, and interest in locally grown, natural food is creating a potential gateway for new conservation stewards.
- More people in our profession have a better understanding of the public trust responsibilities we work under.
- AFWA, the regional fish and wildlife association meetings, and the Wildlife Management Institute can be the "camp fires" to keep bringing the conservation community together to find common ground and move strategically to where all citizens understand how conservation of fish and wildlife benefit them and how they can support conservation.

These efforts reflect our continuing transition into a modern fish and wildlife conservation paradigm where all citizens understand, value, and support fish and wildlife conservation and where conservation organizations are relevant to society because of the work we do to provide conservation *benefits* to them.

All of this is great work and we should be proud of our accomplishments. But we have to continue to challenge ourselves to think and do things differently if all this work is going to make a long-term difference. Most of you who know me, know I'm an optimist. I like to look for the good in everything, but as you have heard during this session, we are facing some very serious and sobering challenges.

If we keep on the same path, we'll continue to see efforts to hijack a true conservation agenda where caring and concern for wildlife is misguided and misdirected. We will continue to see erosion of the value of professional and science-informed fish and wildlife conservation. If we sit still while interests who want to separate people from wildlands, waters, and fish and wildlife resources, interests who want

to push an aggressive regulatory protectionist agenda, interests who want to regulate or litigate rather than cooperate, and interests who oppose sustainable outdoor recreation, we will certainly lose relevance quickly, but more importantly we will lose much of the amazing conservation ground we have gained in the past century.

As Dave Chanda (Recreational Boating & Fishing Foundation) said, we have to start moving together now and show the way forward for conservation. We need to stand together as a community, roll up our sleeves, and figure this out. We have successful conservation history on our side, but strategies and tactics that got us to this point likely won't get us where we need to go given our rapidly changing society. We need to develop a vision for where want we want to end up and develop an adaptive strategy that gets us there. It's going to take time, resources, and hard work. Everyone needs to do their part. We need all the smart, creative people in this room and at this conference and those working on the front lines and in the field back home to be engaged in this effort and understand what it will take to successfully elevate the relevancy of fish and wildlife conservation in today's tough sociopolitical climate.

Thank you for your participation and attendance. Look for some summary pieces from our session presenters in the next few months, look for announcements on how you can get involved in making relevancy a reality, and enjoy the rest of the conference.

Special Session Two.
Conservation in the Face of a Changing Energy Development Landscape

Opening Remarks

Davia Palmeri
Association of Fish & Wildlife Agencies
Washington, DC

Good morning on behalf of the Association of Fish & Wildlife Agencies (AFWA) and our Energy & Wildlife Policy Committee and welcome to this special session.

AFWA, through the committee and its associated subcommittees, is committed to supporting the state fish and wildlife agencies in their efforts to minimize impacts from energy projects on fish and wildlife resources.

We have done this mostly under the leadership of Kathy Boydston, who recently retired. Kathy provided workshops, webinars, and other platforms to exchange information relating to effectively addressing the impacts of energy exploration, development, and transmission on wildlife resources and their habitats.

This special session seeks to follow in that history of information sharing by featuring presentations from state agencies and our federal partners that highlight unique and forward-looking approaches to successful conservation despite changing national energy priorities and increased interest in development of renewable energy technologies.

Today, we will be hearing about conservation efforts in Wyoming, Texas, California, Utah, and Pennsylvania. We will talk about sage-grouse, transmission lines, plant conservation, and proactive planning. You will hear about the impacts of traditional oil and gas development as well as wind, solar, and transmission.

We hope you will leave today with a few key ideas about successful approaches to get the best outcome for fish, wildlife, and their habitats, including:

- thinking and working proactively with industry and other partners to design voluntary processes that guide smart development;
- developing strong communication networks;
- building a strong relationship between state fish and wildlife agencies and the state utility agencies; and
- using science to confine new disturbances to already disturbed areas.

If you are interested in learning more about AFWA's work on energy issues, please consider joining the Energy & Wildlife Policy Committee at our meeting.

Wyoming's Approach to Sage-Grouse Conservation—A Shotgun Wedding of Science and Policy

Thomas J. Christiansen
Wyoming Game & Fish Department
Green River, Wyoming

The greater sage-grouse *Centrocercus urophasianus* (hereafter, "sage-grouse") is an icon of the West's expansive, but increasingly fragmented, sagebrush sea. For the past two decades, this species has been the focus of one of the largest single species conservation efforts ever undertaken (USFWS 2015).

Using sage-grouse conservation in Wyoming as a case study, I will provide an overview of how science has been used to shape policy; discuss how policy is being implemented and monitored; and offer my thoughts on how science could be more effectively used to positively influence this and similar endeavors.

The Endangered Species Act (ESA), with all its inherent blessings and curses, is the obvious driving force (the shotgun) behind this union of science and policy. I've used the "shotgun marriage" analogy for years in various iterations of my talk. However, given current polarization and uncertainty regarding ESA, I had to question whether the analogy is still appropriate. In the end, I reasoned the audience appreciates both the promise and frustration of ESA—and the perspective my humor is intended to illustrate.

Basic Ecology and Status of Greater Sage-Grouse

Sage-grouse are a long-lived upland game bird that depend on large contiguous tracts of sagebrush and are considered one of the best examples of a sagebrush obligate species. Sage-grouse depend almost exclusively on sagebrush for food in winter and their digestive system is uniquely adapted for this. While many game birds may spend their entire lives within a square-mile of optimal habitat, sage-grouse roam across much larger landscapes. Some migratory sage-grouse move up to 76 miles (122 km) between seasonal ranges (Tack et al. 2012). Even nonmigratory birds have seasonal movements of up to 6 miles (10 km) (Connelly et al. 2000). Most populations contain both migratory and nonmigratory individuals (Fedy et al. 2012). Sage-grouse mate on communal leks, a behavior that enables biologists to census them relatively easily. Sage-grouse populations have declined over the past half-century in Wyoming and across the West (Western Association of Fish & Wildlife Agencies 2015).

Sage-grouse currently occupy approximately 56% of the sagebrush area estimated to have existed presettlement in North America (Schroeder et al. 2004). However, 90% of historic range in Wyoming is still occupied. Wyoming contains 26% of the species' range but supports 37% of the total population (Doherty et al. 2010). A combination of anthropogenic factors—including farming, urbanization, and energy development—has contributed to the loss and fragmentation of sagebrush habitat (Leu et al. 2008). Increased frequency of drought in recent decades further exacerbated the decline in habitat suitability. Relatively speaking, habitat in Wyoming is more intact, explaining why sage-grouse densities are higher here than in other states.

Energy Development Challenges

Between 1990 and 2012, world energy demand increased 54% and is projected to increase another 48% by 2040 according to the U.S. Energy Information Administration (USEIA 2016a). Development has increased dramatically across Wyoming's sagebrush habitats during the past 40 years in the form of residential growth and energy production (Parmenter et al. 2003; Copeland et al. 2013). Despite recent shifts in its energy portfolio, Wyoming remains a leader in energy production and exports more energy than any other state (Mead 2013). In a global context, if Wyoming were a country, it would rank tenth in overall energy production (Mead 2013). In early 2017, 66,690 wells were capable of

producing oil or natural gas in Wyoming (Figure 1, Wyoming Oil and Gas Commission, unpublished data). Wyoming produces 40% of the nation's coal, nearly four-times as much as the next highest producing state, West Virginia (USEIA 2017). Wyoming is also the nation's top producer of uranium (Mead 2013). Wyoming's wind resources rank among the best in the nation (Figure 2) and wind-powered generating capacity has increased rapidly during the last 10 years (USEIA 2016b). Several large-scale projects are in development, including a 3,000-megawatt wind farm that may become the largest facility of its kind in the nation (USEIA 2016b). Sustaining sage-grouse populations poses many challenges in a state whose economy depends so inextricably on resource extraction (Willms and Alexander 2014).

Figure 1. Producing oil and gas wells and occupied sage-grouse range in Wyoming as of January 5, 2017. Sources: Wyoming Oil and Gas Commission, Wyoming Game & Fish Department.

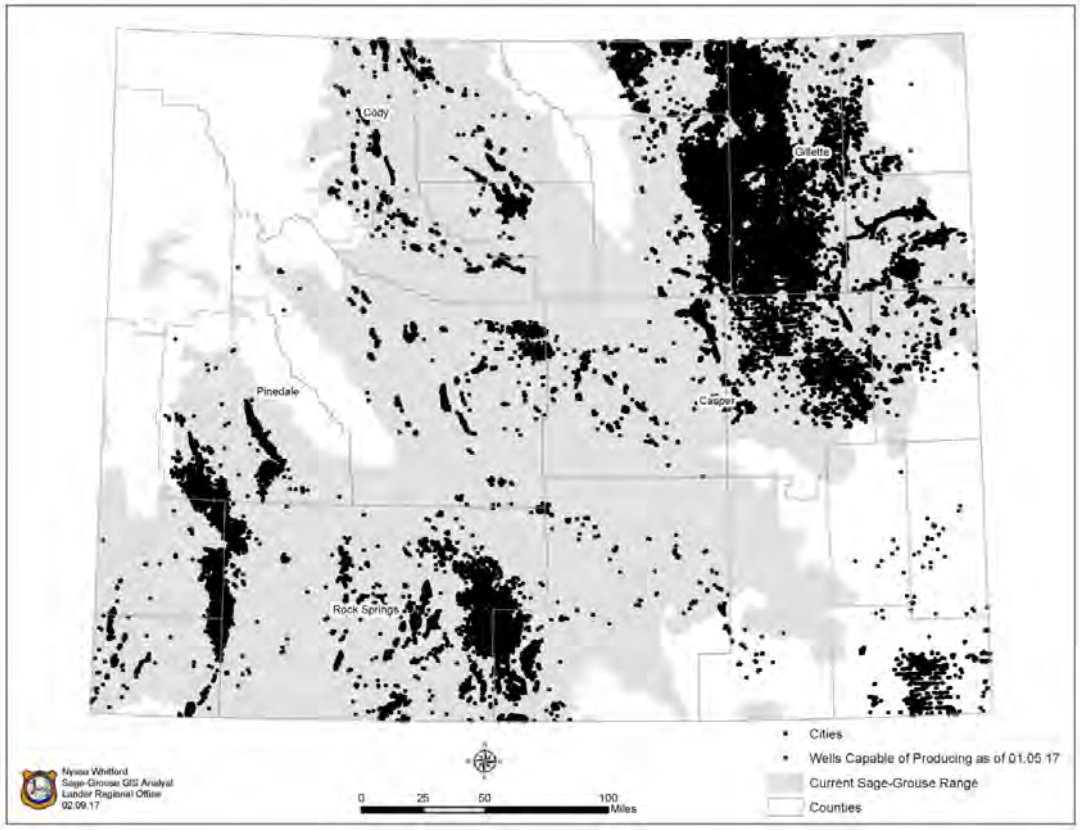
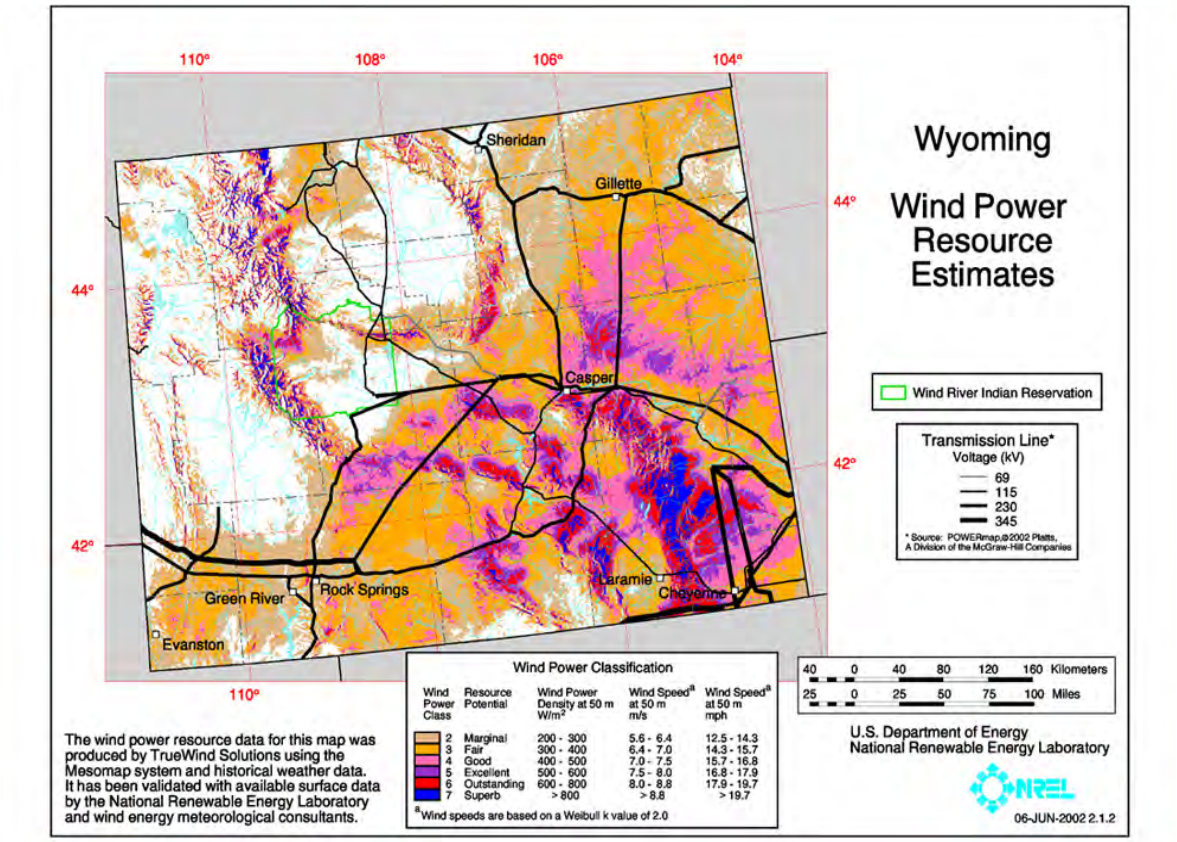


Figure 2. Wyoming wind power potential. Source: U.S. Department of Energy, National Renewable Energy Lab, Boulder, Colorado.



Applying Science to Policy and Management

Wildlife managers became concerned about declining sage-grouse numbers and distribution in the mid-1990s. The Wyoming Game & Fish Department (WGFD) formed an internal working group tasked with understanding reasons behind the decline and with increasing monitoring and research efforts. About the same time, petitions were filed to list sage-grouse as a threatened or endangered species (USFWS 2015). Range-wide conservation of the species began taking shape about the turn of the century. Those efforts were based on state and local conservation plans drafted in most cases by government appointed citizen working groups. All plans identified the need for science-based policy- and decision-making and led to a dramatic increase in research projects and associated publications. Importantly, this research has been collaboratively funded by government, industry, and NGOs (nongovernmental organizations) and has provided a science-based foundation to support Wyoming's approach for sage-grouse conservation.

Eight local sage-grouse working groups were formed in Wyoming. The groups' conservation plans, originally completed in 2007, were updated in 2014. Implementation of conservation actions is accomplished through agency and landowner implementation of appropriate management, protection, and restoration practices. The Wyoming legislature has provided funding to support project implementation.

Local working groups have contributed to the implementation of about 220 projects expending nearly $7 million between 2005 and 2017. The Wyoming legislature funded these projects with appropriations from the state's general fund. The $7 million does not include cost-share dollars, which

often far exceeded the amount of state appropriated funds. Projects have included: sagebrush treatments, invasive plant control, restoration of disturbed sites, grazing management, various education efforts, and applied research related to energy development, effectiveness of habitat treatments, predation, West Nile virus, and reclamation. Approximately 40% of project funding has been spent on applied research.

Legislative funding for the state's sage-grouse program is in place until mid-2017. Funding will then transition from the legislature back to the WGFD due to state budget shortfalls. Ironically, the state's general fund budget derives predominantly from mineral taxes and royalties.

In 2005, the U. S. Fish & Wildlife Service (USFWS) issued a finding of "not warranted" in response to petitions to list greater sage-grouse as a threatened or endangered species (USFWS 2015). Petitioners filed litigation in federal court, and in late 2007, the decision was remanded back to USFWS for further analysis based on "new information" (USFWS 2010). In anticipation of the court's decision, then Wyoming Governor Dave Freudenthal hosted a two-day sage-grouse summit in the summer of 2007. Freudenthal was fully engaged and literally moderated the two-day event, demonstrating his awareness of the impact an ESA listing would have on the economy of the state of Wyoming. This "power of personality" should not be underestimated in its effectiveness at compelling diverse interests to work collectively toward a mutually beneficial outcome.

The 2007 summit resulted in the appointment of the governor's Sage-Grouse Implementation Team (SGIT). This interdisciplinary team comprised of agency, industry, agriculture, and conservation leaders was charged with developing a set of recommendations and processes, which the governor largely adopted.

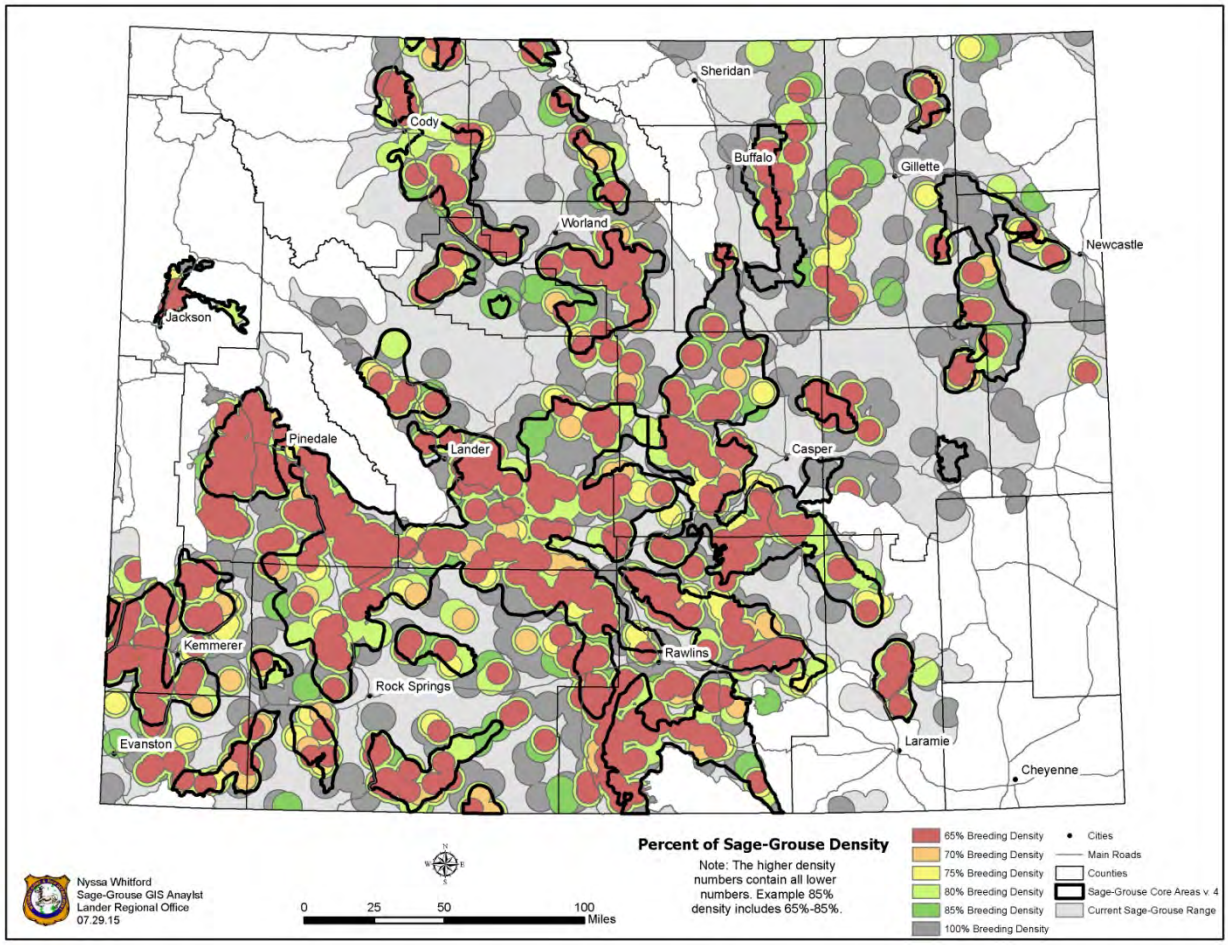
Around the same timeframe, studies of energy development impacts to sage-grouse were being completed and their results published (Holloran et al. 2005; Walker et al. 2007). A group of wildlife researchers and state agency biologists from Wyoming, Montana, Colorado, Utah, and the Dakotas met and distilled the science into a landscape approach for managing energy development compatibly with sage-grouse conservation needs (Apa et al. 2008). The approach was ultimately incorporated into Wyoming's core area concept and a series of governor's executive orders specifically addressing sage-grouse conservation (State of Wyoming 2008, 2010, 2011, 2015). These executive orders have spanned two governors' administrations from different political parties but have maintained the goal of preventing the need to list the bird as threatened or endangered via a process of science-based regulations and incentives.

In 2010, the USFWS determined greater sage-grouse were warranted for listing under the Endangered Species Act but were precluded due to higher priority species (USFWS 2010). The USFWS specified that existing regulatory mechanisms in place at the time had not effectively addressed the threats to the bird but cited Wyoming's core area policy as a potentially effective regulatory mechanism if implemented as planned (USFWS 2010). In September 2015, the USFWS determined the bird was not warranted for listing (USFWS 2015). The Wyoming policy was prominently and repeatedly cited throughout their decision rationale (USFWS 2015).

Figure 3 illustrates the biological basis for delineating core areas along with current core area boundaries. Sage-grouse population abundance centers that contained from 65 to 100% of the known breeding population were identified based on methods from by Doherty et al. (2010) and used to delineate the core areas. The 65% bin reflects the top 65% of bird densities and abundance. To capture 100% of the grouse requires summing all of the density subsets (65+70+75+80+85=100). More simply, the red polygons on the map include the largest, most densely located leks while the gray polygons include mostly small, more isolated leks.

The SGIT overlaid the sage-grouse density data with geospatial data delineating existing disturbances—such as mine locations, roads, urban areas, and producing wells—and areas committed to future development by land-use planning decisions and permitting processes. The SGIT then used these data, along with public input, to delineate the current core areas depicted in Figure 3. The core area boundaries cover less than 25% of the state but encompass 81% of sage-grouse males counted on leks, as well as the associated nesting habitat. Less than 5% of active oil and gas wells and no coal or wind energy developments are located within core area boundaries.

Figure 3. Incremental breeding population densities of greater sage-grouse in Wyoming based on Doherty et al. (2010) and management core areas delineated by the state of Wyoming (2015).



Is It Working?

The ultimate success of Wyoming's sage-grouse conservation strategy can only be determined through long-term monitoring. Based on a recent analysis, 72% of development projects located within Wyoming core areas were in compliance with the executive order (Gamo and Beck 2017). Noncompliant projects were generally operating under valid, existing rights and, therefore, not subject to provisions of the executive order. These projects were reviewed further and operators often agreed to implement mitigation practices that included locating structures within previously disturbed sites, site-specific avoidance of sage-grouse habitat, and habitat restoration. The analysis demonstrated the core area strategy has been generally effective at managing anthropogenic disturbances to conserve sage-grouse in Wyoming. However, it also indicated additional conservation actions are needed to improve sage-grouse population response in northeast Wyoming where many developments had occurred or were permitted prior to the core area policy (Gamo and Beck 2017).

Copeland et al. (2013) found evidence that habitat fragmentation was being reduced in core areas and predicted reduced sage-grouse population losses by implementing the core area strategy along with targeted conservation easements. Another recent analysis of the Wyoming strategy predicted a high

proportion of the landscapes within core area boundaries supporting increasing or stable populations of sage-grouse due to the conservation of high-quality, intact sagebrush habitats (Burkhalter et al. 2015).

The policy's overall effectiveness—as well as that of specific provisions including disturbance thresholds, operational stipulations, and restoration methods—is a subject of ongoing research. The current executive order expressly identifies the need to conduct further research on noise impacts and impacts of gas field development on sage-grouse winter concentration areas (State of Wyoming 2015). The latter will identify thresholds of development associated with a negative response by sage-grouse.

The sage-grouse population reached its lowest point in the mid-1990s. However, the rate of decline has moderated during the last 20 years as conservation has been increasingly directed toward sage-grouse.

The more significant changes made in Wyoming since 2008 have not been in place long enough to support definitive conclusions about how sage-grouse may be responding. In part, this is because sage-grouse respond slowly due to their biology (long-lived, low reproductive rates) and harsh environments in which they live. Moreover, sage-grouse populations appear cyclical or periodically irruptive, and short-term trends are likely driven more by climatic events rather than long-term changes in habitat quality (Fedy and Doherty 2010). This further confounds attempts to isolate and quantify the effect that can be attributed to management actions. Again, only long-term population monitoring will answer this question.

"Don't Be Such a Scientist"

One issue the speakers in this session were asked to address was: What strategies are key to incorporating resource conservation and management into state decisions regarding energy development?

The 2008 multistate gathering of scientists and state biologists for the purpose of collectively interpreting and reporting the results of natural gas development impacts to sage-grouse research was highly effective in communicating the need to conduct conservation at a landscape scale and in formulating development threshold regulations in Wyoming. But my collective background in science and journalism, combined with many years administering and facilitating citizen-based working groups, has led me to conclude that, on the whole, we scientists and managers are not very good at communicating science to those who matter most. And those who matter most are not other scientists and managers but rather the decision-makers who set policy and funding priorities and average citizens who have far more influence on how science informs policy.

Former marine biologist turned filmmaker Randy Olson coined the phrase and titled his book *Don't Be Such a Scientist* (Olson 2010). Several of Olson's TED (Technology, Entertainment and Design) talks on the subject of science communication can be viewed online. Olson's plea is for scientists to become better storytellers rather than simply conveyors of facts. One reviewer suggested Olson's book should be required reading for all graduate students. Others have even suggested a "wholesale reconsideration of the way that scientists communicate with society" through increased use of digital media, recruiting citizen scientists, engaging local opinion leaders, greater participation in public forums, and involvement in research-based communication initiatives (Groffman et al. 2010). The Western Association of Fish & Wildlife Agencies recently established the Sagebrush Conservation Initiative and has created a Communications Sagebrush Team in part to address these issues as well as to facilitate communication within the initiative itself.

Another example of effective science communication is the Natural Resource Conservation Service's (USDA-NRCS) "Science to Solutions" publication (USDA-NRCS 2017). This publication depicts how research informs private lands conservation through the agency's Working Lands for Wildlife program.

Conclusion

The conservation actions and policies being implemented to conserve sage-grouse are unprecedented. At the same time, some continue to question whether the Wyoming core area policy is

truly using the best science and effectively "protecting" sage-grouse and other species dependent on sagebrush ecosystems in Wyoming. Certainly, attempts have been made to discredit, stifle, or misrepresent some of the supporting science. Inarguably, the policy is one of collaboration and compromise, and it relies on a governor's order rather than law. It is not perfect nor was it conceived by prioritizing sage-grouse above all other resources. However, the policymakers are accepting of the science and use it to inform the strategy. Management practices now being implemented on the ground are based on the best available science. So long as the state remains committed to implement the policy and is adaptable enough to make needed management adjustments based on new science, we believe we will maintain a sustainable sage-grouse population in Wyoming. Perhaps this type of collaborative model can be adapted to other species in other places, as well.

Acknowledgments

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Using Science to Inform Management and Improve Biological Conservation in the Desert Renewable Energy Conservation Plan

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Introduction

The Mojave and Colorado deserts of southern California have been viewed as vast wilderness since early exploration and, until recently, were considered the most untrammeled among western landscapes in the contiguous lower 48 states (U.S. Department of Agriculture 1893; Leu et al. 2008). However, the factors that define desert wilderness—small human population, temperature differentials that create unrelenting winds, low rainfall, and cloudless skies—are attractive for renewable energy development. The demand for clean, renewable energy is a national and regional priority and has increased demand for large-scale solar and wind farms in the deserts, particularly in California. The need to balance these national and state energy priorities with existing natural resource and land conservation policies has emerged as a landscape-scale land-use planning initiative known as the Desert Renewable Energy Conservation Plan (DRECP). One of the primary goals for the DRECP was to establish Development Focus Areas (DFAs) where high-quality renewable energy potential of up to 20 gigawatts (GW) could be implemented by the year 2040. DFAs were designed to provide expedited project approvals in locations where environmental impacts could be managed and mitigated, and proximity to transmission corridors provides for the efficient dissemination of energy to users. The DRECP also aims to identify protections for natural resources, recreation, and cultural resources. This plan identifies 37 covered species that receive special consideration in the DRECP. Among the special considerations are climate adaptation requirements, such as the ability to maintain population connectivity through wildlife corridors, while protecting several special recreation areas and 32,000 known cultural sites that are dispersed throughout the region.

We evaluated several particular aspects of the DRECP design and process. In particular, we examined land designations in relation to published studies on Mohave ground squirrel (*Xerospermophilus mohavensis*) habitat and genetic diversity patterns of a suite of broadly distributed desert animal species. The squirrel and its habitat are of particular interest because the entire range of the squirrel is encompassed by the DRECP. We describe the framework of the DRECP, provide a case study of how the DRECP accommodates the needs of the Mohave ground squirrel and its habitat, illustrate

DFAs in relation to the genetic diversity of a broad range of terrestrial biota, and conclude with some observations on how land-use issues were resolved across the landscape under various scenarios.

Describing the DRECP Framework

The DRECP is designed to "provide effective protection and conservation of desert ecosystems while allowing for the development of renewable energy projects" (CEC 2014). The plan encompasses 22.5 million acres (91,054 km^2) of the Mojave and Colorado desert ecoregions in southern California (Figure 1). The DRECP depended on three primary committees for policymaking and science support during the planning process. Signatories of the plan include the California Energy Commission (CEC), California Department of Fish and Wildlife (CDFW), U.S. Bureau of Land Management (BLM), and U.S. Fish & Wildlife Service (USFWS), while six other state and federal agencies participated in planning committees (CEC 2014). A Stakeholder Advisory Committee included counties, municipalities, private industry, utility companies, off-highway vehicle organizations, and several other nongovernmental organizations advocating on behalf of natural resources and cultural interests. The third committee was the Independent Science Advisory Committee (ISAC), incorporating the expertise of academic, private, and government research specialists from a variety of disciplines. The ISAC provided the best scientific information available regarding species conservation and habitat status and reviewed species profiles for taxonomy, geographic distributions, life history parameters, population trends, threats to species and habitats, reserve design, and conservation strategies. A fourth important facet of the DRECP was a robust science program funding original research on topics having insufficient technical information on which to base policy decisions. Independent research projects focused on high-resolution regional vegetation mapping; rare plant population biology; ecology of covered species (e.g., Mojave desert tortoise (*Gopherus agassizii*), golden eagle (*Aquila chrysaetos*), and Mohave ground squirrel); hydro-geophysical dynamics; decision support for the siting of energy facilities; and the cumulative biological effects of alternate planning scenarios.

Phases of the Desert Renewable Energy Conservation Plan

From its inception, the DRECP aimed to provide three important products: 1) BLM's Land Use Planning Amendment (BLM LUPA); 2) the state of California's Natural Community Conservation Plan (NCCP); and 3) the USFWS's General Habitat Conservation Plan (General HCP) that serves counties, municipalities, and private entities. After some eight years in preparation, the BLM completed its planning in 2016 and, by doing so, completed Phase I of the DRECP. Phase I provides a record of decision for BLM lands; however, with some issues still unresolved, work continues on Phase II of the DRECP including the NCCP, the General HCP, and final resolution on an area known as the Bowling Alley (addressed in detail later).

Desert Renewable Energy Conservation Plan—Phase I Accomplishments

Completed in 2016, Phase I of the DRECP identified 388,000 acres (1570 km^2) of Development Focus Areas for expedited energy development; 4.2 million acres (17,000 km^2) of conservation designations; 3.5 million acres (14,000 km^2) of recreation designations; 40,000 acres (162 km^2) of variance lands where energy development is possible (however, those areas do not have the same benefits of preplanning conflict resolution as DFAs); and 400,000 acres (1620 km^2) of BLM multiple-use lands (Figure 2).

Case Study: Mohave Ground Squirrel (*Xerospermophilus mohavensis*)

The Mohave ground squirrel is a small rodent with a short, brushy tail (compared to its closest living relative—the round-tailed ground squirrel *X. tereticaudus*). This squirrel occupies the smallest

distribution among North American squirrels (Hoyt 1972). Mohave ground squirrels are dependent on desert vegetation for food and fulfill most of their life history needs (e.g., feeding, maintenance, mate finding, reproduction, and dispersal) during a very short time span between March and June. Much of the squirrel distribution is in or near some of the highest quality solar energy harvesting areas in the United States. While the squirrel's habitat is highly desirable for energy development, there is a dedicated constituency advocating for the protection and conservation of Mohave ground squirrels and their habitats. Mohave ground squirrels are protected by California state law (Endangered Species Act) but are not protected by the federal Endangered Species Act.

Early in the DRECP process, leading agencies determined that there was insufficient information on the Mohave ground squirrel to make policy decisions. The CEC funded research to provide a habitat suitability model for extant squirrel habitat and to project likely scenarios for future habitat distributions based on global climate change models. That information was merged with projections of energy need and potential build-out for natural resource managers to consider in regard to conservation strategies on behalf of the squirrel as part of the DRECP.

Habitat suitability models for the Mohave ground squirrel described current habitat and evaluated losses from proposed development (Esque et al. 2013). Downscaled versions of global climate models and emissions scenarios were used to project future squirrel habitat availability in 2030 and 2080. Simulation modeling was used to study how modeled habitat shifts would influence genetic diversity patterns of Mohave ground squirrels. Habitat connectivity patterns were identified to determine how current land use and energy development scenarios would influence squirrel distributions (Dilts et al. 2015).

Habitat models for the Mohave ground squirrel identified 19,023 km^2 of suitable habitat. Overlaying the models onto current land-use patterns of the region indicated that between 1,884 and 3,096 km^2 of suitable habitat have been lost historically and that another 10% may be affected by renewable energy development in the near future (Inman et al. 2013).

One of the key factors in the analysis of conservation strategies for the Mohave ground squirrel has been core habitat area. Core habitat is represented by areas where populations of Mohave ground squirrels have been detected for multiple years in large numbers (>30 squirrels) at multiple trapping sites (>6 sites; Leitner 2008). A retrospective comparison between core habitat areas and a recently developed habitat suitability model present two contrasting views of Mohave ground squirrel habitat (Figure 3; Leitner 2008; Inman et al. 2013). While core habitats (Figure 3) coincide with patches ranked among the highest possible using the habitat suitability index, some of the core areas contain highly variable habitat suitability values. For example, the core habitat area that is furthest east (Figure 3) appears to be >50% moderately high habitat but may also link some otherwise isolated areas of the highest suitability index to the rest of the species range. While habitat suitability is certainly not the only criterion to be used in conservation strategy evaluations, it is important among the factors available at this time. Further consideration of these patterns could be important in resolving ongoing land-use issues.

After considering potential habitat losses and gains related to climate change, it was estimated that 57% of the current amount of habitat available could be lost due to climate change by 2030—and as much as 84% by 2080 (Inman et al. 2016). Genetic analyses identified differentiation among northern, central, and southern genetic groups (Matocq et al. 2013). These studies identified important pathways to facilitate gene flow among populations and movements for responding to climate change. It was predicted that some populations may decline in site occupancy or genetic diversity simply as a result of climate change dynamics. The results of these studies were used to explore alternatives to energy development and conservation strategies (BLM 2016).

Intersections of Mohave Ground Squirrel Habitat and Energy Development

Habitat suitability for the Mohave ground squirrel was overlaid on the land-use planning units for Phase I of the DRECP to analyze potential conservation strategies related to planning alternatives. Suitable habitat for the Mohave ground squirrel overlaps substantially with private lands, followed by

military installations, designated recreation areas, California Desert National Conservation Lands (or legislatively and legally protected areas), and Development Focus Areas (Figure 4). Looking only at the map of the BLM LUPA, it appears that the range of this species could be dissected by the juxtaposition of Haiwee DFA, China Lake Naval Weapons Training Center (NWTC), the Trona/Pinnacles DFA, and Fort Irwin National Training Center (NTC; Figure 4). However, the Haiwee DFA, which was grandfathered into the DRECP as a geothermal site with a very small footprint within the DFA, provides some Mohave ground squirrel habitat connectivity between north and south areas. This is because the geothermal site is the only planned energy development in the Haiwee DFA; parts of China Lake NWTC currently support colonies of Mohave ground squirrels and these habitat areas continue to be maintained. The Trona/Pinnacles DFA is a somewhat more degraded habitat area that supports squirrels intermittently and especially during particularly productive years in the desert. Squirrel population dynamics in this area may demonstrate population sink habitat in poor years but could also provide added connectivity between somewhat isolated populations in highly productive years. Like China Lake NWTC, Fort Irwin NTC supports colonies of Mohave ground squirrels that have been monitored for several years and currently provides good habitat. Military lands are administered and planned with respect to natural resources independently of other public and private lands. Thus, the range of this species is not functionally dissected by the geographic position of these landscape features, at this time.

The conservation strategy remains unresolved in an area known as the Bowling Alley just north of the junction of state highways 58 and 395 (Figure 4). The signatory agencies for the DRECP concluded that there was insufficient information to evaluate whether this area should be designated as conservation land, a DFA, or some intermediate designation. The group agreed on a five-year moratorium of energy development to provide time to gather more information on the squirrel status in this and nearby areas and for the CDFW to complete its Mohave Ground Squirrel Conservation Plan—with planned completion in 2020 (BLM 2016).

Overlap of Land-Use Designations and Genetic Diversity Hotspots

We compared the land-use designations in the DRECP record of decision (ROD) with genetic diversity hotspots in the Mojave and Colorado deserts—that were analyzed prior to the completion of the DRECP—to determine the relative amount of protection/vulnerability from development (Wood et al. 2013; Vandergast et al. 2013). These genetic hotspot areas support high genetic diversity and divergence within and among populations of 17 terrestrial animal species in the Mojave Desert and 10 species in the Colorado Desert (Figure 5; Vandergast et al. 2013; Wood et al. 2013). These include four DRECP covered species: desert bighorn sheep (*Ovis canadensis*), Mohave ground squirrel, desert tortoise, and the Mojave fringe-toed lizard (*Uma inornata*). Areas of genetic diversity may be important to protect future evolutionary potential and, thus, may be useful to consider in biodiversity protection efforts (Vandergast et al. 2008). In the deserts, hotspots tended to cluster in ecotones between desert/grassland or desert/mountain habitats, where historically separated populations have come into secondary contact, thus increasing local genetic diversity. Some such areas were also found in regions of high habitat suitability for particular species and represent areas with relatively large or stable populations for those species historically (Wood et al 2013; Vandergast et al 2013). The DFAs that were established in the DRECP occur mostly outside of known genetic diversity hotspots (Figure 5). With the addition of California National Land Conservation Lands (CNLCL) designated in the BLM LUPA, all of the genetic diversity hotspot polygons A, B D, E, F, G, and I (Figure 5)—except polygon C (Antelope Valley/Mojave Desert Transition)—have increased protection as a result of the DRECP Phase I, compared to previous analyses (Vandergast et al. 2013). Genetic diversity hotspots A, B, C, and D (Figure 5) currently have some areas that were assigned to DFAs although the DFAs in B and C have very minimal surface areas. Genetic diversity hotspot F is a diffuse polygon of many small parcels of land, and this area encompasses the single largest variance area that is subject to potential development. The genetic diversity hotspots for the Colorado Desert are also substantially protected by current land-use planning (see Figure 5, I and L).

Conclusions

In review of the draft DRECP and BLM's record of decision for the Land Use Planning Amendment, we suggest that the DRECP applied the best science available to the land-use issues in question (CEC 2014; BLM 2016). The process appears to have been effective in several respects. Covered species did not necessarily all receive the same investment of resources because emphasis was applied to topics that most needed new information. The temporary moratorium on renewable energy development in the Bowling Alley DFA demonstrates the adaptability of the process and a willingness to gather additional data to clarify issues when necessary. Furthermore, Phase I only covers lands administered by BLM. Because of the large amount of private land existing within suitable Mohave ground squirrel habitat, completing Phase II of the DRECP could benefit Mohave ground squirrel conservation by facilitating for potential coordination of regional conservation efforts throughout the range of the squirrel. The phased approach provided flexibility in the achievement of program goals to accommodate the needs of participating agencies and provided the opportunity to achieve all the goals in the foreseeable future. Current challenges include updating and coordinating new findings/data and disseminating it to the community. In addition, the current land-use classifications in the DRECP increase protection in areas of high genetic diversity for a group of some covered, and many uncovered, desert animal species. Our assessment indicates that the DRECP achieved conservation goals while concurrently establishing guidance to achieve energy production targets.

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Figure 1. The Desert Renewable Energy Conservation Plan planning area covering 22.5 million acres of Mojave and Colorado desert habitats in southern California, USA. Figure excerpted from BLM 2016.

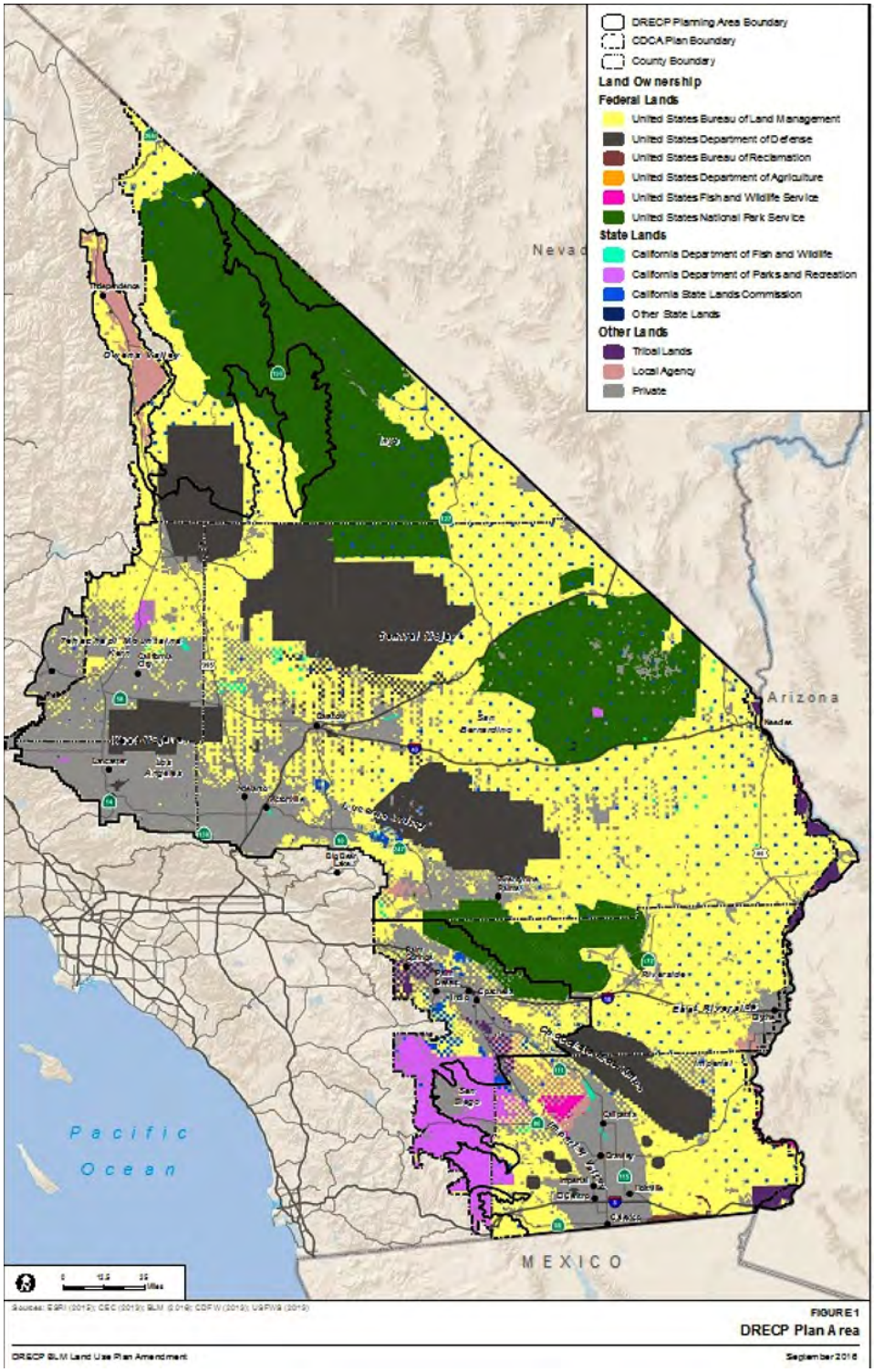


Figure 2. Phase I of the Desert Renewable Energy Conservation Plan, consisting of the Bureau of Land Management Land Use Planning Amendment. Figure adapted from BLM 2016.

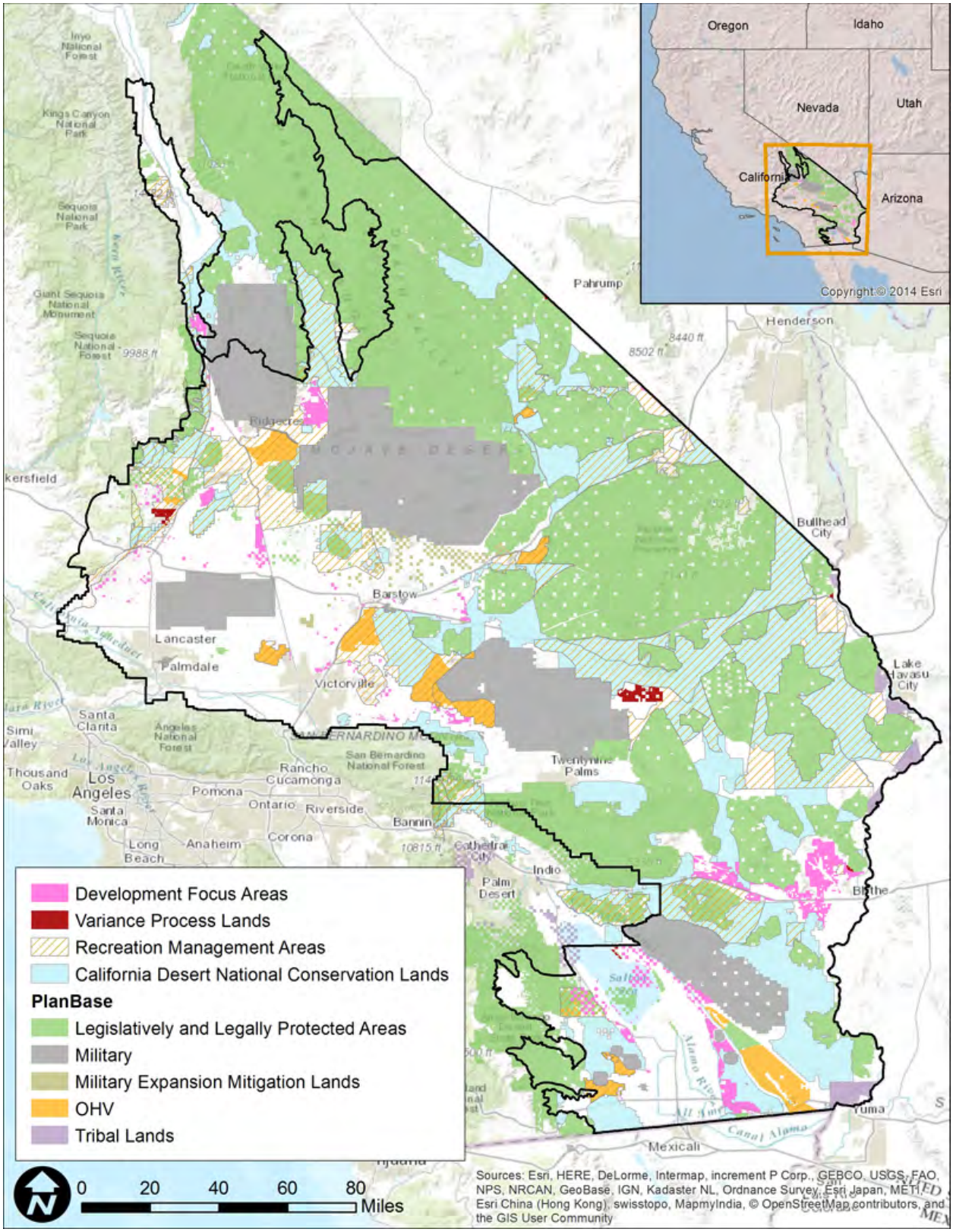


Figure 3. An illustration of Mohave ground squirrel (MGS) (*Xerospermophilus mohavensis*) habitat core areas (adapted from Leitner 2008) superimposed on a habitat suitability model for this species. The scores on the color ramp refer to an index of habitat suitability ranging from 0 to 1. Higher numbers (warmer colors) indicate higher habitat suitability. Figure adapted from Inman et al. 2013.

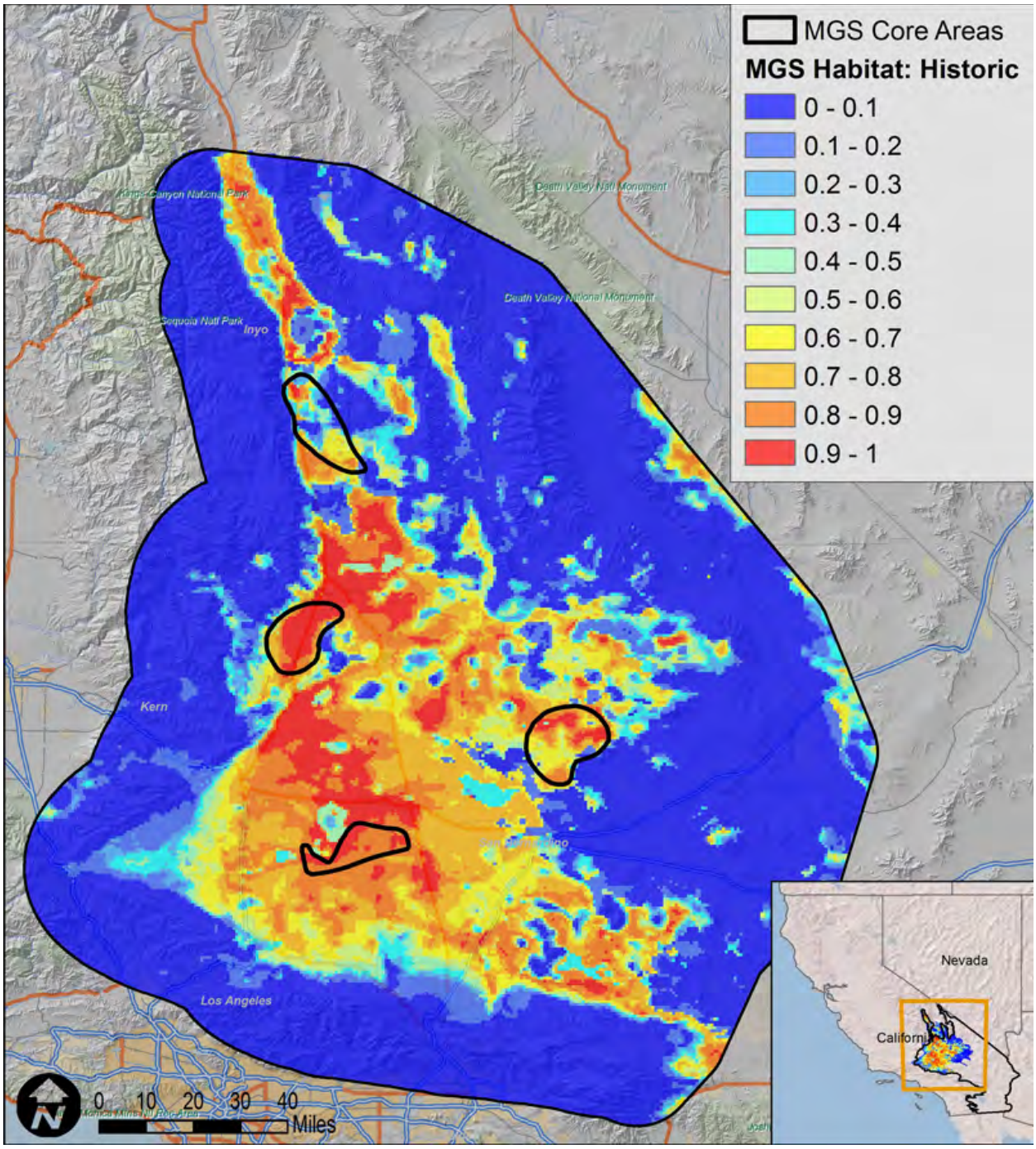


Figure 4. A Mohave ground squirrel (*Xerospermophilus mohavensis*) habitat suitability map (beige shading) superimposed on the Bureau of Land Management Land Use Planning Amendment (adapted from Inman et al. 2013 and BLM 2016, respectively) for discussion of squirrel habitat in relation to other land uses. The Haiwee (A) and Trona/Pinnacles Development Focus Area (C) have been resolved as part of the DRECP. China Lake Naval Weapons facility (B) and Ft. Irwin National Training Center (D) are resolved through Department of Defense. The Bowling Alley (E) represents an area of continued discussion as part of the DRECP.

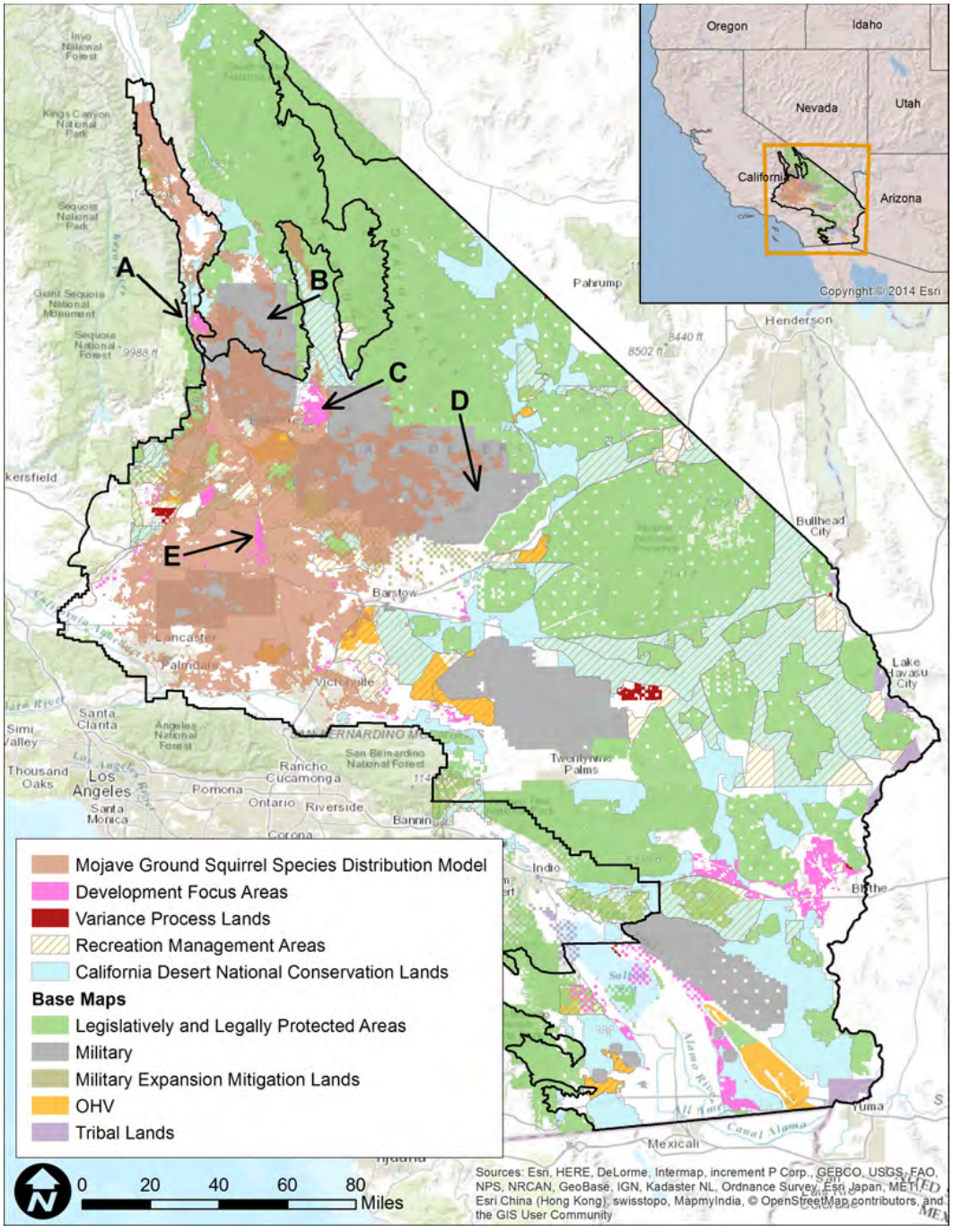
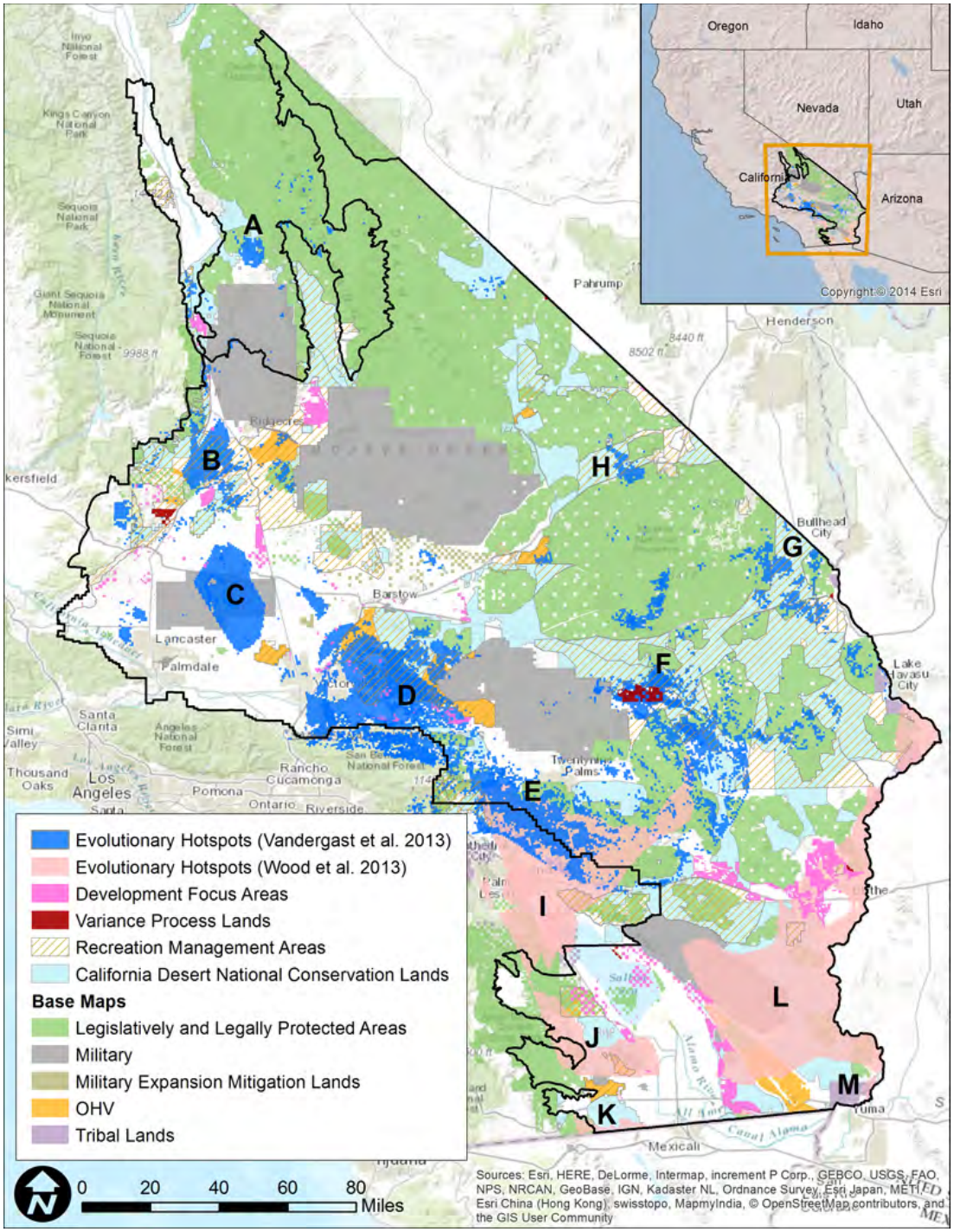


Figure 5. Regional hotspots of genetic diversity in relation to DRECP land conservation status in the Mojave and Colorado deserts. Hotspots are A) Dunmovin–Coso Junction; B) Sierra–Tehachapi Transition Zone; C) Antelope Valley–Mojave Desert Transition; D) Ord Mountain–Lucerne Valley; E) Indio Hills–Little San Bernardino Mountains; F) Pluvial Lakes; G) Colorado River: H) Ivanpah Valley; I) Palm Springs area; J) Anza Borrego area: K) western border region: L) Blyth to Imperial Dunes area; and M) eastern border area. Figure adapted from Vandergast et al. (2013) and Wood et al. (2013).



The Pennsylvania Game Commission's Wind Energy Voluntary Cooperation Agreement

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Introduction

The Alternative Energy Portfolio Standards Act (2004, Nov 30, P.L. 1672, No. 213, 73 P.S. §1648.1, et seq.) requires that 18% of all electricity sold to retail customers in Pennsylvania come from renewable energy sources by 2019. Wind energy was one technology competing for a substantial share of the alternative energy market.

To assist wind energy development in an environmentally responsible manner, Governor Rendell convened The Pennsylvania Wind and Wildlife Collaborative (Collaborative) in 2007 to develop a set of Pennsylvania-specific principles, policies, best management practices, guidelines, and tools that could be used to assess risk to habitat and wildlife from wind energy development and to minimize and mitigate the impact of that development. The Collaborative was led by the Pennsylvania Department of Conservation and Natural Resources and included participants from federal and commonwealth agencies and offices, nongovernmental agencies, and the wind industry. Results from the Kerns and Kerlinger (2004) and Arnett (2005) bat mortality studies and the Brandes (2006) paper on impacts to raptor migration highlighted the Collaborative's immediate wildlife concerns.

In 2006, the Pennsylvania Game Commission (PGC) took the lead in addressing the potential impacts to the commonwealth's bird and bats since these resources are under the agency's jurisdiction. The PGC and wind energy developers began an intense effort to address the issues of the current environmental review process, including the absence of regulations addressing wind energy, shortcomings of the environmental review process, and the lack of statewide and local data on impacts to fauna due to wind energy facilities. Through this coordination the PGC Wind Energy Voluntary Cooperation Agreement (WEVCA) was developed. The WEVCA consists of a formal agreement and corresponding protocols developed to ensure early coordination for proposed projects and to standardize the review process and wildlife monitoring protocols associated with the development of wind energy projects. The WEVCA was the first of its kind in the United States and provided a mutually beneficial and flexible process to help both parties meet their goals and objectives.

The draft WEVCA was presented to the Collaborative, including the wind energy developers, for input and feedback. After the PGC determined the objectives and goals of the WEVCA, the wind industry provided input on what surveys could best meet those goals and objectives without requiring significant delays to their projects or exorbitant cost to the developers. The WEVCA was finalized in April 2007, and the first signatories (Cooperators) signed on to work with the PGC to better understand the impacts of wind energy development on wildlife in Pennsylvania. Of the 25 operating wind energy facilities in Pennsylvania, 20 had signed on to the PGC's WEVCA. The five facilities that had not signed on to the PGC's WEVCA were all owned by Florida Power and Light Company, a subsidiary of NextEra Energy Inc.

Each proposed project was screened and assigned a risk level (high, moderate, or low) for potential impacts to raptors and bats. Raptor risk was determined based on known migration points; ridges with known migration concentrations were deemed high risk; lesser, disconnected ridges were deemed moderate risk; and flat terrain was deemed low risk. Bat risk was determined based on the presence of state threatened or endangered species or the presence of known hibernacula in the vicinity of the project. High-risk projects were defined as being located within five miles of a state threatened or

endangered bat species, within one mile of a hibernaculum of concern (containing 1,000 or more bats counted during internal survey or 100 bats captured via trapping), or within five miles of a hibernaculum containing more than 5,000 bats. Moderate risk was assigned to projects between one and five miles from a hibernaculum of concern, within one mile of a hibernaculum containing 100 to 1,000 bats, or within five miles of a hibernaculum containing 1,000 to 5,000 bats. Low risk was assigned to projects that did not meet any of the above criteria. The assigned risk category determined which pre- and postconstruction surveys would be required and the level of effort necessary for each survey. Potential preconstruction requirements included raptor migration studies, breeding bird surveys, bat mist-netting, bat hibernacula surveys, and bat acoustic monitoring. All Cooperator facilities were also required to conduct two years of postconstruction mortality monitoring, regardless of the bird or bat risk level associated with the facility. Additional postconstruction surveys could be requested by the PGC, including raptor migration, breeding birds, bat mist-netting, and bat acoustic monitoring depending on the results of preconstruction surveys (PGC 2007).

Preconstruction Survey Results

More than 270 pre- and postconstruction bird and mammal surveys have been completed at Pennsylvania wind energy facilities since 2004. Inconsistencies in data collection pre- and post-WEVCA have resulted in difficulties interpreting results and comparing the results among sites. Since the WEVCA has been developed, Cooperators have funded one or more preconstruction wildlife surveys at more than 50 proposed wind sites and postconstruction surveys have been initiated at 20 sites, resulting in more than 120,000 hours of surveys. For confirmed presence of threatened and endangered species, the PGC worked with the Cooperator to best avoid the area, minimize negative impacts, and mitigate for any negative impacts to the species and its habitat.

Fall Raptor Migration Surveys

Fall raptor migration varied across the state as expected. A total of 30 preconstruction fall raptor surveys were completed at 29 proposed wind facilities between 2004 and 2013. Turkey vultures (*Cathartes aura;* 33%), red-tailed hawks (*Buteo jamaicensis*; 18%), and broad-winged hawks (*B. platypterus*; 18%) were the three most common raptors observed during fall migration surveys. Northern goshawks (*Accipiter gentilis) were the least observed raptors* (0.15%) followed by rough-legged hawks (*B. lagopus*; 0.2%) and Pennsylvania endangered peregrine falcons (*Falco peregrinus*; 0.2%). Overall, the raptor risk levels did not correspond to the total raptor species observed, the total number of raptors observed, or the raptors observed per hour.

Spring Raptor Migration Surveys

Twenty-two spring raptor migration surveys were conducted between 2006 and 2013 at 21 proposed wind facilities. Turkey vultures (59%), red-tailed hawks (13%), and broad-winged hawks (5%) were the three most common raptors observed during spring migration surveys. Peregrine falcons and northern goshawks were the least observed (0.1%), followed by merlins (*F. columbarius*; 0.2%) and rough-legged hawks (0.2%). Only three raptor species were observed during all spring raptor migration surveys: sharp-shinned hawks (*A. striatus*), red-tailed hawks, and turkey vultures.

Breeding Bird Survey Results

A total of 36 breeding bird surveys were conducted at 30 proposed facilities between 2006 and 2016. Several proposed facilities conducted more than one year of surveys because the protocol was not followed, the project area was not adequately covered, or changes to the project area required additional points. Breeding bird surveys consisted of point counts, area searches, or a combination of point counts and area searches. Thirteen proposed facilities documented at least one Pennsylvania threatened or endangered bird species during surveys. The state-listed birds observed included yellow-bellied flycatcher (*Empidonax flaviventris*), blackpoll warbler (*Setophaga striata*), American bittern (*Botaurus*

lentiginosus), upland sandpiper (*Bartramia longicauda*), osprey (*Pandion haliaetus*), and northern harriers (*Circus cyaneus*).

Bird Species of Special Concern Survey

Bird species of special concern surveys conducted at proposed wind facilities have included bald eagle (*Haliaeetus leucocephalus*) nest surveys, short-eared owl *(Asio flammeus)* presence/absence surveys, upland sandpiper presence/absence surveys, and blackpoll warbler and yellow-bellied flycatcher habitat surveys. A total of 24 bird species of special concern surveys were conducted including: four upland sandpiper surveys, 12 bald eagle nest surveys, one bald eagle roost survey, two northern harrier presence/absence surveys, one short-eared owl presence/absence survey, one blackpoll warbler habitat assessment, one blackpoll warbler presence/absence survey, one yellow-bellied flycatcher habitat assessment, and one yellow-bellied flycatcher presence/absence survey.

Bat Hibernacula Investigation Surveys

Since the WEVCA has been in effect, the PGC received reports from 28 proposed wind facilities that conducted potential bat hibernacula investigations. The investigation of potential hibernacula within the project area includes features such as abandoned mines, subsidence areas, and abandoned buildings. Twenty of the 81 features trapped were deemed a hibernaculum of concern based on the species present.

Acoustic Monitoring

We received reports and data from 44 preconstruction bat acoustic surveys conducted at 38 proposed wind facilities between 2005 and 2016. Analysis of these data is difficult as there were variations in detection zones among acoustic detectors, sampling at various heights above ground level, as well as operational success of detectors. Of the 44 preconstruction bat acoustic surveys performed, eight followed the PGC protocols that provided standardized, comparable data. Using data from these eight sites, some general trends can be derived. An average of 69% (range 60 to 82%) of all bat activity occurred between July 1 and September 30. These data suggest that any efforts to minimize bat mortality should be focused between July 1 and September 30.

The data also shows that 59% (range 48 to 69%) of the documented bat activity occurred when wind speeds were less than 6 meters per second, and 76% (range 72 to 92%) of bat activity occurred when wind speeds were less than 7 meters per second, which demonstrates that bat activity decreases as wind speeds increase. PGC protocol does not standardize the identification of calls to species; therefore, the ability of the PGC to determine species activity or species detection rates at these wind speeds is not possible.

Mist Net Surveys

Between 2004 and 2016, the PGC received results from 53 bat mist net surveys conducted on 43 proposed wind facilities in Pennsylvania. Several proposed facilities conducted two years of mist net surveys because project areas changed, the original survey did not adequately sample the project area, or additional netting for telemetry was required because threatened or endangered bat species were captured during the first survey. Between 2004 and 2016, mist net effort averaged eight bats per 1,000 units of effort (range 3 to 45 bats). A unit effort is defined as one square meter of net in place for one hour. In other words, it took 1,000 square meters of nets in place for one hour to capture eight bats. Mist net effort in Pennsylvania has decreased significantly since the onset of white-nose syndrome. Cave bats—little brown (*Myotis lucifugus*), big brown (*Eptisicus fuscus*), Indiana (*M. sodalis*), tricolored (*Perimyotis subflavus*), northern long-eared (*M. septentrionalis*), and eastern small-footed bats (*M. leibii*)—generally comprise the majority of bats captured during mist-netting. Overall, effort required to capture cave bats has increased significantly while the effort needed to capture migratory tree bats—red (*Lasiurus borealis*), hoary (*L. cinereus*), and silver-haired bats (*L. noctivagans*)—has remained steady. Mist net capture rates were not anticipated to correlate with bat risk levels because the capture rates are reliant on site-specific mist net locations. Mist net surveys are designed to sample bat presence on the landscape,

determine the presence or absence of threatened and endangered species, and obtain specimens for telemetry.

Telemetry Surveys

Since the WEVCA was established, telemetry surveys have been conducted at 12 proposed wind facilities. Telemetry surveys identify foraging areas, roost locations, maternity colonies, and behaviors that enable the PGC to determine where to best site wind turbines to avoid and minimize potential adverse impacts to bat species. Since 2007, telemetry was conducted on 56 bats—34 individual Indiana bats and 22 individual eastern small-footed bats.

Indiana bat telemetry surveys associated with wind energy projects revealed that female bats tend to travel farther from roosts to hibernacula than male bats. Fall trapping at one hibernaculum indicated that female Indiana bats travelled up to 11.8 miles from roost tree to hibernaculum during fall swarming. Additionally, more than 71 Indiana bat roosts were identified, including the state's second-largest maternity colony. It was also noted that male Indiana bats tended to forage in forested hilly terrain and use smaller riparian areas compared to females, which tended to forage in flatter areas and use larger riparian areas.

Telemetry studies of eastern small-footed bats associated with wind energy projects have revealed more than 48 roost locations including one maternity location. Eastern small-footed bat home range, using fixed kernel utilization distribution at 95%, averaged 158 hectares (1.58 km^2) (range 0.1 to 828 hectares; 0.0 to 8.28 km^2). This species utilized deciduous forests primarily for foraging. Roost locations were identified in rocky outcroppings within the forest, strip mines, spoil piles, and on cliffs.

Postconstruction Survey Results

From 2007 to 2013, a total of 38 postconstruction mortality surveys were conducted at 20 different wind energy facilities in Pennsylvania under the PGC's WEVCA (PGC 2007, 2013). No postconstruction surveys were conducted from 2014 to 2016. Under the WEVCA methodologies, a survey is defined as one season of monitoring; therefore, each facility may have one or more surveys conducted.

Mortality Surveys

Mortality searches were conducted daily from April 1 to November 15. PGC staff validated the identification of all carcasses from all surveys, with few exceptions. Estimated mortality was calculated from daily, standardized searches conducted at 10 turbines, or 20% of all turbines, whichever was greater at each facility. Standardized searches are defined as searches within the delineated 120 meter-by-120 meter search plot during a scheduled search time. The Erickson et al. (2004) estimator was used to estimate bird and bat mortality. The Erickson estimator uses actual carcasses found, the searchers' efficiency at finding carcasses, and carcass persistence on the landscape to calculate a mortality estimate for both birds and bats. Carcass condition (disintegrated, missing parts of the carcass that contain key identification characteristics, etc.) sometimes precluded the ability to determine the age, sex, and species of some carcasses, in which case these carcasses were classified as unknown for the respective metric.

Bird Mortality

The average estimated mortality for the 38 surveys conducted between 2007 and 2016 was calculated to be four bats/turbine/year (range 1 to 10). A total of 701 bird carcasses, consisting of 97 species, were found during standardized searches at Pennsylvania wind facilities. The vast majority (73%) of all carcasses have been Passeriformes (Table 1).

Table 1. Number of bird carcasses by order found during mortality monitoring at 20 Pennsylvania wind energy facilities each year from 2007 to 2013. No postconstruction monitoring occurred from 2014 to 2016.

Year	Accipitriformes	Anseriformes	Apodiformes	Charadriiformes	Columbiformes	Coraciiformes	Cuculiformes	Galliformes	Gruiformes	Passeriformes	Piciformes	Unknown	Total
2007–2008	1	0	1	0	1	0	2	1	0	40	1	9	56
2009	3	3	3	1	3	0	4	5	1	100	1	15	139
2010	7	0	1	3	1	0	1	5	0	71	3	16	108
2011	0	0	1	0	0	1	0	6	1	86	2	9	106
2012	3	2	2	1	0	0	3	2	1	86	2	27	129
2013	4	2	1	2	3	0	2	4	0	133	0	12	163
Total	18	7	9	7	8	1	12	23	3	516	9	88	701

Red-eyed vireos (*Vireo olivaceus*) were the most frequently documented passerine species, as well as overall bird species (26%), found during standardized searches. Red-eyed vireos are considered common and abundant in Pennsylvania. Unlike the next two most commonly found passerines—golden-crowned kinglet (*Regulus satrapa*) (8% of birds) and magnolia warbler (*Setophaga magnolia*) (3% of birds)—red-eyed vireo mortality is not limited to migration periods. Red-eyed vireo mortality has been documented from May to October. Golden-crowned kinglets, magnolia warblers, and ruby-crowned kinglets (*R. calendula*) were also documented in higher numbers compared to other passerines at Pennsylvania wind sites. Mortality of these species is limited to spring and fall migration periods of April to May and September to November. Overall the mortality of these species can most likely be attributed to wind facilities being constructed on ridges historically used as migration pathways; however, it remains unknown why certain species appear to be more at risk than others.

Between 2007 and 2016, 10 of the 20 facilities conducting mortality monitoring documented raptor mortality. A total of 18 raptor mortalities have been documented—one broad-winged hawk, 10 red-tailed hawks, and seven turkey vultures. The raptor fatalities were documented in March, April, May, July, October, and November. Bird mortality is spread throughout the survey season; however, there were two peaks that occurred in the spring and fall. During April and May, 29% of all bird mortalities occurred, while the months of August, September, and October accounted for 54% of all bird mortalities.

Bat Mortality

The average estimated mortality for the 38 surveys conducted between 2007 and 2016 was calculated to be 25 bats/turbine/year (range 5 to 70). A total of 4,715 bat carcasses were found during standardized searches at Pennsylvania wind facilities conducting mortality monitoring between 2007 and 2016.

Nine species of bats have been found during mortality monitoring from 2007 to 2016: little brown, Indiana, northern long-eared, silver-haired, tricolored, big brown, eastern red, Seminole (*L. seminolus*), and hoary bats. Overall, migratory tree bats (silver-haired, eastern red, Seminole, and hoary) comprised 80% of all documented mortality (Table 2). In contrast, the usual cave hibernating bats ("cave bats"—little brown, Indiana, northern long-eared, tricolored, and big brown) comprised 20% of all documented mortality.

Table 2. Number of bat carcasses by species found during mortality monitoring at 20 Pennsylvania wind energy facilities each year from 2007 to 2013. No postconstruction monitoring occurred from 2014 to 2016.

Year	Little Brown	Indiana	Northern Long-Eared	Silver-Haired	Tricolored	Big Brown	Eastern Red	Seminole	Hoary	Unknown	Total
2007–2008	38	0	0	104	80	15	125	0	181	5	548
2009	108	0	1	121	94	38	93	2	169	5	631
2010	72	0	0	165	43	71	453	4	356	11	1175
2011	20	1	0	74	14	51	121	2	181	2	466
2012	8	0	0	113	53	101	530	4	410	3	1222
2013	1	0	0	204	17	82	134	1	229	5	673
Total	247	1	1	781	301	358	1456	13	1526	31	4715

Hoary bats were the most commonly documented carcasses found during monitoring (32%). Seminole bats were the least frequently found migratory tree bat at Pennsylvania wind facilities with 13 being found from 2007 to 2013. All suspected Seminole bats were sampled and confirmed via genetic analysis. Seminole bats were found at facilities throughout Pennsylvania, except for the northwestern portion of the state, indicating that Seminole bats are more widely distributed in Pennsylvania than previously thought (e.g., Schlitter 1985).

Seasonal distribution of bat mortality varies among species; however, the peak of mortality for all species occurs at the end of summer (Figure 1). Seventy-nine percent of all bat mortality occurred between July 1 and September 30. Mortality trends are similar between migrating and cave bat species with 79% of all migratory tree bats and 78% of all cave bat mortality occurring between July 1 and September 30, peaking in August (Figure 1).

Large Mortality Events

One large mortality event was documented in October 2011, which is defined as more than 50 carcasses found in the facility in one night. This facility had already completed two years of monitoring and was not conducting mortality monitoring in 2011. The PGC visited the site on October 7 and 11, 2011, and collected 258 bird and two bat carcasses. The PGC investigated the incident and concluded the event was caused by lighting conditions at or near the turbine in combination with a low cloud ceiling during peak bird migration. This conclusion was based on the mortality occurring only at the turbine nearest to the lighted substation, as well as no other large mortality events observed at any other wind facilities in the vicinity.

The lighting at a nearby substation was lit with photovoltaic sodium vapor lights instead of being on a switch or using motion- or heat-sensor lighting. Bird mortality caused by weather and lighting is well documented. Mannville (2000) noted that low cloud ceilings can cause migrating birds to fly at lower altitudes, increasing the chance of collision with large structures. Additionally, Gehring et al. (2009) found that birds can become disoriented by steady burning light refraction, causing the birds to circle closer and closer to the light. Another large bird mortality caused by all-night lighting at a substation and inclement weather conditions was documented during the same time of year at a facility in West Virginia (Steelhammer 2011). However, unlike the mortality event in Pennsylvania, the bird deaths in West Virginia were believed to be caused by exhaustion and collisions with the substation as opposed to the

turbines. The Cooperator has since implemented best management practices to prevent further mortality.

Adaptive Management

The WEVCA was intended to be a dynamic agreement, in that the survey requirements and protocols could change based on changing environmental conditions as well as the data gathered by the Cooperators. For example, since the WEVCA's inception, white-nose syndrome drastically reduced cave dwelling bat populations to where no hibernacula in the state were meeting the hibernacula of concern thresholds. Similarly, based on postconstruction mortality data, it appeared that overall bird mortality was occurring yet risk to birds other than eagles and raptors was not being assessed. In 2013, the PGC and Cooperators reviewed the data collected since 2007 and agreed to amend the WEVCA to address some of these concerns.

As part of the 2013 amended WEVCA, risk levels were modified from a three-tiered risk system (high, moderate, and low) to a two-tiered risk system (high and low; PGC 2013). Risk levels were changed from "raptor risk" to "bird risk" to include all bird species and not just raptors, and the assessment criteria for determining bird risk levels were also updated. To be deemed high risk for birds, a proposed project must have either a known occurrence of breeding state threatened or endangered species within one mile of the proposed project area, an important bird area within one mile of the proposed project area, or a unique habitat supporting a diversity of Wildlife Action Plan species within one mile of the proposed project area (PGC and PFBC 2015). Proposed projects that do not meet these criteria are deemed low bird risk. To be deemed high risk for bats, a proposed project must have a hibernaculum of concern (now defined as a hibernaculum containing a state listed bat species or housing three bats of any species captured via trapping) within 10 miles of the project area, a known occurrence supporting the breeding or hibernating of a state listed species within 10 miles of the project area, or a maternity colony of a cave-dwelling species within five miles of the project area. Proposed projects that do not meet any of these criteria are deemed low risk for bats. The assigned risk category determines which pre- and postconstruction surveys will be required by the PGC.

The 2013 amended WEVCA also revised the types of surveys required by the PGC. Surveys that did not prove useful for predicting mortality were no longer required by the 2013 WEVCA. For example, pre- and postconstruction bat acoustic surveys are no longer requested by the PGC. While acoustic surveys provided data that were useful in determining peak bat activity periods, these surveys did not provide information relevant to predicting bat mortality at a proposed facility. In addition, huge variations in the way consultants collected and analyzed acoustic data resulted in many unidentifiable bat calls as well as data sets that could not be used to analyze trends on a regional or statewide basis. Because of the drastic change in the landscape following construction of a wind energy facility, the preconstruction surveys did not accurately represent actual bat use of the postconstruction area. Similarly, results of raptor migration surveys, which are time- and labor-intensive, did not document a relationship between raptor migration and raptor mortality.

The PGC also worked with Cooperators to set a maximum level of effort to be implemented by Cooperators to reduce bat mortality for developing projects (PGC 2013). Operational facilities have limitations such as old turbine technology and contractual obligations that may preclude the implementation of some types of bat mortality minimization efforts. However, developing projects do not have such limitations and, thus, have the ability to incorporate these measures into the project design. Therefore, developing projects, as defined in the 2013 amended WEVCA, are held to a higher standard for minimizing bat mortality than facilities already in operation. This gives the Cooperators guidelines on the maximum bat mortality minimization efforts the PGC can request so that these measures can be included in their economic feasibility analyses.

Because of the changes agreed upon by the PGC and Cooperators, Cooperators who wanted to remain as such were required to sign a 2013 amended WEVCA to formalize the updated protocols, bat mortality minimization efforts, and best management practices. Fewer wind energy companies signed onto the 2013 amended WEVCA than had signed onto the 2007 WEVCA due to the fact that some

companies were no longer pursuing wind energy development in Pennsylvania. The 2013 amended WEVCA Cooperators are limited to companies that have operational or proposed facilities in Pennsylvania, whereas in 2007, companies without proposed projects had signed on to the WEVCA.

Conclusion

The PGC's WEVCA was created to provide uniform guidance for wind development in Pennsylvania, to better understand impacts to birds and mammals from wind energy development, and to create ways to avoid, minimize, and, when necessary, mitigate impacts on birds and mammals. Overall, the WEVCA appears to have been successful at providing a standard process for which wind energy projects are reviewed for potential impacts to wildlife. Because of the standardized protocols and risk assessments, wind energy developers understand and can anticipate what is expected of them—and also what they can expect from the PGC—during the environmental review process. This understanding has led to early coordination with the PGC during project development in order to minimize potential impacts to the greatest extent practicable. These benefits are not limited to just Cooperators, as nonsignatories can view the PGC's process and anticipate the environmental review process.

The 2013 amended WEVCA continues to work to avoid and minimize impacts to birds and mammals. For example, several proposed wind energy facilities have been abandoned due to significant wildlife concerns. These abandoned project locations typically have ideal wind resources and are often repeatedly targeted by other wind energy developers. However, the PGC has used the wildlife data collected under the WEVCA and 2013 amended WEVCA to show subsequent wind developers that there are wildlife concerns on and in the vicinity of these locations. The sharing of this information has resulted in the withdrawal of wind development plans at these locations and the conservation of wildlife and wildlife habitat. Likewise, using data collected during preconstruction surveys, the PGC has worked with wind energy developers to modify project layouts to avoid and minimize impacts on wildlife from both project construction and operation. Data collected during pre- and postconstruction surveys have been used by wind energy facilities to determine what operational adjustments to implement postconstruction, such as increased cut in speeds and feathering of blades, to minimize impacts to bats. Both the WEVCA and 2013 amended WEVCA were made possible by the efforts of the Cooperators and can serve as a model for other industries.

For an in depth review of the PGC Wind Energy Voluntary Cooperative Agreement and its accompanying protocols, visit the Pennsylvania Game Commission website—click on the "Wildlife" tab at the top of the page, then on "Habitat Management," and finally click on "Wind Energy."

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Figure 1.

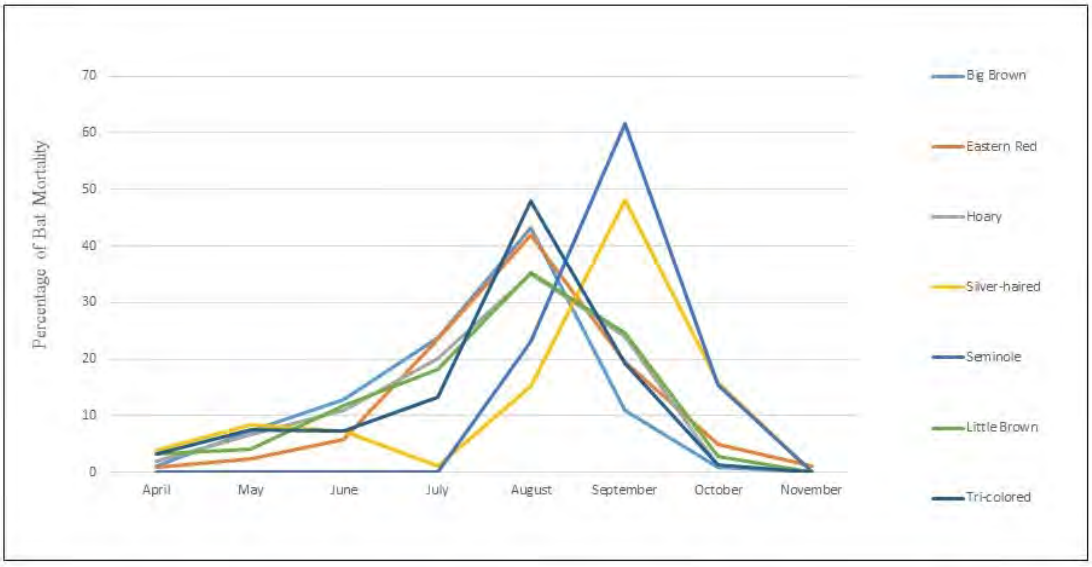


Figure 1. Distribution of bat mortality by species and month, 2007-2013. Indiana and northern long-eared bats are not represented since there was only one mortality of each species, in September. No post-construction monitoring occurred in Pennsylvania from 2014-2016.

Special Session Three.
Insights to Inform Marketing Efforts within State Fish and Wildlife Agencies

Opening Remarks

Kristin Phillips
Michigan Department of Natural Resources
Lansing, Michigan

Nationally, there's been a lot of conversation around R3—recruitment, retention, and reactivation of hunters, anglers, and recreational shooters—and the fourth "R"—relevance.

This special session on marketing is timely and essential as we talk about the four "Rs" (R4). The science of marketing can help state agencies understand what it takes to motivate new audiences to participate *and* what it means to be relevant to segments of our customers, as well as to the broader public. It takes customer research to understand human attitudes, motivations, and perceptions, and those data are essential to understanding what is needed to push license sales—or be relevant to a segment of the public.

We know in Michigan, for instance, that about 7% of our population hunts and 10% fish. License sales provide the necessary revenue for us to fulfill our responsibilities, so the three Rs are critical for us to continue our mission.

And we know in Michigan that 7% are fundamentally opposed to hunting and killing of animals and there's approximately 80% in the middle who do not hunt or fish but have varying degrees of support, depending on the species or the reason for hunting. They do have an opinion when it comes to matters of hunting or wildlife management showing up on a voter's ballot.

Our natural resources belong to everyone in our state, and we manage and protect them for everyone, whether they sit in a tree stand, sit in a kayak, or sit on the couch. We need to communicate and take actions that speak to the values and concerns of everyone, not just those who hunt and fish. The art and science of marketing can help us understand and accomplish all of those goals.

But "doing marketing" in a state agency, particularly a natural resources agency, is a challenge.

Marketers depend on technology and using the latest communication tools and techniques to reach people, but staying on top of those trends in a state bureaucracy is difficult. For example, we are using the same web platform as when I started with the state in 2001! Successful marketing requires research, strategy, and consistency, which may be considered luxuries to many state agencies.

And the term "marketing" in a natural resources agency is a challenge itself. Nearly all of my DNR colleagues use the term interchangeably with "advertising," "promotion," or "communication," but these are distinct disciplines. Marketing is the process through which goods and services move from concept to the consumer. Marketing is based on thinking about a business in terms of customer needs and satisfaction, based on research. Marketing is used to create the customer, to keep the customer, and to satisfy the customer. Marketing philosophies and strategies can be used to sell products—or ideas.

It used to be that when a new policy, fee, or program was proposed in our agency—and I would ask, "How will this impact customers?"—I would be met with blank stares. But demonstrating how marketing can increase license sales and drive camping reservations—and showing customer research on how the department is perceived by a variety of audiences—has helped my colleagues better understand the power of marketing.

You are going to hear about a marketing campaign in Michigan that is striving to make hunting and fishing relevant to nonhunters and nonanglers. There are some interesting discrepancies in terminology that is driving that message strategy. You will also hear about some other campaigns from Washington, Missouri, and Georgia that target different segments of customers to increase awareness of destinations, promote outdoor recreation, and drive license sales. These are all examples of R4 efforts.

I am proud that WMI recognizes the significance of marketing and added this special session to

the 2017 North American conference. And I'm excited and inspired by this work and group of people because it signifies the progress that we've made as state natural resource agencies—and motivated to keep pushing forward as audiences change, use of the resources change, and technologies change.

After hearing today's presentations, I hope you will have a better understanding of what is possible with effective marketing and seek out that expertise, either within or outside your agency, to help you reach your goals.

How Georgia DNR Increased License Revenue by over $1 Million Through Digital Marketing Thereby Accomplishing R3

Jenifer Hancock Wisniewski
Georgia Department of Natural Resources
Social Circle, Georgia

At the Georgia Department of Natural Resources (GDNR), we know that retention and reactivation are huge opportunities, with 124 million people who have fished and a ton of people who hunted—but not all of those people stay hunting and fishing. It is easier to reactivate than it is to recruit—and it's much easier to retain than it is to reactivate or recruit. In Georgia, we are targeting the low hanging fruit of retention and reactivation. The whole community recruits, and we feel, as the state agency, that it is our job to retain customers and reactivate. Once the community makes a hunter or angler, it is up to the state to keep that customer.

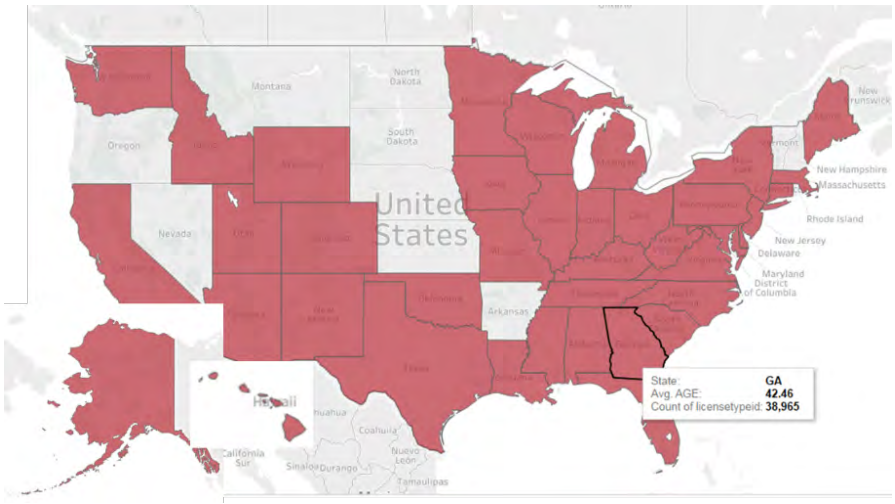
Background on Georgia

Our annual licenses are the cheapest in the country. With annual hunting licenses at $10 and annual salt/freshwater fishing licenses costing $9—or a combo for $17—we have a lot of licenses tied to $1 million in revenue. It is important to talk dollars, but it's equally important to look at the number of licenses sold as a result of each of the strategies discussed below, because the revenue for your state could look much different.

GDNR's Three Main Strategies for Retaining and Reactivating and Increasing Revenue

Auto-Renew

We offer all of our annual and biannual licensees the ability to auto-renew through our license sales system. This is an effort to keep churn as low as possible while providing great convenience for our customers. We implemented this feature in June 2016. In seven months, we had 42,000 licensees sign up. The most surprising part was that we had a lot of nonresidents signing up to auto-renew with people from 40 states (even Alaska and Hawaii). There was no one type of customer who auto-renewed. The licenses were evenly split between hunting and fishing and ages were all over the place (Figure 1). For example, there was a 76-year-old man from Michigan who auto-renewed and three 21-year-olds from Utah. The following map pictures all of the states from which people auto renewed their licenses—most of whom are in Georgia and Florida.



License Packages

Georgia's license structure is complex and can be confusing and hard to understand. From customer feedback, we realized that our customers ask questions like: "What licenses do I need to go deer hunting?" or "What do I need to go trout fishing on public land?" In response to these activity-based questions, we designed license packages that it included all the licenses a customer would need to pursue each activity.

We were strategic with our license packages and put in combo licenses where we can upsell customers when possible. This results in about $5 more per transaction. We are also able to increase our certifications for wildlife and sport fish restoration by selling more combo licenses.

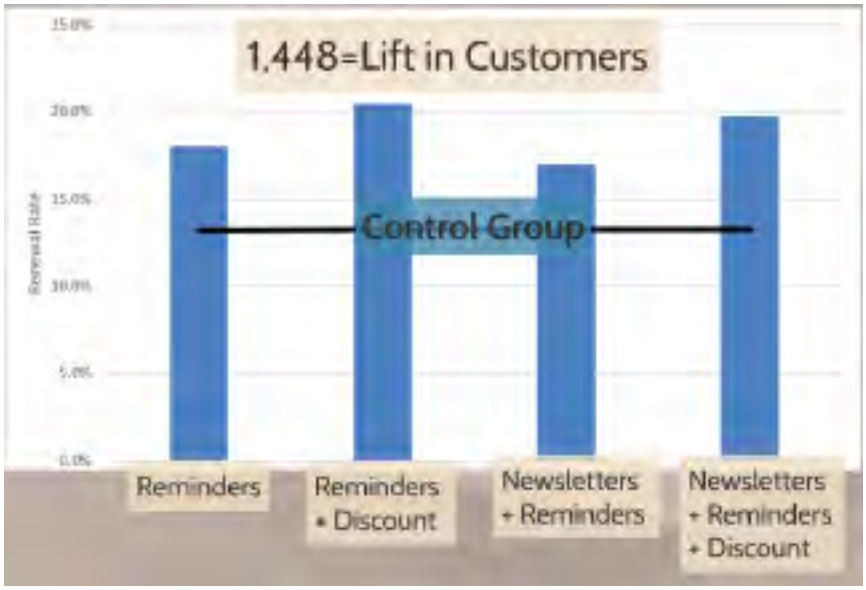
The following chart breaks down how many of each package was sold—if you consider the increase of $5 per transaction, that's about $650,000 in direct license revenue. More revenue will be made from certifying all of the combo licenses for both wildlife and sportfish restoration funds (WSFR).

PackageName	Term	Residency	Sales
Deer / Turkey	1 year	Resident	32,352
Avid Angler	1 year	Resident	32,008
Georgia Sportsman	1 year	Resident	30,350
Deer / Turkey	1 year	Non-Resident	6,345
Deer / Turkey	3 day	Non-Resident	5,983
Avid Angler	3 day	Non-Resident	4,265
Hog	3 day	Non-Resident	3,532
Waterfowl	1 year	Resident	2,822
Target Shooting	1 year	Resident	2,213
Public Lands - Angler	1 year	Resident	1,551
Avid Angler	1 year	Non-Resident	1,413
Target Shooting	3 day	Non-Resident	1,358
Waterfowl	3 day	Non-Resident	429
Georgia Sportsman	1 year	Non-Resident	405
Target Shooting	1 year	Non-Resident	250
Georgia Sportsman	3 day	Non-Resident	249
Hog	1 year	Non-Resident	209
Waterfowl	1 year	Non-Resident	138
Public Lands - Hunter	1 year	Resident	55
Public Lands - Angler	3 day	Non-Resident	1
			125,928

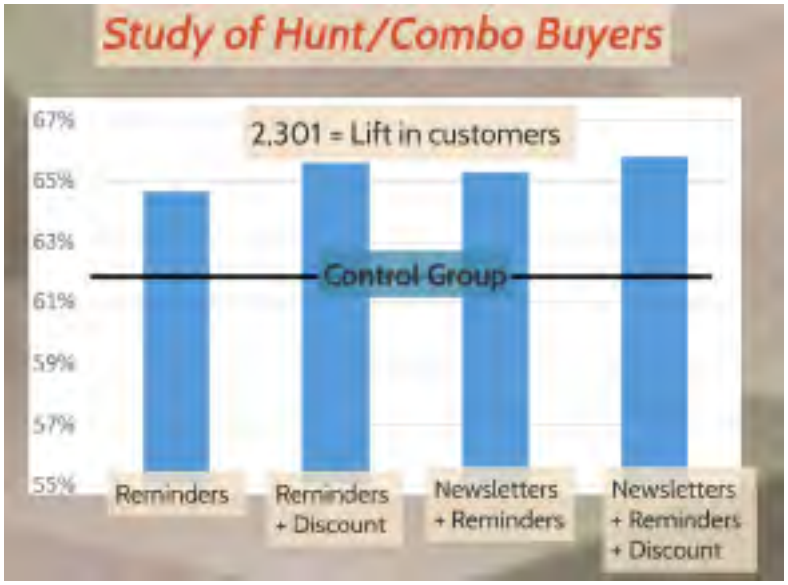
Targeted Emails

We emailed five different groups of people with different communications strategies and measured those strategies against a control group. We did this with first-time anglers and with annual hunting and combo license purchasers. We were able to cause a lift in every group through emails against the control group. Here were the results for fishing and hunting:

Fishing—more than $20,000 lift and 1,448 customers (the case study outlined later in this paper details the full results and methodology of this email experiment).



Hunting—revenue lift of $43,766 (estimated license and WSFR funds brought in are $83,638) and 2,301 more customers.



Breakdown of groups and revenue tied to each communication strategy.

Group	Description	Total License Revenue	Revenue Per Renewal	Lift in License Revenue	Lift in Revenue Including Federal WR
1	Control (no contact)	$82,459	$19.08		
2	Reminders	$197,660	$19.33	$9,224	$17,493
3	Reminders w/discount	$197,537	$19.05	$11,600	$22,152
4	Newsletters + reminders	$196,355	$19.03	$10,733	$20,507
5	Newsletters + reminders w/discount	$194,063	$18.68	$12,156	$23,434
	Total Treatment Group (2-5)	**$785,614**	**$19.02**	**$43,766**	**$83,638**

** Southwick Associates estimate of $17.33 per hunter in 2016.*

Number of licenses sold.

Group	Description	#	Renewals	Renewal Rate	% Lift	Increased Renewals	Average days lapsed before renewal
1	Control (no contact)	7,003	4,322	61.7%			-3.8
2	Reminders	15,793	10,224	64.7%	3.0%	477	-5.5
3	Reminders w/discount	15,816	10,370	65.6%	3.9%	609	-6.0
4	Newsletters + reminders	15,803	10,317	65.3%	3.6%	564	-5.8
5	Newsletters + reminders w/discount	15,779	10,389	65.8%	4.1%	651	-5.6
	Total Treatment Group (2-5)	63,191	41,300	65.4%	3.6%	2,301	-5.7

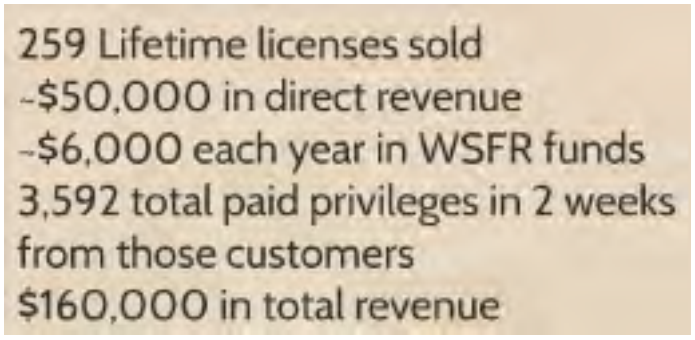
Lapsed Angler Reactivation Targeted Messages

We used the Recreational Boating & Fishing Foundation's (RBFF) lapsed angler toolkit and sent emails to lapsed anglers in the month of June when license sales are usually very slow; broke our large group of lapsed anglers into two groups—less-than-five-years lapsed and more-than-five-years lapsed; and sent both groups an email with RBFF's tested language. We gave the customers two weeks to purchase and then pulled sales data. The results were 12,950 privileges sold and $171,472 in direct license revenue. There was no investment required for this return except about six hours of an employee's time.

We also sent three marketing messages via email targeted at selling licenses, especially pointing to purchasing a lifetime license. These email messages were sent December 1:

- Preseniors (59 to 64 years old) "Count Me" message: "We offer a discounted senior lifetime license that you can purchase and be counted for federal certification for the rest of your life."
- Sportsmen's license purchasers—people age 16 to 40 who buy our all-inclusive annual license: "Save big and buy a lifetime license or multiyear license."
- Hunters' education graduates (13 to 15 years old): "Buy a discounted youth lifetime license or ask for one for Christmas."

The data pulled two weeks after the email was sent showed these results:

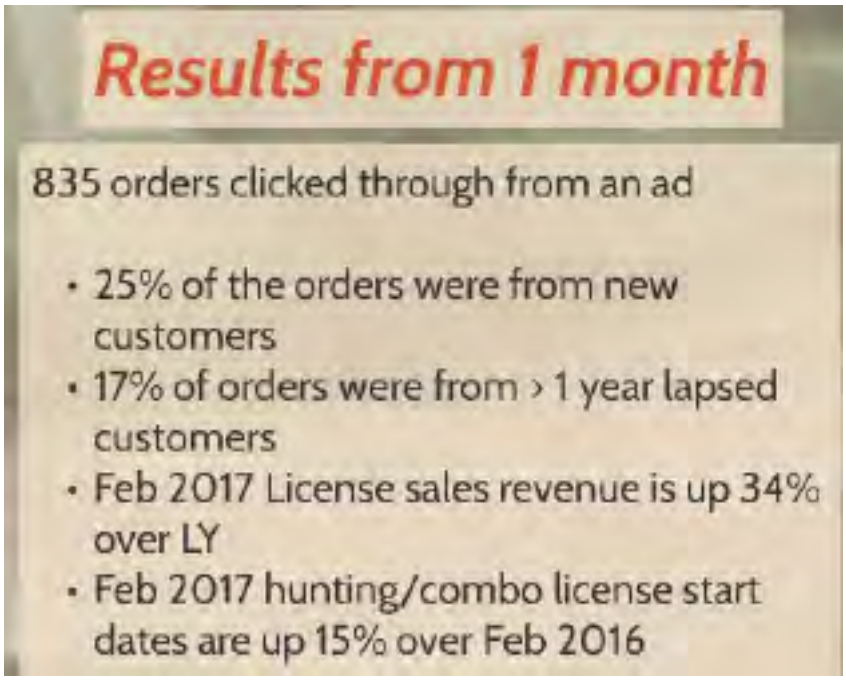


Digital Marketing Ad Campaign

GDNR then launched a digital ad campaign in February 2017—a new bonus strategy with one month of results. These digital ads targeted people who "look like" our customers based off of our data and Google profiles, meaning they visit the same websites and buy the same types of things. We also bought ads based on search words—so if a potential customer was Googling for something related to

licenses or what GDNR does, then our organization's website would be listed at the top of the Google search results.

Here are examples of our digital ads, along with the results from one month of our targeted digital ad campaign:



Case Study

As previously referenced in this paper, in 2015, the Georgia Department of Natural Resources Wildlife Resources Division partnered with the Recreational Boating & Fishing Foundation (RBFF) to implement a pilot program to assess the effect of email communication on the retention of new anglers, specifically (GDNR had also conducted the same—but separate—study for hunters). New anglers—or first-time fishing license buyers—were defined as those who purchased a resident annual fishing license in 2015 but did not purchase any privilege in the four years prior (2011 through 2014).

All new anglers from January 1 to July 31, 2015, with valid email addresses were selected as the target audience for this retention effort. These were divided into five groups with 10% of the total set aside as a control group (Group 1) and the remaining treatment group divided evenly across the remaining four groups (Table 1). All five groups received a "thank you" email upon license purchase. All of the treatment groups received email reminders the following year to renew their license. Two of the groups received additional emails with four monthly newsletters containing fishing-specific content and a follow-up survey. Additionally, the renewal notices included a discount promotion for early renewal for two of the groups while it was not mentioned for the other two treatment groups. The $2.75 transaction fee was waived if the license was renewed before it expired.

Table 1. Communications received by treatment and control groups.

Communication	Group				
	1	2	3	4	5
'Thank You' upon purchase	YES	YES	YES	YES	YES
Newsletters and follow-up survey	NO	NO	NO	YES	YES
Renewal reminders	NO	YES	YES	YES	YES
Discount (promoted in renewal notice)	NO	NO	YES	NO	YES

Four renewal-reminder emails were sent based on the license expiration date of each angler as follows:

1. 30 days before license expired
2. 1 week before license expired
3. 1 day before license expired
4. 30 days after license expired

The following results section compares renewal rates and days lapsed before renewal of the treatment groups in comparison to the control group. It also provides the additional effects of the newsletter emails and the discount promotion in the renewal notices.

The final analysis was conducted using sales through September 8. Note that anglers whose licenses expired in June or July had less time to renew before the cutoff date for the analysis than those in

earlier months. Anglers whose licenses expired after July 25 had less than two weeks to renew after the last reminder before the analysis cutoff date.

Results

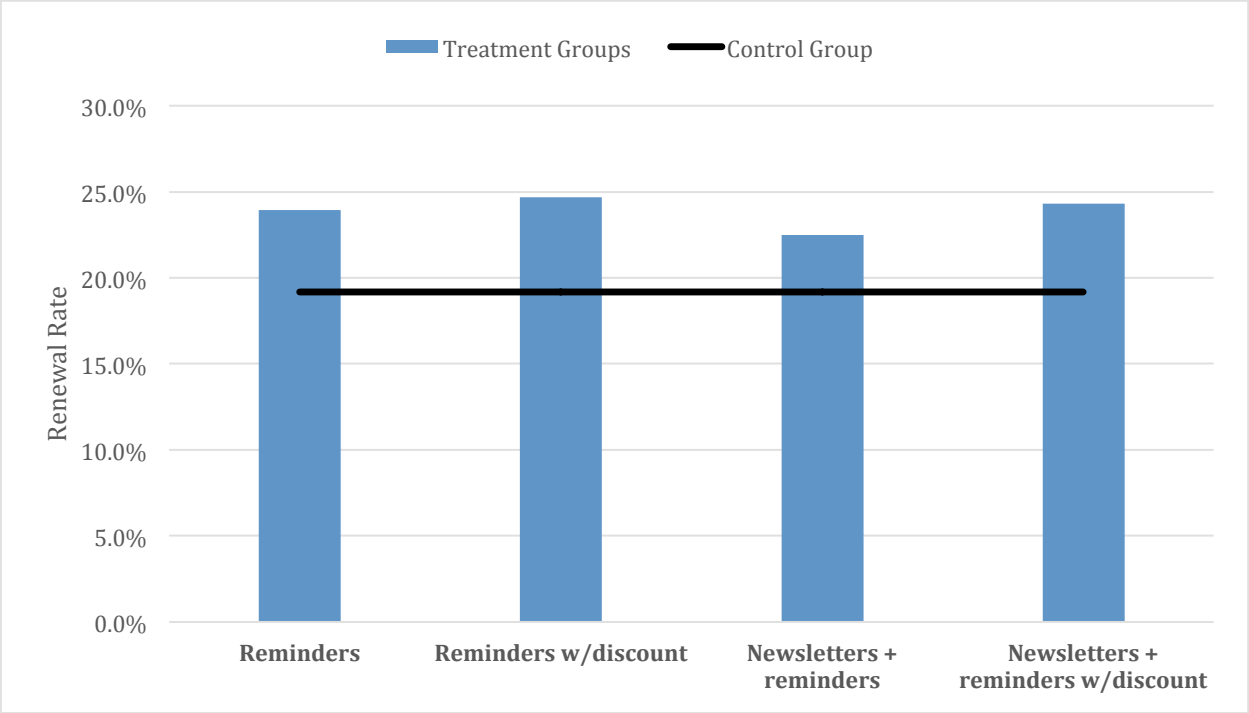
All four of the treatment groups have shown significant increases in renewal rates compared to the control group (Table 2 and Figure 1).

- Overall, the email reminders generated an increase of 4.7% in the renewal rate compared to the control group, which translates into an additional 1,448 renewals.
- The groups whose reminder included the discount promotion for early renewal had statistically significant greater renewal rates compared to the groups that did not receive the promotion for the discount.
- Groups that received emails with newsletters had slightly lower renewal rates compared to the groups not receiving these emails. However, overall the difference in renewal rates was not statistically significant.
- Besides increased renewal rates, anglers who received the reminders had fewer days between expiration and renewal compared to anglers in the control group who renewed their license. Renewing anglers in the treatment groups lapsed for an average of only 18.8 days compared to 30.5 days before renewal for anglers in the control group.

Table 2. Treatment groups versus control group renewal rates.

Group	Description	#	Renewals	Renewal Rate	% Lift	Increased Renewals	Average days lapsed before renewal
1	Control (no contact)	3,430	658	19.2%			30.5
2	Reminders	7,737	1,852	23.9%	4.8%	368	20.1
3	Reminders w/discount	7,719	1,907	24.7%	5.5%	426	16.5
4	Newsletters + reminders	7,731	1,740	22.5%	3.3%	257	20.6
5	Newsletters + reminders w/discount	7,734	1,881	24.3%	5.1%	397	18.1
	Total Treatment Group (2-5)	**30,921**	**7,380**	**23.9%**	**4.7%**	**1,448**	**18.8**

Figure 1. Renewal rates of treatment groups versus control group.



The revenue effects of the retention program were:

- On average, renewing anglers in the treatment group spent an average of $12.49 on licenses. Applying this to the increase in renewals from Table 2, the email retention program generated an additional $18,091 compared to what Georgia would have received without the reminders.
- The control group spent almost a $1.50 more per angler than the treatment groups. Perhaps this is a sign that anglers in the control group who renewed tended to be more avid since they renewed without any reminders to do so (Table 3).

Table 3. Revenue effects of retention efforts.

Group	Description	Total License Revenue	Revenue Per Renewal	Lift in Revenue
1	Control (no contact)	$9,182.50	$13.96	
2	Reminders	$24,371.00	$13.16	$4,839.45
3	Reminders w/discount	$23,273.50	$12.20	$5,201.60
4	Newsletters + reminders	$21,256.50	$12.22	$3,138.51
5	Newsletters + reminders w/discount	$23,291.50	$12.38	$4,920.00
	Total Treatment Group (2-5)	**$92,192.50**	**$12.49**	**$18,091.42**

Renewals by Month of Expiration

Table 4 and Figure 2 compare renewal rates of the treatment groups to that of the control group by the month that an angler's license expired.

- The reminders produced statistically significant increases in renewal rates in every monthly cohort of anglers except for those whose license expired in March.
- Renewal reminders had the greatest impact on anglers whose licenses expired in January or February; however, these months contained lower numbers of new anglers.
- Renewal rates were lower for later months, at least in part because these anglers had less time to renew before the cutoff date for the analysis. But the reminders produced a strong increase in renewals in these later months, with almost two-thirds of the total increase in renewals (904) coming from anglers whose licenses expired May through July.

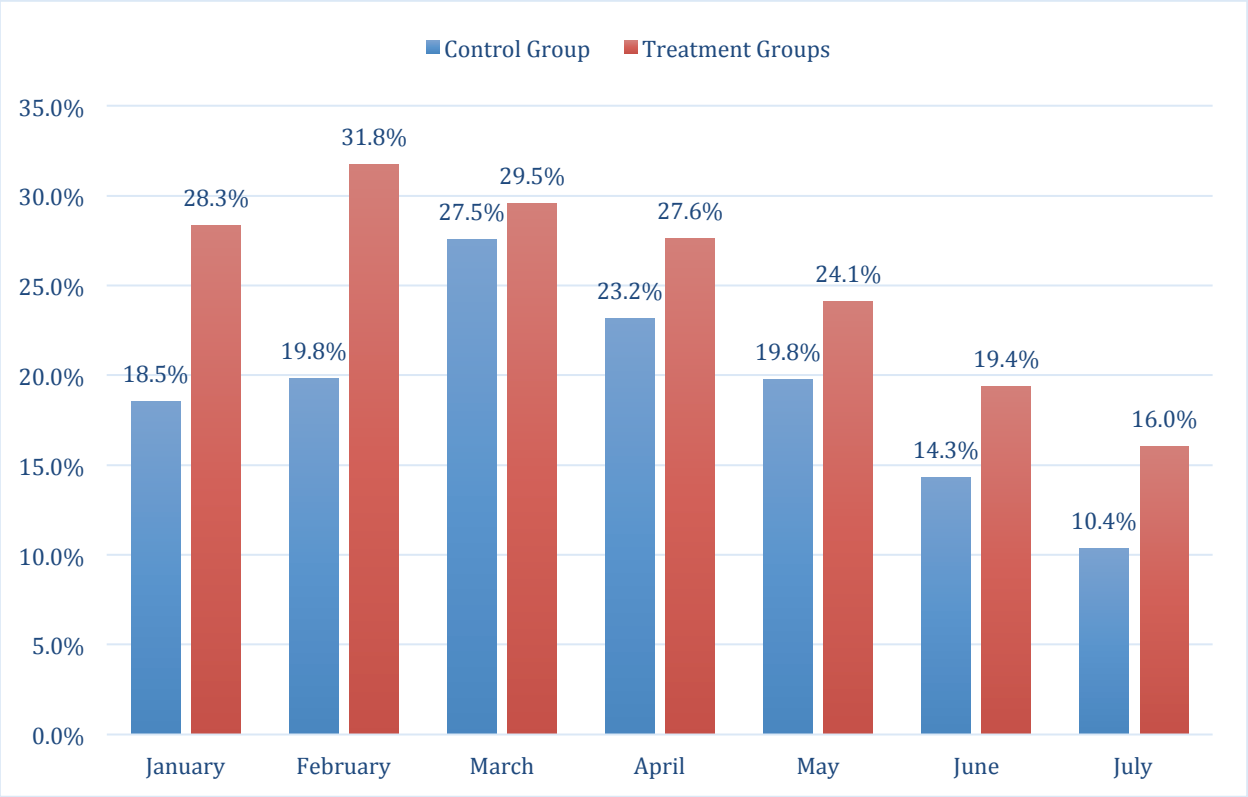
Table 4. Overall results by month.

Expiration Month	Control Group			Treatment Groups				
	#	Renewals	Renewal Rate	#	Renewals	Renewal Rate	% Difference	Additional Renewals
January	81	15	18.5%	759	215	28.3%	9.8%	74
February	101	20	19.8%	954	303	31.8%	12.0%	114
March*	472	130	27.5%	4,265	1,260	29.5%	2.0%	85
April	747	173	23.2%	6,443	1,780	27.6%	4.5%	288
May	901	178	19.8%	8,303	2,002	24.1%	4.4%	362
June	607	87	14.3%	5,521	1,070	19.4%	5.0%	279
July	520	54	10.4%	4,670	749	16.0%	5.7%	264
Total	**3,430**	**658**	**19.2%**	**30,921**	**7,380**	**23.9%**	**4.7%**	**1,448**

** Increased renewal rate for March was not statistically significant.*

*** Total includes 6 anglers in the treatment groups and 1 in the control group whose licenses expired before January 2016*

Figure 2. Renewals by month of expiration.



Discount

Table 5 and Figure 3 compare renewal rates of new anglers whose reminders included the discount versus those who did not receive the discount promotion.

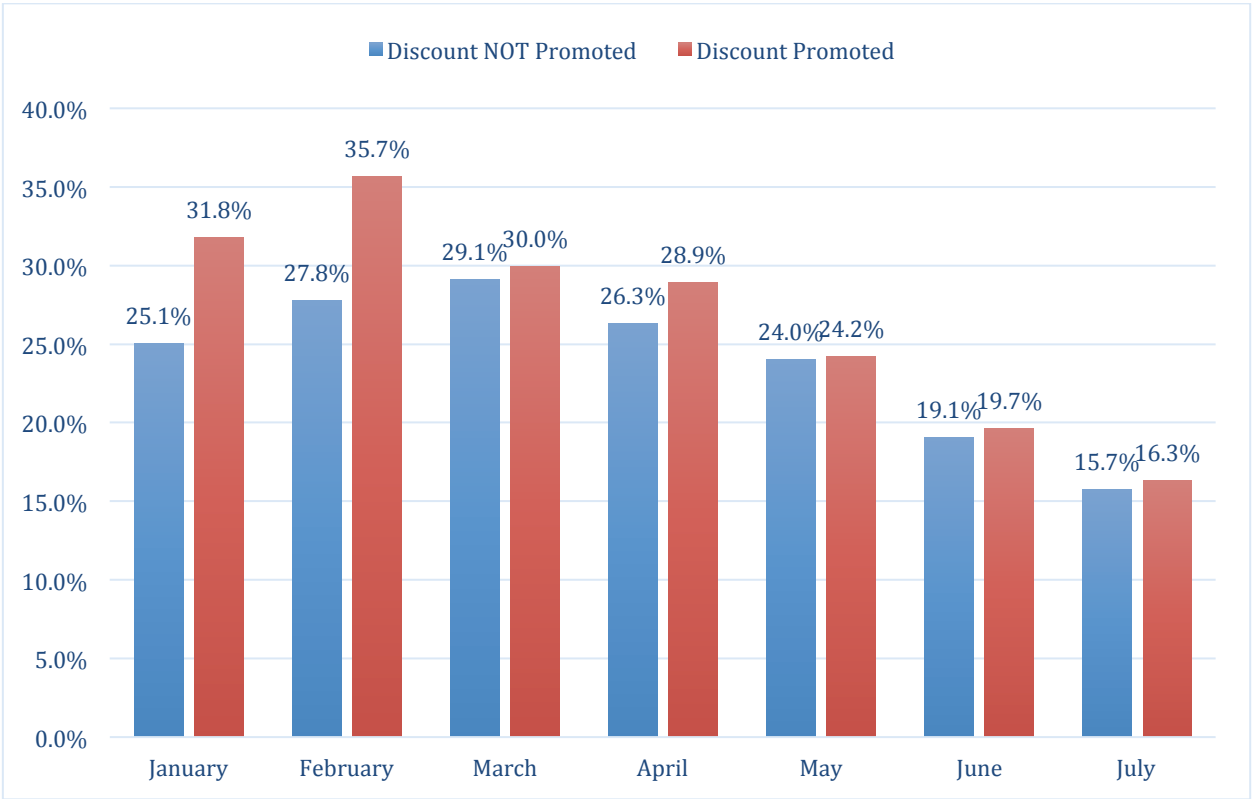
- Overall, reminders promoting the discount increased the renewal rate by 1.3%—or by an additional 198 renewals—compared to if the discount was not mentioned.
- The discount promotion had the most effect on those anglers whose licenses expired in January or February, producing 6.7% and 7.9% greater renewal rates, respectively, in those months.
- Renewal rates were the lowest for anglers whose licenses expired in June and July, at least in part because they had less time to renew before the cutoff date of the analysis.

Table 5. Discount versus no-discount promotion.

Expiration Month	Discount NOT Promoted #	Renewals	Renewal Rate	Discount Promoted #	Renewals	Renewal Rate	% Difference	Additional Renewals
January	391	98	25.1%	368	117	31.8%	6.7%	25
February	475	132	27.8%	479	171	35.7%	7.9%	38
March	2,150	626	29.1%	2,115	634	30.0%	0.9%	18
April	3,211	845	26.3%	3,232	935	28.9%	2.6%	84
May	4,149	997	24.0%	4,154	1,005	24.2%	0.2%	7
June	2,765	528	19.1%	2,756	542	19.7%	0.6%	16
July	2,324	366	15.7%	2,346	383	16.3%	0.6%	14
Total	**15,468**	**3,592**	**23.2%**	**15,453**	**3,788**	**24.5%**	**1.3%**	**199**

** Totals include 6 anglers whose licenses expired before January 2016.*

Figure 3. Renewal rates of discount versus no-discount promotion.



Newsletters

Table 6 and Figure 4 compare renewal rates of those anglers who additionally received newsletters with fishing-specific content during 2015 versus those who only received the reminder emails around the time their license was expiring.

- Except for anglers whose license expired in January and July, anglers who received the newsletters had lower renewal rates compared to those who did not receive the newsletter emails.
- Overall, the groups receiving newsletters had a slightly lower (-0.9%) renewal rate compared to the groups not receiving the newsletters. However, this is not statistically significant. In other words, the newsletters did not appear to have a measurable effect on subsequent renewal rates.

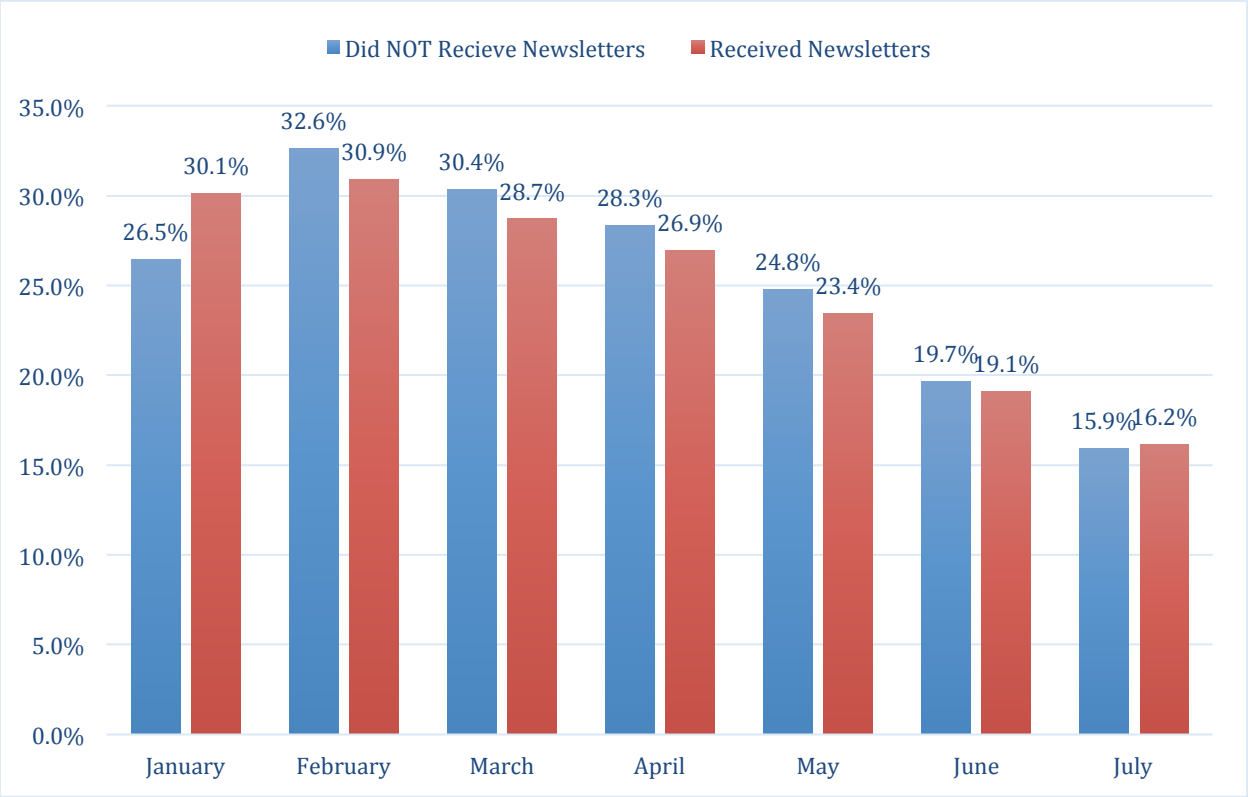
Table 6. Newsletters with reminders versus reminders only.

	Did NOT Receive Newsletters			Received Newsletters				
Expiration Month	#	Renewals	Renewal Rate	#	Renewals	Renewal Rate	% Difference*	Additional Renewals
January	374	99	26.5%	385	116	30.1%	3.7%	14
February	469	153	32.6%	485	150	30.9%	-1.7%	-8
March	2,140	650	30.4%	2,125	610	28.7%	-1.7%	-35
April	3,197	906	28.3%	3,246	874	26.9%	-1.4%	-46
May	4,179	1,036	24.8%	4,124	966	23.4%	-1.4%	-56
June	2,762	543	19.7%	2,759	527	19.1%	-0.6%	-15
July	2,333	371	15.9%	2,337	378	16.2%	0.3%	6
Total**	**15,456**	**3,759**	**24.3%**	**15,465**	**3,621**	**23.4%**	**-0.9%**	**-140**

** Note that difference in renewal rates between anglers receiving newsletters and those not receiving newsletters is not statistically significant.*

*** Totals include 6 anglers whose licenses expired before January 2016.*

Figure 4. Renewal rates of groups receiving newsletters versus no newsletters.



The Art and Science of Successful Communications: Key Steps to Reaching New Audiences

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Güd Marketing
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Background

The Michigan Wildlife Council was created in 2013 to help educate the general public about the benefits of hunting, fishing, and the taking of game and the essential role that sportsmen and sportswomen play in wildlife conservation. Michiganders recognize that our state is home to a marvelous bounty of natural resources and wildlife. However, through research, we found that people are unaware of the tremendous amount of conservation and wildlife management work that is performed to ensure that both remain available for enjoyment today and in the future.

Michigan, following the model established by Colorado, created a nine-member, governor-appointed council to guide the public education campaign funded by $1 from the sale of every hunting and fishing license. This allocation created a budget of approximately $1.6 million a year to use for the effort. The Michigan Wildlife Council retained Güd Marketing as its third-party marketing agency to develop, implement, and lead the integrated, comprehensive media-based public information campaign.

The Michigan Wildlife Council aims to educate audiences that hunting, fishing, and trapping are:

- necessary for the conservation, preservation, and management of Michigan's natural resources;
- valued and integral to the cultural heritage of the state and should forever be preserved; and
- important to the state's economy.

The council also aims to show that licensed hunters and anglers are:

- the primary source of funding for conservation and wildlife management work in Michigan;
- devoted conservationists; and
- responsible people.

Council members' due diligence and their important understanding that they are passionate advocates for hunting, fishing, and trapping rather than representatives of the "general public" led them to take a deliberate and systematic approach to the five-year education campaign.

Therefore, in its first year, the council sought to introduce itself as a credible source of information, capture the general public's attention, and set the stage for acceptance of hunting and fishing as important wildlife management and conservation tools.

Research

Prior to launching the campaign, the Michigan Wildlife Council recognized it was important to start with research. Through a variety of tactics, the council sought to:

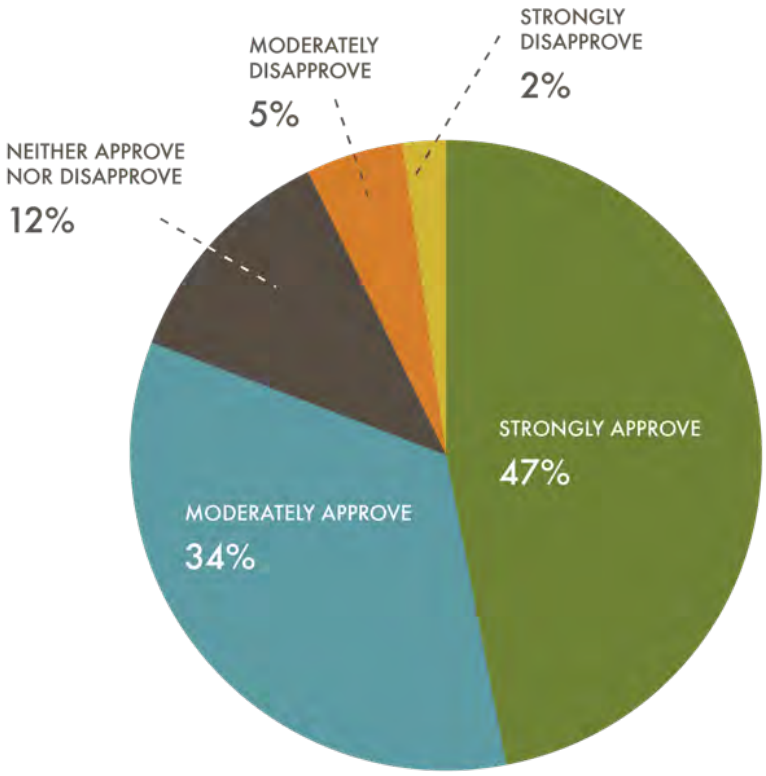
- Determine the current levels of knowledge and perceptions about wildlife management, conservation, hunting, fishing, and trapping
- Identify and define key target audience groups and potential messaging strategies

During the course of six months in 2015, comprehensive secondary research, in-depth interviews, a statewide baseline survey, and focus groups were conducted to help determine the best course of action for the campaign. The same statewide survey was repeated in 2017—following one year of the public

information campaign—and will be deployed annually moving forward. The survey is used to measure the campaign's effectiveness and shifts in attitudes.

In July 2015, the statewide baseline survey was deployed to 800 residents, balanced to reflect the demographics and geographic spread of Michigan. The survey helped to gauge awareness and familiarity with hunting and fishing benefits, as well as approval of hunting and fishing.

Figure 1. Hunting approval in Michigan, 2015.



The 2015 survey showed that approval of hunting in Michigan is high. In all, 81% of Michiganders either moderately or strongly approve of hunting, with close to half (47%) of the state strongly approving and only 7% of the population falling into the disapproval categories (Figure 1).

However, deeper analysis found that the majority of residents' approval of hunting was highly conditional. Hunting for food or helping to keep wildlife populations in balance were by far the most accepted motivations for hunting, with 88% and 81% total approval, respectively. Hunting for recreation or for a trophy had far less acceptance among those who otherwise strongly or moderately approve of hunting. In fact, only 1 in 5 people are OK with hunting for a trophy (Figure 2).

Figure 2. Motivations for acceptance of hunting, 2015.

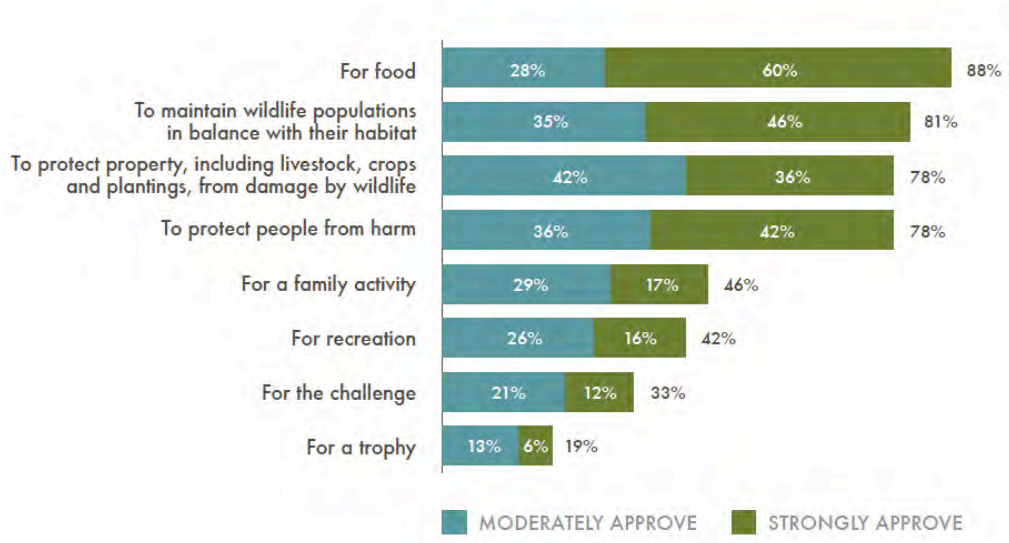
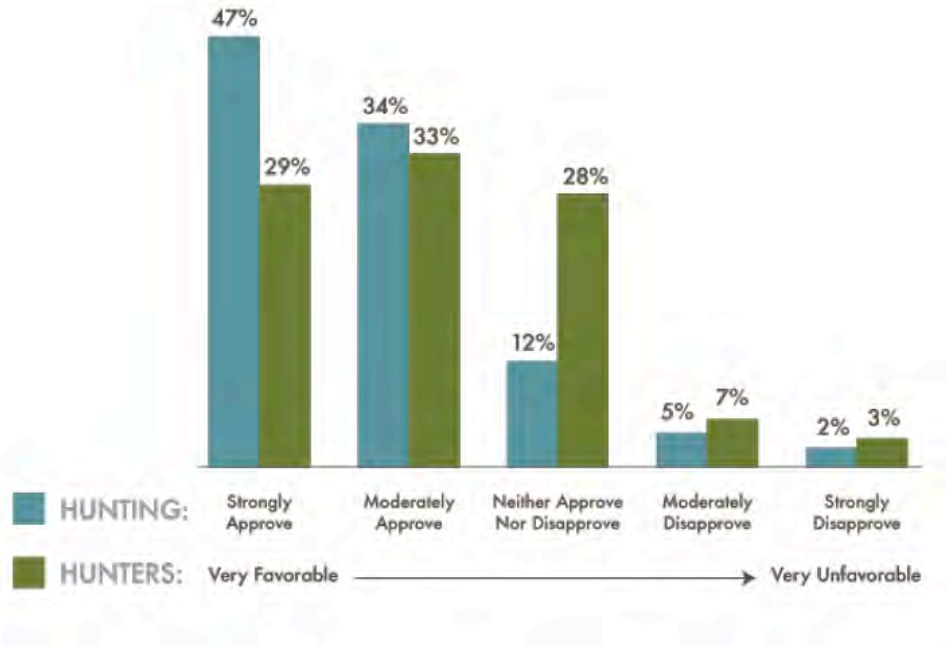


Figure 3. Approval of hunting and hunters, 2015.



Furthermore, it was concluded that the act of hunting was more widely accepted than hunters themselves. In fact, there was a nearly 20-point difference between strong approval for hunting and strong approval for hunters (Figure 3). Undecided and higher negative opinions by the general public toward hunters posed the potential to undermine any education efforts about the value and importance of the activity in the long run.

Next, the council sought to gain a better understanding of the general public's knowledge of and appreciation for wildlife management.

The survey asked Michigan residents about the importance of the following wildlife management services:

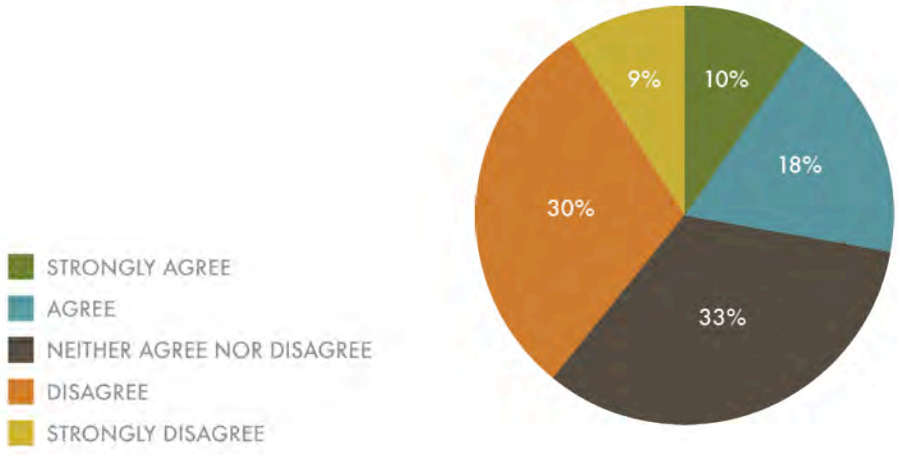
- Ensuring hunting is done legally and responsibly (91%)
- Keeping wildlife healthy and disease-free (90%)
- Keeping wildlife species from becoming endangered or extinct (89%)
- Maintaining wildlife habitats (87%)

While these services were overwhelmingly viewed as important, more than a quarter of the population agreed that wildlife *did not* require management by humans to thrive and one-third of respondents were not sure if human intervention was necessary. So while residents believed that maintaining habitat and balanced populations were important, many did not think or did not know that humans played a role (Figure 4).

In addition, it was found that 38% of hunters agreed that wildlife did not require management by humans to thrive. This raised a lot of red flags and showed a significant need for education not just for the general public but also for an audience group that had been assumed to be knowledgeable about their activity.

Wildlife Does Not Require Management by Humans to Thrive

Figure 4. Understanding of wildlife management, 2015.

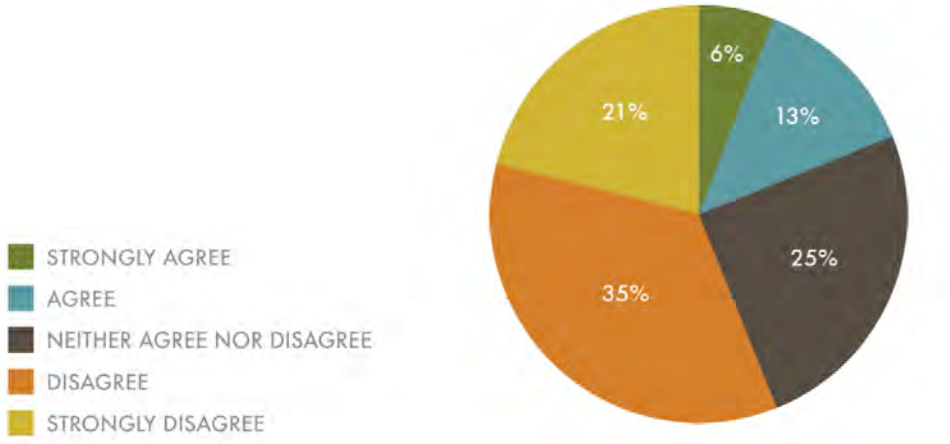


Furthermore, about 1 in 5 people believed legal, regulated hunting led to the extinction of a species (Figure 5). That was more than double the 7% of people who disapproved of hunting. A quarter of people surveyed were not sure if legal hunting led to species extinction.

The agreement by self-identified hunters that legal, regulated hunting led to extinction was actually higher—27% of hunters agreed that it did, while 14% were not sure. These misinformed hunters were not a target for the Michigan Wildlife Council education effort, but the data was shared widely with the Michigan Department of Natural Resources and sportsmen organizations to help them better communicate with their constituents about topics that many had assumed were broadly well understood.

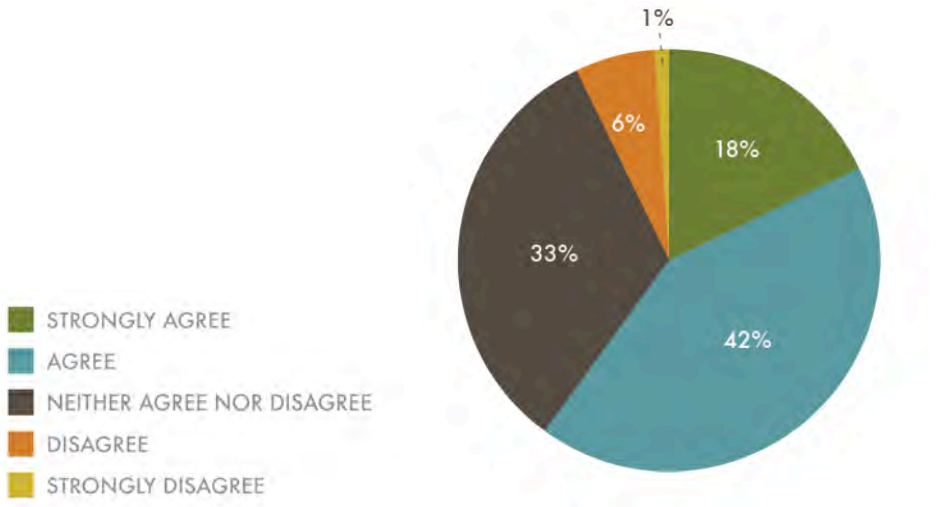
Legal, Regulated Hunting Leads to the Extinction of a Species

Figure 5. Understanding hunting as it relates to species management, 2015.



The Protection of Wildlife and Their Habitat Is Largely Funded by the Purchase of Hunting and Fishing Licenses

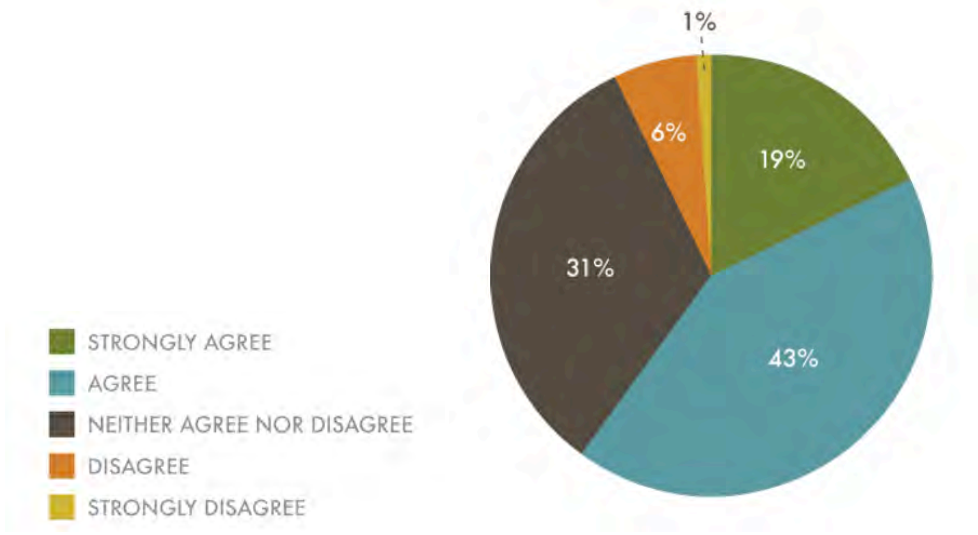
Figure 6. Understanding of wildlife management funding source, 2015.



In terms of funding, 60% of survey respondents agreed that licenses were the primary source of funding (Figure 6). However, 62% also agreed that everyone pays for the work via their taxes (Figure 7).

Everyone in Michigan Pays to Protect Our Natural Resources, Including Wildlife, Through Taxes

Figure 7. Understanding of wildlife management funding source, 2015.



Now equipped with knowledge, the council identified a target audience—Michigan residents who moderately approved of hunting or were neutral, meaning they neither approved nor disapproved of hunting. In total, this group made up 46% of the state population, a large enough group to make a difference in overall understanding of wildlife management topics.

In addition, the survey showed that moderate approvers and neutrals were broadly supportive of hunting, wildlife management activities, and hunters' role as funders. However, that support was conditional, and understanding of the big picture was minimal as misunderstandings were common. Still, the council had a chance to inform them as they also valued Michigan's natural resources and had a desire to protect our state's wildlife.

Furthermore, the council learned that the target audience was primarily located in Michigan's two largest urban areas—metro Detroit and Grand Rapids—and skewed female and/or under the age of 50.

Planning

Based on the Michigan Wildlife Council's comprehensive research, a five-year strategic communication plan was developed, translating the research findings to develop communications that met the target audience where they were and that could bring them along the path of increased understanding.

Meeting the target audience where they were was critically important to long-term success. While the target audience was likely to believe the council when it said licenses fund conservation work, they did not have a grasp of what conservation work entailed and why it was important. They did not have a clear understanding of the necessity for people to "manage" or "take care" of wildlife and natural resources.

Next, it was important that the council develop a campaign theme and message that appealed to the chosen target audience.

Together, writers and designers developed several different themes and messages. Those concepts were then put to the test. Focus groups were conducted with people who moderately approved or were neutral toward hunting in our geographic regions (west and southeast Michigan). In addition, another survey was deployed, allowing a new statewide group to rank the messages and themes that were meaningful to them—ones that made them want to learn more or taught them something new (Figure 8).

Figure 8. Creative concepts and messages that were tested, 2015.

Through this additional research, the council learned that the words used by the sportsmen community did not hold the same meaning for people not connected to Michigan's outdoors. For example, when asked about sportsmen, respondents inquired about the Detroit Red Wings or the Detroit Pistons (Figure 9).

Figure 9. Importance of language, 2015.

WHAT SPORTSMEN SAY	WHAT NON-SPORTSMEN HEAR
Wildlife	Nature
Hunting	Deer
Sportsmen	Athletes
Fees	Taxes

In addition, when talking about hunting, the definition among the target audience was largely limited to deer hunting in November, with little to no mention of other game species or hunting seasons.

At the same time, this research gave the council the opportunity to learn what words moderate approvers and neutrals use to talk about spending time outdoors and their thoughts regarding why people hunt and fish. As it turns out, they were very similar to how hunters and anglers discuss their outdoor activities. The target audience understood it was about creating memories outdoors, the heritage of continuing traditions, and spending time together (Figure 10).

Figure 10. Making connections, 2015.

In addition, the council found that many Michigan residents had at least one fishing memory—whether it was along the Detroit River or "Up North" on a lake, people had something positive associated with fishing in Michigan, making fishing another great connection point.

Through this research, the council discovered one message and theme that appealed universally and engaged our target audience. This message became the backbone of the Michigan Wildlife Council's education campaign, the idea that "Wildlife is managed for the use and enjoyment of future generations," and from this message the "Here. For Generations." campaign was born (Figure 11).

The "Here. For Generations." campaign is an obvious nod to future generations of Michiganders. However, it also speaks to the tradition of outdoor activities and protecting Michigan's special landscapes, and it can highlight families and our forests, waters, and wildlife.

In addition to its connectivity, this campaign theme is relatively flexible in that it can evolve over the course of the entire five-year campaign (Figure 12).

Figure 11. "Here. For Generations.", 2016.

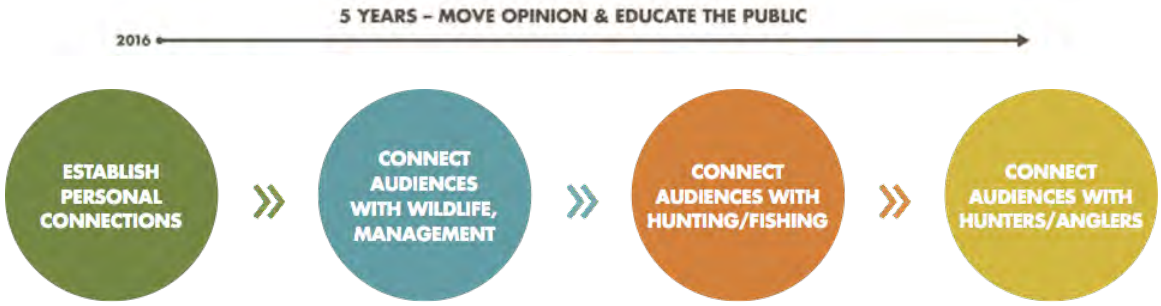
Figure 12. "Here. For Generations.", 2017.

Establishing the Campaign

Throughout the first full year of the campaign, completed in spring 2017, the Michigan Wildlife Council used multiple tactics to connect to the target audience, including:

- Connecting to the issues and ideas that are already important to them (i.e., protecting Michigan's outdoors for the next generation's enjoyment)
- Establishing the Michigan Wildlife Council as a credible source of information (because people don't believe things unless they trust the source)

Figure 13. Campaign message evolution, 2016.



Looking to build on personal connections and the trust of the Michigan Wildlife Council, the campaign has incorporated a mix of both traditional and digital advertising—including broad tactics such as television, radio, billboards, and newspapers—and targeted tactics such as television interviews, content marketing articles, and social media.

As the campaign moves forward, the council will continue to build target audiences' understanding and knowledge from the foundation established during the first year (Figure 13).

During the second year of the campaign, from April 2017 to April 2018, the campaign will build off the audiences' understanding of wildlife management, not just through wildlife success stories—such as Michigan's rejuvenated elk and wild turkey populations—but also broader messages that continue making those personal connections to future generations and family time outdoors.

Campaign Success

But how do we know the Michigan Wildlife Council is successful in educating people? How does the council know it is meeting its campaign goals?

A variety of metrics are available to determine whether the campaign is reaching the right people. In fact, some—such as website and Facebook analytics—can be tracked in real time.

From the launch of the campaign in April 2016 through December 2016, the campaign had more than 6 million engagements. Engagements go beyond seeing an ad. They include taking an action—such as visiting the website, watching a video, or sharing or liking a post on social media (Figure 14).

The campaign website, which offers an opportunity to learn more, has attracted more than 100,000 people, more than half in the target audience group of 18- to 34-year-olds.

Overall, with paid and organic Facebook posts between April and December 2016, the campaign reached more than two million people over five times each with messages about wildlife, management, and other relevant topics.

Figure 14. Campaign results, April through December 2016.

Also during that time span, the campaign produced 39 full-length articles that appeared on major media outlets' websites in our target markets, including the *Detroit Free Press*, *Detroit News*, and *Grand Rapids Press*. In total, they garnered more than 4.5 million views.

One of our latest stories, published in February 2017, highlighted the recovery of the Michigan elk population. This story was shared more than 5,000 times in its first week.

To more definitively measure success, the council will deploy a second statewide survey to track how the campaign has moved knowledge, beliefs, and interests related to hunting, fishing, and trapping's role in wildlife conservation in Michigan.

From a recent Michigan Department of Natural Resources survey, the council is aware that its credibility is up significantly, particularly among the key target audience group of women, young people, and residents of metro Detroit.

Conclusion

To summarize, what were the key steps to building this campaign? What can other states learn from the Michigan Wildlife Council's "Here. For Generations." campaign?

Set goals and understand communications is a marathon, not a sprint. Entities do not have to—and should not try to—reach everyone with all key messages in one execution.

Define and understand the intended audience. They are not you. Find where your constituents' thoughts overlap with the audiences' beliefs and start there.

Advertising and communications do not have to—and should not—be deployed blindly. **Asking** the intended target audience what they think and feel about potential themes is key to ensuring the right messages connect with the right people.

Think strategically and long term. What are today's goals? How can they evolve? For the Michigan Wildlife Council, that means establishing trust and a personal connection in year one so that in year two it can deliver more educational messages based on the strong foundation that was established.

Evaluate and refine. Vigilantly track what is and is not working—and evaluate what needs changing. Today's media channels all have critical metrics. Learn what is most effective and why it is most effective.

Evaluate the overall success and impact of the campaign. Research is critical. If people are learning what they are meant to, it is time to push forward toward the next messaging goal.

Aligning Marketing with the Customer Experience

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Introduction

It's no secret that anglers or hunters are much more likely to return to the sport again if they have a positive experience. Whether it is ease of buying a license and providing accessible and clean boat launches to seeing abundant wildlife while hiking and bringing home table fare or a trophy animal, the Washington Department of Fish & Wildlife (WDFW) actively works to improve the outdoor recreational experience in Washington state. WDFW's mission is to conserve fish and wildlife and provide sustainable recreational opportunities. If WDFW provides a great experience, customers will likely return for years to come, which ultimately funds the mission of the agency and conservation of fish and wildlife. An area that WDFW has identified to make improvements in order to generate revenue and improve customer experience is to better inform customers of great hunting or fishing opportunities.

To accomplish this objective, WDFW created a marketing team in 2012 to increase license sales revenue by improving the customer experience. The WDFW marketing team focuses on hunter and angler recruitment, retention, and reactivation through a variety of marketing strategies and promotions that promote positive customer experiences. This paper discusses the roles and responsibilities of the marketing team and provides an overview of the marketing approach to ensure both new and returning customers are aware of opportunities in Washington.

WDFW's Marketing Team

WDFW's marketing team is led by a sales and marketing manager who serves as the agency's marketing expert and develops strong relationships with internal programs and external agencies to create promotional collaboration. The sales and marketing manager leads an in-house team of marketing specialists and a deployed team of account representatives.

The in-house marketing team conducts market research and develops, implements, and evaluates marketing campaigns. Each in-house member specializes in a skill ranging from data analysis to event coordination to graphic design. These skills come together to drive marketing campaigns from start to finish.

The field marketing team consists of account representatives who work directly with approximately 600 WDFW retail stores across the state that sell WDFW recreational licenses. There are four account representatives deployed across the state. Each account representative works with the retail dealer community to understand how to better serve customers in the licensing purchasing process. Account representatives maintain strong relationships with their license dealers and frequently visit their locations to provide marketing materials, inform about upcoming promotions, and assist with WDFW related issues or concerns.

Customer Experience

After comprehensive Washington state hunting and angling community analysis (churn rate, avidity, age, barriers to entry, and demographic studies) the marketing team developed an effective strategy to target new, returning, and current customers. The marketing team's 2016 license year goal was to reverse declining hunting and angler population trends by focusing on the customer experience.

WDFW's marketing strategy for campaign development begins by aligning the recreational activity to market segments. Market segmentation creates the target market by dividing customers into groups by geographic areas or demographic profiles. Once the target market is determined, the key

marketing message is developed and deployed across multiple marketing channels including promotional flyers; print, web, or radio advertisements; and social media.

The key marketing message explains how, where, when, and why customers should participate in the opportunity and tips on how to be successful in the field. The marketing message aids in creating a positive customer experience from the start of the purchase process and segues into the activity.

The key message is the basis of all of the marketing team's campaigns. With their promotional efforts, the marketing team has contributed to an additional $1.4 million in revenue in calendar year 2015. Below are high-level overviews of some of the marketing campaigns developed and executed in the past several years that strongly utilized a key message to promote a positive customer experience.

Fishing Derby

In efforts to reduce angler churn and provide an intriguing entry point for new anglers, the marketing team developed the idea for a statewide fishing derby. WDFW wanted to use the fishing derby to positively promote the agency and license dealers across the state.

WDFW programs (fish, public affairs, licensing) coordinated the statewide derby around the Lowland Lake opener, the largest fishing opportunity of the year. The marketing team's field staff solicited donated prizes from license dealers and retail manufacturers.

Customers with a valid 2016 fishing license could participate and catch tagged rainbow trout. Each derby trout had an orange Floy tag that was unique to a specific prize donor, identifiable by a distinct prize number listed on each tag. WDFW released a total of 2.3 million catchable trout, of which 749 were tagged, in a total of 105 lakes in 32 counties. After catching a tagged trout, customers called WDFW headquarters using the phone number on the tag and received dealer information so that the customer could then visit that location to redeem their prize(s).

WDFW ran a multifaceted campaign March 1, 2016, through September 5, 2016. The campaign focused on reaching customers through point-of-sale (POS) materials at dealer locations, emails, direct mail, bag stuffers (at select locations), social media, press releases, the website landing page, and targeted banners at sport shows and donating dealer locations. The main focus of this campaign was to recruit new anglers, with a secondary focus on reactivation and retention.

Altogether WDFW received 749 prizes valued at $20,000 from 133 dealers. The 2016 fishing derby resulted in one of the best Aprils to date in terms of both license sales and revenue. In April, the derby brought in approximately 13,000 more annual licenses than April 2015 and an additional $323,000 in total revenue (Figure 1).

Promotional efforts led to 16,121 new customers (2,960 more than the previous license year). These customers were those who purchased an annual freshwater or combination license in license year 2016 but had no previous purchase history of those two license types within the last five license years. Of the 16,121 new anglers, 5,964 were female and 10,157 were male anglers; up 1,293 and 1,667, respectively (Figure 2). The derby also upsold annual licenses to 4,487 customers who had purchased temporary licenses in previous years (Figure 3 outlines the age breakdown for these customers).

Overall, the derby was an effective campaign that promoted a positive customer experience by utilizing key messages and components to encourage new anglers to enter the sport by offering a fun benefit and activity.

Multiseason Deer and Elk Permit Campaign

Informing current customers of opportunities or products they are not utilizing is another way the marketing team is improving the customer experience to increase revenue. The marketing team developed and executed a campaign promoting multiseason deer and elk applications because they are very beneficial to our hunters, but traditionally, very underutilized hunting opportunities.

Beginning in December, hunters can purchase deer or elk multiseason applications. Those drawn for permits will allow hunters the chance to hunt with all three weapon types during a license year (season

permitting) and submit for special hunt applications using any weapon choice. Multiseason elk permit holder benefits are also greater than deer, as hunters don't have to designate which side of the state to hunt as they do with their general season elk tag.

WDFW selects 8,500 deer and 1,000 elk multiseason permit holders from the application pool for the opportunity to purchase a multiseason tag. Historically, multiseason deer and elk tags haven't sold out. In 2015, WDFW pursued an administrative rule change and began opening up the sale of unclaimed multiseason permits on a first-come, first-served basis. Sales were only available to unsuccessful multiseason permit application holders who had not purchased their tag(s).

WDFW ran a multifaceted campaign December 1, 2015, through January 31, 2016, with a follow-up campaign in July and August 2016. The campaign focused on reaching customers through POS materials at dealer locations, targeted emails, and direct mail. The campaign's focus was to reactivate customers, with a secondary focus on recruitment and retention of applications from the previous license year.

WDFW found that some customers do not purchase a multiseason tag after they're selected because they are unaware that the multiseason tag carries an additional cost over the application. The multiseason flyer's key marketing message conveyed multiseason tag benefits, with additional emphasis on the price for successful applicants. Nearly all of WDFW's 587 license dealers displayed the multiseason flyer in their stores near licensing terminals.

WDFW also developed a postcard to send to successful applicants who had not purchased their permit yet. The postcard emphasized the last chance a permit winner could purchase their permit before sales were opened on a first-come, first-served basis.

In 2016, WDFW brought in 5,248 new customers through these recruitment, reactivation, and retention efforts. New customers were those who purchased a multiseason application in the current year but had no prior purchase in the previous five license years.

WDFW saw a 4% lift in application sales over the previous license year. This lift is significant because it meant WDFW was not only able to maintain the previous 2015 license year's permit application sales (a lift of 46%) but to grow application sales as well (Figures 4 and 5).

The continued multiseason application sales growth allowed WDFW to open up multiseason tag sales on a first-come, first-served basis for the second year in a row. Multiseason elk tags sold out in less than one minute. A large number of customers who were in line to purchase elk tags, but were unsuccessful because they sold out, made the choice to purchase the multiseason deer tag instead. After the significant gains in 2015, multiseason deer tags saw a slight 5% decline in 2016 due to many factors, including cost, time, access, special permit eligibility, etc. (Figure 6).

Email campaigns generated 3,114 transactions accounting for approximately $111,400 in revenue through WDFW's online purchase site.

Informing customers about the multiseason tag's value helps not only generate revenue for the agency but also helps reach the goal of recruiting, reactivating, and retaining customers and improves the customer experience by tripling their opportunity to harvest a deer or elk.

Current/Future Promotion: Squid Fishing

In efforts to recruit new customers to activities that have the fewest barriers to entry, the marketing team recently analyzed squid fishing. Squid fishing is an underutilized fishery that's easy to learn and requires little equipment (fishing rod, squid jig, and a bucket). Promoting easy and simple opportunities to potential customers helps create a positive customer experience because the chance of success is higher.

Recreational Boating & Fishing Foundation's 2015 Special Report on Fishing survey found 23.4% of respondents cited "the lack of knowledge, lack of equipment, or equipment is too expensive" as barriers to participation in fishing. Thus, the WDFW marketing team is currently developing and executing a strategy to target new customers using species that have few barriers to entry.

The squid campaign's target audience is urban customers in the Puget Sound region. The urban customer target is someone who enjoys eating squid, or fresh seafood, but is unfamiliar that they can harvest it themselves. The key marketing message includes how and where to squid fish, emphasizing how easy it is and the lack of barriers to entry (i.e. no boat required, limited equipment, etc.). Marketing messages will also include recipes that will appeal to "foodies" who are typical among urban customers.

The campaign "soft launched" at the 2017 Seattle boat show because it's located in an urban area with an abundance of squid fishing opportunities nearby. Many boaters at the show were interested in learning more about squid fishing because some of the country's top chefs have been using squid ink in cocktails and various recipes. This trend is now becoming popular with home cooks as well as trendy restaurants and bars.

The official squid marketing campaign launch will begin in fall 2017 and focus on recruiting new customers (Figure 7). WDFW's marketing team will cross-promote with new partners such as Washington State Parks and develop marketing materials to reach customers who have never purchased a license from our agency. Partnering with other agencies helps us to reach an urban customer base that has a different demographic profile than WDFW's typical customer (Figure 8).

WDFW will measure the campaign's success by the number of new customers who purchase a shellfish/seaweed license during the marketing campaign's timeframe. Promotional efforts will include a variety of components including POS flyers, rack cards, direct mail, and emails.

Current/Future Promotion: Spring Turkey

Turkey hunting is an easy entry point for new hunters and has growth potential for active hunters. Nationwide, wild turkey is the second most commonly hunted species at 23% (Responsive Management and National Shooting Sports Foundation 2008). In comparison, in Washington state, turkey is hunted by only 5% of all hunters (Responsive Management 2014). According to a 2011 Southwick survey, turkey was ranked the second most popular species that hunters are interested in but do not currently hunt (National Shooting Sports Foundation, Southwick Associates, and Responsive Management 2011). Turkey hunting offers advantages to the first-time hunters because of the minimal amount of equipment needed to get started, and there is a higher success rate in comparison to big game species.

The marketing team determined the most effective way to reach new turkey hunting customers is utilizing its existing hunter customer base and eliminating barriers to entry. The majority of hunters typically go with a companion and very few hunters go alone (only 5%). Camaraderie is an important motivation for participating in hunting and can promote a positive customer experience (National Shooting Sports Foundation, Southwick Associates, and Responsive Management 2011). Seventy-one percent of the time, hunters name family members as their hunting companion (National Shooting Sports Foundation, Southwick Associates, and Responsive Management 2011).

The campaign also focuses on how easy it is to bring a new hunter with the Hunter Education Deferral Program (HEDEF). HEDEF allows customers the opportunity to hunt for one year prior to completing the hunter education program. Customers who utilize the HEDEF program must be accompanied by a mentor who has hunted for the past three consecutive years. Given these facts, the promotion focuses on targeting active hunters to bring friends spring turkey hunting because it's an easy, fun sport with high success rates and limited necessary equipment. The campaign's communication tools will include point-of-sale signs at retail locations, rack cards, social media posts, emails, digital advertisements on license dealer monitors, and an advertisement in the WDFW Turkey Regulations pamphlet.

A campaign encouraging experienced turkey hunters to mentor new hunters will not only increase the number of new turkey hunters but should also give them the best possible experience in the field and increase the likelihood of them returning and becoming lifelong customers. The success of the campaign will be measured by the number of new turkey hunters over the previous years.

Conclusion

By focusing on the customer experience and tailoring campaigns to maximize the experience potential, WDFW's marketing efforts have been increasing revenue through reactivation, retention, and recruitment. Strategies that aim to eliminate barriers to entry, simplify seemingly complicated rules, and getting the right message to the right target market are all integral aspects of aligning the customer experience for long-term success and customer loyalty. These loyal customers will return year after year and will advocate to their friends and family not only the positive experience, but will also become supporters of the agency.

References

National Shooting Sports Foundation, Southwick Associates, and Responsive Management. "Understanding Activities that Compete with Hunting and Target Shooting." 2011.

Responsive Management National Office. "Washington Hunters' Participation in Hunting Various Species and Their Opinions On and Attitudes toward Various Hunting Regulations." 2014.

Responsive Management and National Shooting Sports Foundation. "The Future of Hunting and the Shooting Sports." 2008.

Figure 1. License sales results of the 2016 WDFW fishing derby compared to previous five years.

Net Quantity (April)	2010	2011	2012	2013	2014	2015	2016	Difference '16–'15
Annual Combination Fishing License	59,047	49,213	51,619	54,761	55,004	61,897	59,787	-2,110
Annual Freshwater License	119,429	99,469	109,224	100,750	109,143	117,100	132,097	14,997
Grand Total	178,476	148,682	160,843	155,511	164,147	178,997	191,884	12,887

Figure 2. Promotional efforts for the 2016 WDFW fishing derby led to 16,121 new customers with no previous license purchase history. This outlines age breakdown for these anglers.

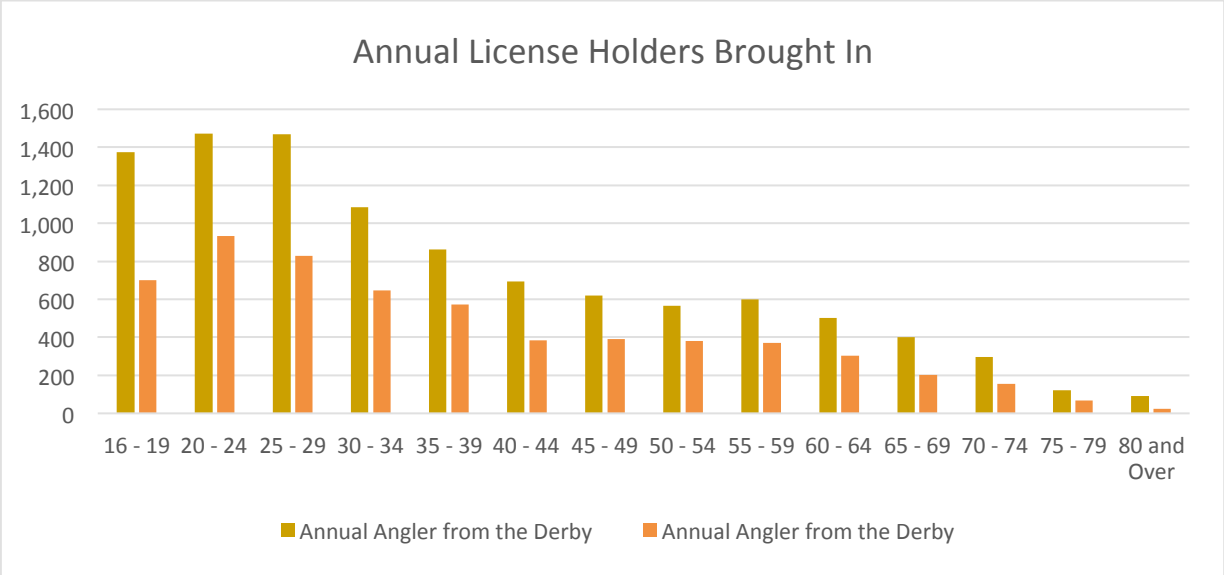


Figure 3. The derby also upsold annual licenses to 4,487 customers who had purchased temporary licenses in previous years. This outlines the age breakdown for these customers.

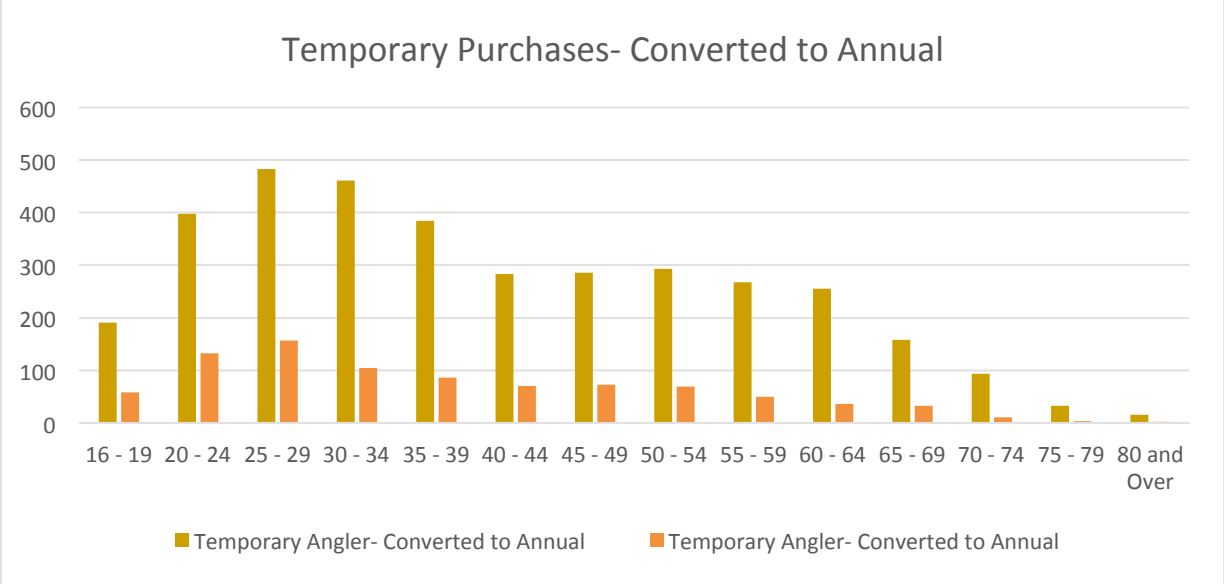


Figure 4. In 2016, WDFW saw a lift in multiseason deer tag application sales over the previous license year.

MS Deer Application LY15	MS Deer Application LY16	Increase	Percent Increase
12,903	13,369	466	4%

Figure 5. In 2016, WDFW saw a lift in multiseason elk tag application sales over the previous license year.

MS Elk Application LY15	MS Elk Application LY16	Increase	Percent Increase
13,615	14,251	636	5%

Figure 6. Multiseason tag sales data. After significant gains in 2015, multiseason tags saw a slight decline in 2016, due to many factors including cost, time, access, special permit eligibility, etc.

(Net Quantity)	2010	2011	2012	2013	2014	2015	2016
Multi-Season Deer Tag	1,447	2,189	3,688	3,447	5,007	6,663	6,345
Multi-Season Elk Tag	563	681	772	824	812	1,112	1,029

Figure 7. Poster created by WDFW marketing team promoting the official squid marketing campaign launched in fall 2017.

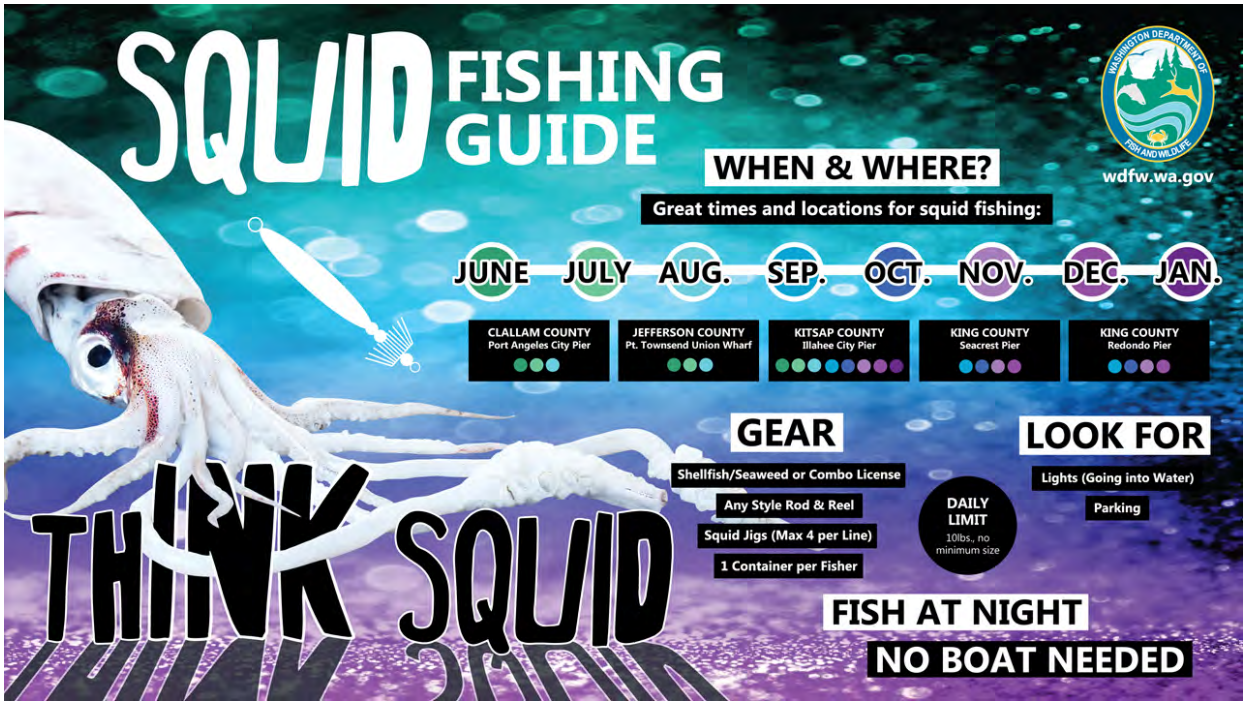


Figure 8. WDFW's typical customer compared to Washington State Parks' more urban customer base.

	PARKS	WDFW*
GENDER	Mostly female	Mostly male
AGE	25-44	25-44
MARITAL STATUS	64%	45%
EDUCATION	60% college	65% college
HOUSEHOLD INCOME	$50K-$75K	$50K-$75K
INTEREST	Camping, hiking, events, geocaching	Bird watching, fishing, hunting

Closing Remarks

Stephanie Hussey
Recreational Boating & Fishing Foundation
Alexandria, Virginia

Thank you to all our presenters. You heard a variety of marketing strategies from these four presenters—whether email marketing, using targeted digital approaches, implementing an awareness campaign, or building retailer partnerships—all utilizing marketing approaches to reach broader audiences and increase relevancy.

As you can see, there's an art and science to it. There's research and evaluation/measurement to inform efforts, just as with fish and wildlife management.

Marketing has come a long way in the natural resources arena. I remember as an intern at the Association of Fish & Wildlife Agencies in 1993 that marketing was taboo; it was a bad word. There's been a lot of change over the years—maybe not as fast as many of us would like, but marketing is part of the conversation now.

When you consider these four agencies and their approaches and staffing expertise—and that many other agencies have marketing positions or are looking to hire a marketing person—it's refreshing. Just yesterday, an agency director mentioned to me in conversation that they need to hire marketing expertise, as that's what it's going to take to be relevant and make a difference on the recruitment, retention, and reactivation (R3) front.

Marketing goes hand-in-hand with R3. From a national perspective with the Recreational Boating & Fishing Foundation, marketing is an important component of your R3 efforts.

We hope you will embrace marketing as part of your agency's efforts in carrying out your mission.

As Kristin mentioned, we are thankful for the opportunity to showcase these efforts with you and to have marketing be a topic for a special session at this conference.

You have wonderful resources in these agency folks and we hope you will leverage to inform your own efforts—and encourage you to share your experiences.

Special Session Four.
Wildlife Successes in Optimum Funding Scenarios—Exxon Valdez and Deepwater Horizon Restoration

Overview

Tim Richardson
Wildlife Forever
Rockville, Maryland

James L. Cummins
Wildlife Mississippi
Stoneville, Mississippi

Ross Melinchuk
Texas Parks & Wildlife Department
Austin, Texas

This two-panel session dealt with the ecosystem restoration outcomes in the aftermath of America's two largest oil spill disasters—Exxon Valdez in 1989 and Deepwater Horizon in 2010. While the traumatic and shocking onsets of both spills received attention in each panel, the six presenters focused primarily on the uses of significant financial penalties that arose from the spill settlements with Exxon Corporation (prior to becoming Exxon Mobil) and British Petroleum and responsible parties such as Transocean in the Deepwater Horizon disaster.

The public policy arenas in both spills were addressed, shedding light on how and why prior law, the court system, presidential and gubernatorial administrations, attorneys general, and legislative branches treat the circumstances of giant environmental accidents, fines, and penalties. Both panels addressed how the above processes made billions of dollars available to natural resource agencies at the state and federal levels, how said agencies were and are tasked with designing comprehensive restoration plans of unprecedented scale, and how best to proceed with restoration implementation in the context of an aroused stakeholder community and public citizenry that is local, regional, and national in scope.

The sudden availability of significant financial resources in the Exxon Valdez and Deepwater Horizon aftermaths stand in sharp contrast to modern wildlife management conditions in which tightening budget constraints at the state and federal level are causing "triage rationing" of personnel and project resources in all too many cases. Routine budgetary constraints have become the norm for wildlife professionals—and come at a time when advances in wildlife management are making more positive outcomes possible, albeit during an era when the pressures of human population growth, climate change, invasive species, wildlife diseases, and other chronic pressures are transforming and challenging the wildlife management profession and the outcomes of this community's labors.

Panelists in this session sought to describe events as they experienced them as well as to prepare the audience for how to grapple with similar large-scale disasters should they encounter them during the course of a typical 30- to 40-year career in wildlife and natural resource management.

Panel Introductions

James L. Cummins
Wildlife Mississippi
Stoneville, Mississippi

The late William Faulkner once said, in his Nobel Prize in Literature acceptance remarks, "…man will not merely endure: he will prevail." While I would have preferred that the spills from Exxon Valdez and Deepwater Horizon would have never taken place, I do think we prevailed in the funding that resulted to mitigate for their environmental damages. This session focuses on these two events—and the restoration associated with them—as unprecedented examples of natural resource management in optimum funding conditions under conditions of extreme duress.

I was asked to cochair this panel because I've spent a lot of time in Alaska, both professionally and personally, on these lands and seascapes that received the largest habitat protection investment in its time—a $1 billion settlement from Exxon. I am also a resident of Mississippi, which borders the Gulf of Mexico. The explosion aboard the Deepwater Horizon occurred approximately 100 miles south of Biloxi—almost the same location where Katrina, the nation's costliest natural disaster, made landfall. It was the deepest oil well in history, until she exploded in 2010, killing eleven workers and spewing 3.19 million barrels of oil into the Gulf. From a legislative perspective, I also spent a lot of time on the RESTORE Act (Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act). Currently, we are in the midst of a major Deepwater Horizon coastal restoration effort. It is my hope that we are good financial stewards of the largest environmental settlement in our nation's history. Only time will tell.

The impetus for this session is to showcase an alternative source of funding as a critical need in challenging budgetary times. Function 300, which forms the core of conservation funding for the federal government, accounts for less than 1% of total federal expenditures. In another measure of conservation spending, federal spending overall grew more than 130% from 1980 to 2009, but conservation spending went up by only 2.15%. The importance of this session is reinforced by the recent headlines about deep, across-the-board cuts recommended for the U.S. Department of the Interior, the EPA (Environmental Protection Agency), and NOAA (National Oceanic and Atmospheric Administration). Many state natural resource budgets face similar situations.

The panelists will make the case that mitigation undertaken in response to the nation's two largest oil spills are examples of success for wildlife and society, in general. They hope to shed light on three basic questions.

First, does the Exxon Valdez and Deepwater Horizon restoration help make the case for the importance of adequate funding for wildlife and natural resource agencies and for adequate oversight of that funding? Are we maximizing the environmental benefits per dollar expended?

Second, what is currently happening in the Gulf of Mexico involving the $16.6 billion being allocated in a region that is home to the nation's largest wetland area that is experiencing unprecedented land loss and coastal resiliency issues? Is large-scale coastal ecosystem restoration a vital and doable enterprise?

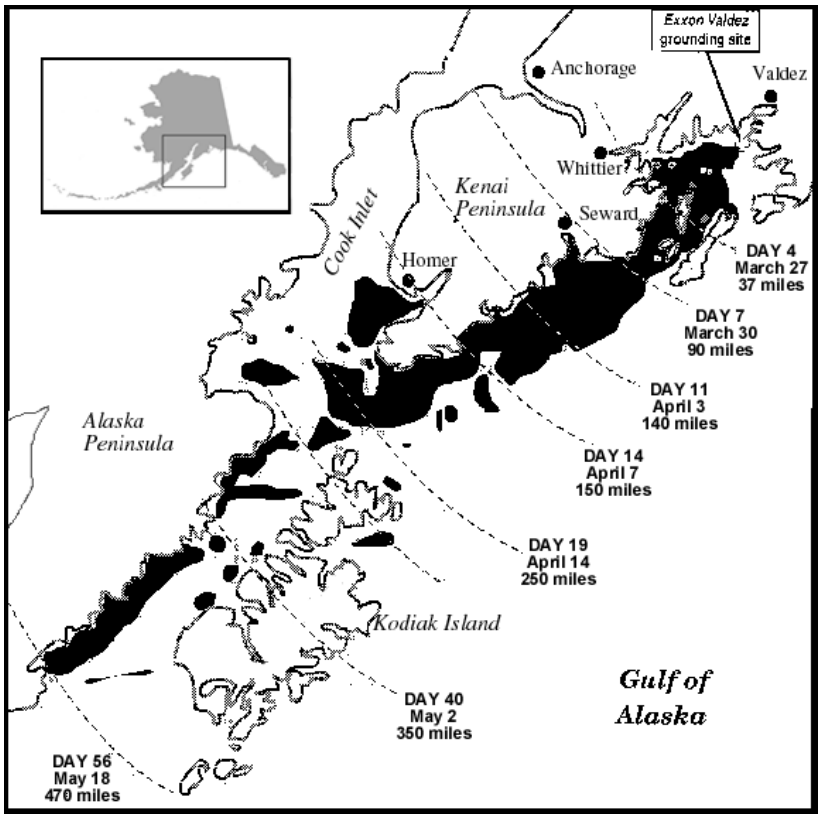
Third, is it likely, in the course of your careers spanning 30 to 40 years, that you may yourself experience an unexpected massive ecosystem disaster? Can the Exxon Valdez and Deepwater Horizon records of response be helpful in your ability to be prepared?

Reaching the $1 Billion Consent Decree

Paul Schmidt
Paul Schmidt Consulting for Conservation
Palmyra, Virginia

Events on the scale of the Exxon Valdez oil spill are life changing and career defining for those caught in them. While tanker accidents and large oil spills in Alaska's shipping lanes were contemplated, even predicted, when the Trans-Alaska Pipeline connected the North Slope oil fields to the oil terminal in Valdez, there was insufficient preparation by the industry or by state and federal agencies, including the U.S. Coast Guard. Some have compared the March 24th Good Friday news flash about the Exxon Valdez grounding to an environmental "Kennedy assassination moment" because many people remember where they were when they heard the news and knew it could be a moment of major consequence.

Emotions felt on a personal level were quickly amplified by around-the-clock Alaskan and national media coverage as officials scrambled to respond. During the calm wind and weather conditions of the first 48 hours after the spill, local officials and industry representatives confirmed skeptics' suspicions that there was insufficient capability ready in Prince William Sound. Talk of burning the oil leaking from the crippled tanker was rejected because at least 80% of the oil was still on board and destruction of the tanker in a fireball could become a far worse catastrophe.



As a frantic worldwide scramble to obtain oil containment booms was underway, a strong northeast wind arose on Sunday, dispersing 11 million gallons of crude oil westward toward pristine bays within Prince William Sound and toward the prevailing Gulf of Alaska Gyre currents that would eventually cause oil to reach more than 1,200 miles of coastline in the sound, the Kenai Peninsula, the Alaska Peninsula, and the Kodiak Archipelago.

All available state and federal wildlife agency staff were deployed to the sound. Attorneys, special agents, biologists, administrators, and other staff from the Alaska Department of Law, Alaska Department of Fish and Game, U.S. Fish & Wildlife Service, and U.S. Coast Guard donned rain gear, rubber boots, and skiffs as they inspected the wildlife and people impacts, following the incessant path of crude oil. While the damages were incalculable, all were aware that the collection of bird, otter, and other sea creature carcasses was a necessity for the lawsuits sure to come as the disaster and media spectacle unfolded day by day, week by week, month by month, all summer long.

The area of the oil spill (August 10, 1989) compared to the Eastern Seaboard.

Commercial fishery closings caused unprecedented fleet and cannery layoffs, soon followed by a rash of social pathologies including substance abuse, bankruptcies, divorces, suicides, and even murder. Exxon's community liaison personnel hired as many skippers and boats as they could to try to scoop up oil with buckets or create makeshift booms to limit oil encroaching into salmon- and herring-rich bays. Whenever local rage swelled in Cordova, Seward, and Kodiak, Exxon changed out its local reps until they too needed to be switched out by new faces of the world's largest corporation.

For all the people in the spill region, most of the people in Alaska, and some of the people in the United States, March 24, 1989, was a clear dividing line in their lives—before and after the wreck of the Exxon Valdez.

Nothing in normal wildlife management course study prepares one for catastrophic events or the frustrating two-and-a-half year wait for the Exxon consent decree for violations of the Clean Water Act, Migratory Bird Act, and Natural Resource Damages Act, when the citizenry had a right to some kind of justice. While the personal economic damage payouts did proceed faster than wildlife damage claims—because they were far easier to calculate—the salmon fishery closure saw farmed Chilean and Norwegian salmon take major market share from Alaska's fleet.

The subsequent dramatic crash in salmon and herring permit values, boats, nets, and other gear compounded the shock of the spill taking away more than the loss of innocence Alaskan's felt as a birthright from living so far from the rest of the polluted world in the Lower 48.

Fortunately for Alaska, Governor Walter Hickel and his Attorney General Charlie Cole were able to close ranks with the George H.W. Bush Administration and Attorney Generals Dick Thornburgh and William Barr. Although passionately pro-oil, Hickel loved Prince William Sound and believed that the only way for Big Oil to save face in his state and in a Congress debating the opening of the Arctic Refuge to oil and gas development was to have Exxon pay a significant fine. Both the Hickel and Bush administrations had been confident that Congress would pass legislation allowing for oil and gas development on the coastal plain of the Arctic National Wildlife Refuge that year.

When offered less than $1 billion by Exxon executives, Attorney General Cole closed his briefcase in a Houston boardroom and said, "See you in court."

After considering an untested legal strategy based on contingent valuation or "existence value," that put the fair penalty total at $2.8 billion based upon national polling of what average Americans felt the value of each lost bird and otter was worth, Hickel and Cole and U.S. Attorney General William Barr's team obtained a $1.15 billion consent decree—$900 million in civil fines to be paid out over 10 years and a $100 million criminal fine to be paid right away. The total fines equaled 20% of Exxon's 1989 profit and set the record for environmental legal damages. The amount of the fine Exxon could deduct from their taxes, plus the 10-year delay in the full payment, put the hard cash cost of the settlement at about $500 million according to analysts. Exxon's stock went up when the settlement was announced.

The Exxon Valdez settlement was divided into three parts:

- *Criminal plea*: Exxon Shipping pled guilty to three misdemeanor counts for violating Clean Water Act, Migratory Bird Treaty Act, and the Refuse Act for $150 million.
- *Criminal restitution*: Exxon was ordered to pay $100 million in restitution for injuries caused to fish, wildlife, and lands of the spill region. The funds were divided equally between state and federal governments.
- *Civil settlement*: Exxon agreed to pay $900 million with annual payments spread out over 10 years. A memorandum of agreement established a state and federal trustee council to allocate the funds for injured resources.

Addenda

From the Exxon Valdez Oil Spill Trustee Council final environmental impact statement, September 1994.

Settlements

On October 8, 1991, the U.S. District Court approved a plea agreement that resolved various criminal charges against Exxon, and a civil settlement that resolved the claims of the United States and the State of Alaska against Exxon for recovery of natural resource damages resulting from the oil spill.

The Criminal Plea Agreement. As part of the criminal plea agreement, the court fined Exxon $150 million — the largest fine ever imposed for an environmental crime. Of this amount, $125 million was remitted in recognition of Exxon's cooperation with the governments during the cleanup, timely payment of many private claims, and environmental precautions taken since the oil spill. Of the remaining $25 million, $12 million was paid to the North American Wetlands Conservation Fund for wetlands enhancement in the U.S., Canada and Mexico, and $13 million was paid to the federal treasury. As part of the plea agreement, Exxon also agreed to pay restitution of $50 million to the United States and $50 million to the State of Alaska. The state and federal governments separately manage these $50 million payments. Funds from the criminal plea agreement are *not* under the authority of the Trustee Council, and the use of these funds is not guided by this plan.

Civil Settlement and Restoration Fund. The Federal Water Pollution Control Act, 33 USC 1321(f)(5), provides the authority for the civil settlement. The use of monies provided by the civil settlement is governed by two documents: The first is a Consent Decree between Exxon, the State of Alaska and the United States that requires Exxon to pay the United States and the State of Alaska $900 million over a period of ten years. The second is the Memorandum of Agreement between the State of the Alaska and the United States. Both were approved by the U.S. District Court.

According to the Consent Decree between Exxon and the state and federal governments, Exxon must make ten annual payments totaling $900 million. The first payment was made in December 1991; the last payment is due in September 2001. As of December 1994, four payments totaling $410 million have been received. The payment schedule is provided in Table 1. The terms of the Consent Decree and Memorandum of Agreement require that funds paid by Exxon are to be used first to reimburse the federal and state governments for the costs of cleanup, damage assessment and litigation. Settlement funds remaining after the reimbursements are to be used for purposes of restoration. The use of the restoration fund is guided by this plan.

The Consent Decree with Exxon also has a reopener provision that allows the governments to claim up to an additional $100 million between September 1, 2002 and September 1, 2006 to restore one or more resources or habitats that suffered a substantial loss or decline as a result of the spill. Under the Consent Decree, the reopener is available only for any losses or declines that could not reasonably have been known or anticipated from information available at the time of the settlement.

The Memorandum of Agreement provides the rules for spending the restoration funds. Those rules are:

- Restoration funds must be used "...for the purposes of restoring, replacing, enhancing, or acquiring the equivalent of ***natural resources*** injured as a result of the Oil Spill and the reduced or lost ***services*** provided by such resources...."

- Restoration funds must be spent on restoration of natural resources in Alaska unless the Trustees unanimously agree that spending funds outside of the state is necessary for effective restoration.

- All decisions made by the Trustees (such as spending restoration funds) must be made by unanimous consent.

The Memorandum of Agreement and other settlement documents define a number of important terms.

Restore or **Restoration** means any action, in addition to response and clean-up activities required or authorized by state or federal law, that endeavors to restore to their prespill condition any natural resource injured, lost, or destroyed as a result of the Oil Spill and the services provided by the resource, or that replaces or substitutes for the injured, lost or destroyed resource and affected services. Restoration includes all phases of injury assessment, restoration, replacement, and enhancement of natural resources, and acquisition of equivalent resources and services.

Replacement or acquisition of the equivalent means compensation for an injured, lost or destroyed resource by substituting another resource that provides the same or substantially similar services as the injured resource.

Enhancement means any action that improves on or creates additional natural resources or services where the basis for improvement is the prespill condition, population, or use.

Natural resources means the land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belonging to or managed by the state or federal governments. Examples of natural resources include birds, fish, mammals, and subtidal plants and animals.

The Consent Decree also provides that funds may be used to restore archaeological sites and artifacts injured or destroyed by the spill.

In addition to restoring natural resources, funds may be used to restore reduced or lost *services* (including human uses) provided by injured natural resources. Humans use the services provided by resources injured by the spill in a variety of ways: subsistence,

References

Personal experience during the oil spill from day one continuing for several years while based in U.S. Fish & Wildlife Service Region 7, Anchorage, Alaska.

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Habitat Protection as the Cornerstone of Exxon Valdez Restoration

Jim Kurth
U.S. Fish & Wildlife Service
Washington, DC

A U.S. Fish & Wildlife Service (USFWS) assignment in Alaska can fulfill long-held professional career goals. The prospect of being involved in a region with more federal public land than the size of Texas—a "Great Land" with twice as much coastline as the entire Lower 48 states—can be inspiring. An Alaskan wildlife job posting means a typical day can involve you with Canada, Russia, Mexico, and South America or work duties relating to the Gulf of Alaska; the north Pacific Ocean; the Bering, Chukchi and Beaufort seas; and the Arctic Ocean. These unique and inspiring dimensions of Alaska natural resource management should not be overlooked when addressing the personal and professional impact of a disaster such as the Exxon Valdez oil spill.

To arrive in Alaska, as I did, in the aftermath of the nation's worst oil spill—and on the cusp of a $1 billion settlement—puts the scale of career rewards and challenges in a rare light. That circumstance is one I was not seeking but became privileged to experience after arriving in Region 7, in 1991, and became immersed in the nation's largest-ever environmental mitigation project.

The first order of business, after the $1 billion consent decree was approved by federal Judge Russel Holland, was to prepare to help allocate $900 million in civil penalty funds over 10 years, obtained pursuant to the Federal Water Pollution Control Act. In addition to the civil fines, both the state of Alaska and the United States received $50 million in criminal restitution funds that were also designed to restore the oil spill-injured ecosystem. Job one for both governments was to provide staff support for obtaining public input and to undertake programmatic planning in support of the Exxon Valdez Oil Spill Trustee Council (EVOSTC), an independent hybrid branch of government made up of a six-member oil spill trustee council created under the memorandum of agreement (MOA) developed by the settlement consent decree.

The trustee council members served at the pleasure of either the governor of Alaska or the president of the United States, both of who were, in essence, the two overall trustees representing all Alaskans and all Americans in the Lower 48 and Hawaii, respectively. The three state trustees represented the Alaska Department of Fish and Game, Alaska Department of Environmental Conservation, and Alaska Department of Law. The three federal trustees represented the U.S. Department of Agriculture, U.S. Department of Commerce, and U.S. Department of Interior, each of which was respectively represented on the trustee council by the U.S. Forest Service, NOAA/NMFS (National Oceanic and Atmospheric Administration and National Marine Fisheries Service), and the U.S. Fish & Wildlife Service.

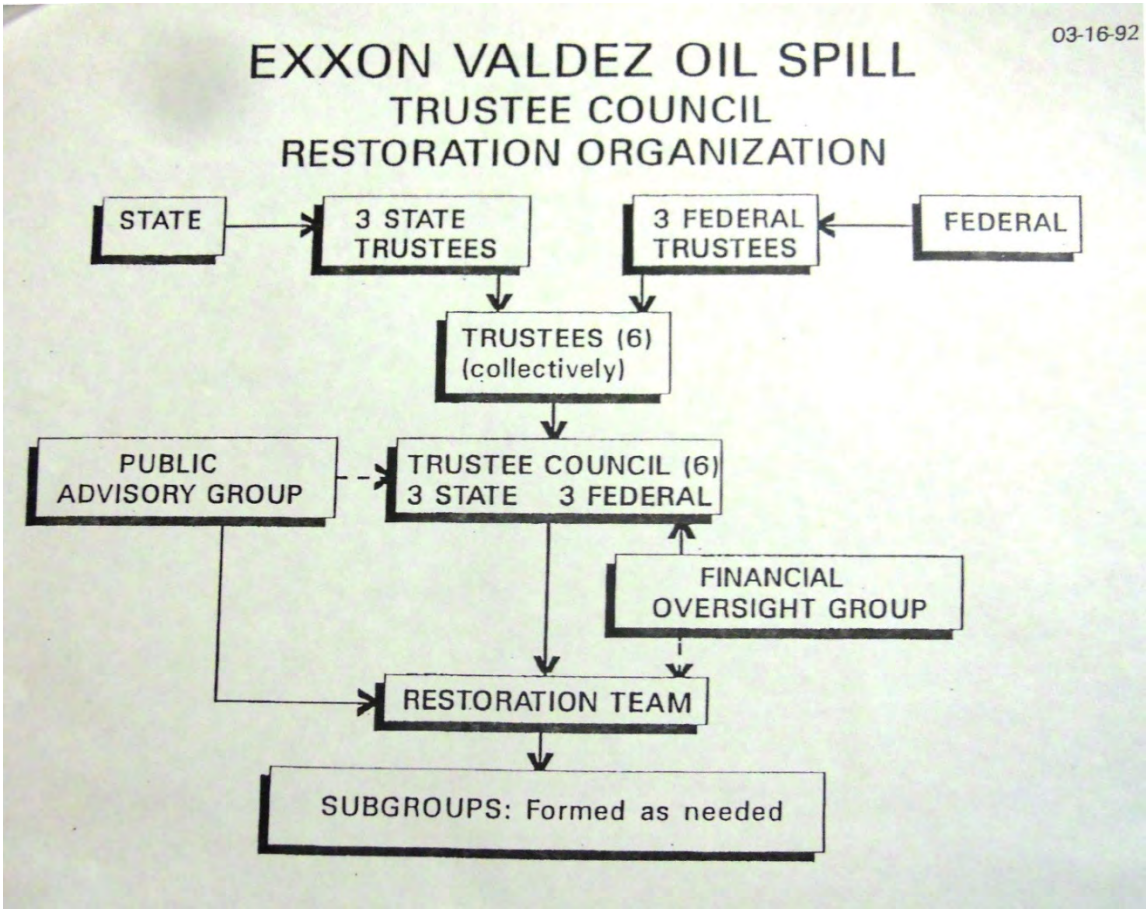
Under the MOA, restoration funds had to be used "…for the purposes of restoring, replacing, enhancing, or acquiring the equivalent of natural resources injured as a result of the Oil Spill and the reduced lost services provided by such resources…"

The ground rules for implementing Exxon Valdez restoration were shaped by the landmark environmental regulatory laws that were passed starting in the late 1960s and included the National Environmental Policy Act.

The mission of the trustee council was to efficiently restore the environment injured by the Exxon Valdez oil spill to a healthy, productive, world-renowned ecosystem, while taking into account the importance of the quality of life and the need for viable opportunities to establish and sustain a reasonable standard of living.

The restoration was, and still is, to be accomplished through the development and implementation of a comprehensive, interdisciplinary recovery and rehabilitation program that included: natural recovery, monitoring and research, resource and service recovery, habitat acquisition and protection, resource and service enhancement, replacement, meaningful public participation, project evaluation, fiscal accountability, and efficient administration.

A novel aspect about Judge Holland's consent decree rules for the trustee council was that all funds required a 6–0 vote for approval, otherwise a given project proposal failed. The normal fractious state-versus-federal interplay in Alaska was unusually intense and President Bill Clinton came into office in 1993 while Walter Hickel was still governor and the comprehensive restoration plan was taking shape. Many predicted gridlock between Juneau and Washington, DC. But careful negotiations by U.S. Secretary of the Interior Bruce Babbitt and Assistant Secretary of the Interior George Frampton with the Hickel administration, including Attorney General Charlie Cole, led to a meeting of the minds between Alaskan and federal trustees.



All decisions and actions of the Exxon Valdez Oil Spill Trustee Council "must be made in consultation with the United States Environmental Protection Agency," according to the MOA. While little restoration activity was ready for implementation during the final year-and-a-half of the George H.W. Bush administration, the refereeing duty over spending the $900 million civil fine was held by the Clinton administration's EPA director Carol Browner, a fact that dealt a strong hand to a "green" interpretation of how oil spill funds could be spent, to the chagrin of some of Alaska's "prodevelopment" voices.

If it turned out that the trustees couldn't reach the 6–0 unanimous consent over various allocation outcomes, either the United States or the state of Alaska could resort to litigation in the United States District Court for the District of Alaska, which meant that Judge Holland would be the final arbitrator over disagreements.

The subsequent orderly roll out of oil spill restoration was due in no small part to the strenuous public demand in Alaska and the nation for environmental justice in the aftermath of the nation's worst environmental accident. Given the rare Alaska/U.S. accord over oil spill restoration that developed under

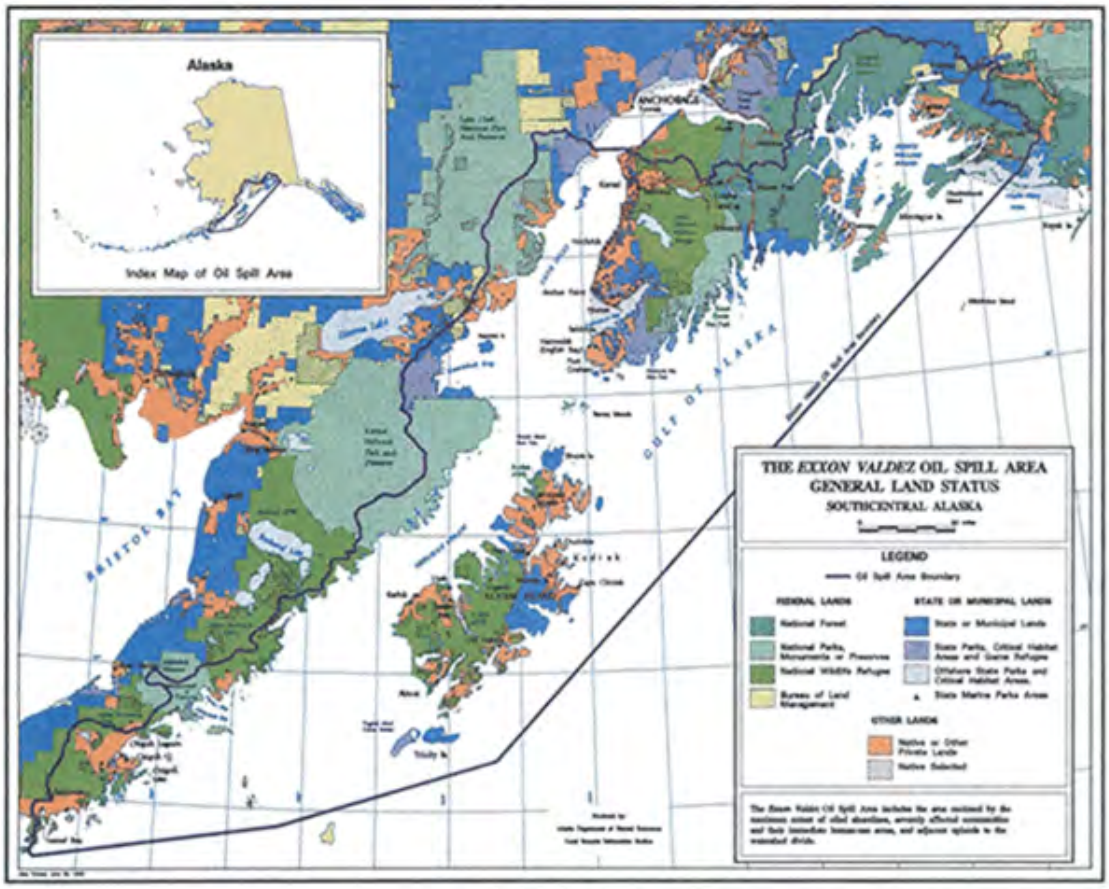
the Hickel and Clinton administrations, the respective state and federal natural resource agencies were organized into both science-led research and monitoring efforts and a Habitat Protection Working Group. The habitat group conducted both a thorough damage assessment of the 1,300-mile spill region and a ranking system of priority habitat areas typically defined by watersheds, where the replacement of equivalent resources called for in the consent decree could best be carried out.

The habitat focus was the U.S. Fish & Wildlife Service's and my primary interest in oil spill restoration and it so happened that the establishment of the oil spill region involved significant federal conservation units such as the Chugach National Forest, the Kenai Fiords National Monument, and the Kodiak National Wildlife Refuge. Together, these large conservation units equaled land roughly two-and-a-half Yellowstone National Parks in size, and all of them had significant private inholdings owned by the oil spill region's native Alaskan corporations that made land selections of traditional hunting, fishing, and subsistence use areas, which they selected and claimed pursuant to the 1971 Alaska Native Claims Settlement Act (ANCSA). The land selection directives of ANCSA provided an acreage provision that corresponded to native populations in 1971, and each person was made a shareholder in a regional native corporation and in the village corps where they resided or established as their birthplace or family's historic home area. In 1981, the Alaska National Interest Lands Conservation Act (ANILCA) completed the federal withdrawals of former territorial lands deemed important to the United States. ANILCA also led to an additional round of native corporation land selections, many of which were inside large federal conservation units.

More than 90% of the lands within the oil spill region were either federal forests, parks or refuges, or native corporation private inholdings with the remainder belonging to either the Alaska Department of Natural Resources, including state parks such as Kachemak Bay State Park, or the municipalities of Cordova, Valdez, Seward, Homer, Kenai, and Kodiak. Tiny portions of land—many of which included cannery sites, homesteads, and mining claims—were held by nonnative, private individuals including heirs of military veterans.

By and large, the primary scene of the action within habitat protection and acquisition phase of oil spill restoration took place inside the often-complex mosaic of federal and native lands created by ANCSA and ANILCA withdrawals from major federal conservation lands, which stretched back to the presidencies of Benjamin Harrison, Theodore Roosevelt and Franklin Roosevelt.

Negotiations with landowners of property identified as desirable for restoration by the Habitat Protection Working Group proceeded according to an ecosystem ranking system and a willing-seller, self-nomination process. The multiyear effort resulted in creative habitat protection measures, including fee-simple purchases, conservation easements, timber easements, and retention of a handful of shareholder home and lodge sites. Most habitat protection agreements allowed for public access for camping, hunting and fishing, restricted development, and the maintaining of subsistence uses, while protecting injured resources and providing economic benefits to native corporations.



Regional balance was a primary goal of the comprehensive restoration plan, and the spill region was divided into three areas—Prince William Sound, Kenai Peninsula, and the Kodiak Archipelago.

Alaska's Prince William Sound is a natural resource rich, globally significant marine environment surrounded by towering coastal mountains, more than 90% of which are part of the Chugach National Forest, the nation's second largest at seven million acres, created in 1907 by President Theodore Roosevelt. The coastal fishing and tourism towns of Valdez, Cordova, and Seward hold nearly all the population. Alaska native corporation inholdings in the Chugach National Forest totaled more than 300,000 acres of the best coastal rainforest, salmon rivers and subsistence tidelands.

The Kenai Peninsula is Alaska's most visited remote area and has the famous Kenai River and the coastal town of Homer all easily accessible on the road system from Anchorage. Most of the Kenai, like most of Alaska, is in public ownership, with sizeable native corporation holdings comprising more than 90% of the private land on the peninsula. The oil spill hit the southeastern portion of the Kenai Peninsula as soon as it left Prince William Sound, with the Kenai Fjords National Monument and Preserve (created 1980), being the most impacted coastline. Millions of Americans who have visited Alaska had greater awareness of the Kenai Peninsula and Cook Inlet than of Prince William Sound or the Kodiak Archipelago or the Alaska Peninsula. Kachemak State Park is among Alaska's most visited state parks, and the Kenai National Wildlife Refuge and Chugach National Forest have many millions of acres on the Kenai.

The Kodiak Archipelago is a 3,500-square-mile collection of islands, mountains, fjords, and rivers two-thirds the size of Connecticut—described by some as "cold, wet, and remote" but that is also stunningly beautiful—and it's distinct combination of forests, mountains, grasslands, and tundra make it something of a microcosm of the state. You are more likely to run into a bear hunter or cultural

anthropologist on Kodiak than a T-shirt wearing cruise ship tourist. The archipelago is the home base of the Sugpiak Eskimos who populated most of the oil spill region since the last Ice Age. Kodiak was also the site of the first capital of Russian America. For most of its history, Kodiak has been the commercial fishing capital of Alaska and is home to America's largest Coast Guard base.

The Habitat Protection Working Group carried out damage assessment on species with a link to injury. The state agencies called upon decades of local knowledge and relationships while federal agency members, especially the USFWS, had superior species mapping data that proved vital.

- Twenty-eight wildlife species or habitat types and four human services, plus archaeological resources and designated wilderness areas, were identified with a link to injury.
- Species selected were often already known to be in decline like harlequin duck, marbled murrelets, and sea otters.
- Common murres suffered an estimated 250,000 deaths, two different killer whale pods in Prince William Sound were impacted, and herring populations crashed.
- Traditional subsistence lifestyles declined dramatically in rural villages—and 24 archaeological sites were looted by oil spill cleanup crews.

Habitat areas for species with a link to injury and owned by willing landowners were ranked for conservation based on a potential for benefit to injured species resources and services.

PARCEL RANKING ANALYSIS

PARCEL		[1]RANKING CRITERIA								
#	NAME	1	2	3	4	5	6	7	8	SCORE[2]
PWS 01	Orca Narrows	0-H, 6-M	Y	N	Y	N	Y	N	Y	12
PWS 02	Power Creek	4-H, 0-M	Y	Y	Y	N	Y	Y	Y	24
PWS 03	Two Moon Bay	1-H, 5-M	Y	N	Y	N	Y	N	Y	14
PWS 04	Fish Bay	1-H, 7-M	Y	Y	Y	N	Y	Y	Y	27
PWS 05	Eyak River	1-H, 3-M	N	N	N	N	Y	N	Y	5
PWS 06	Patton Bay	1-H, 4-M	Y	Y	Y	N	Y	Y	Y	18
PWS 07*	Chenega	6-H, 8-M	Y	Y	Y	N	Y	Y	Y	60
CIK 01	China Poot	4-H, 7-M	Y	Y	Y	N	Y	Y	Y	45
CIK 02	Sadie Cove	0-H, 3-M	Y	N	Y	N	Y	Y	Y	7.5
CIK 03	Jakalof Bay	0-H, 3-M	Y	N	Y	N	Y	N	Y	6
CIK 04	Port Graham	1-H, 2-M	Y	N	Y	N	Y	N	Y	8
CIK 05	Lower Kenai Peninsula	0-H, 9-M	Y	Y	Y	N	Y	N	Y	22.5
CIK 06	Windy Bay	0-H, 0-M	N	N	N	N	Y	N	Y	0
CIK 07	Rocky Bay	0-H, 2-M	N	N	Y	N	Y	N	Y	3
KAP 01	Seal Bay	2-H, 11-M	Y	N	Y	N	Y	N	Y	30
KAP 02	Pauls Lake	0-H, 4-M	N	N	Y	N	Y	N	Y	6
KAP 03	Izhut Bay	1-H, 3-M	Y	N	Y	N	Y	N	Y	10
KAP 04	Kazakof Bay	0-H, 5-M	Y	N	Y	N	Y	N	Y	10
KAP 05	Danger Creek	0-H, 1-M	N	N	N	N	Y	N	Y	1
KAP 06	Paramanof Creek	0-H, 1-M	N	N	N	N	Y	N	Y	1
KAP 07*	Alitak Bay	3-H, 4-M	Y	Y	Y	N	Y	Y	Y	30
KAP 08*	Shuyak Strait	3-H, 10-M	Y	Y	Y	N	Y	Y	Y	48

* = Opportunity Parcel

The National Environmental Policy Act (NEPA) requirement for the development of a comprehensive restoration plan based on an Environmental Impact Statement (EIS) meant that a vigorous public comment process needed to be carried out. Five alternative restoration plans were presented, ranging from a "no action" alternative to the chosen "Alternative 5" calling for comprehensive restoration that offered the EVOSTC the broadest scope of actions. The council allowed for spending funds to aid resources that had already recovered, as well as those that had not. Actions likely to produce some improvement over unaided recovery were allowed under this alternative. Habitat protection received the largest part of the alternative. Monitoring and research were also highly endorsed by the chosen alternative.

Support for "Habitat Protection and Acquisition" received the greatest share of public comment. Its place in the restoration program was discussed in almost every letter, brochure return, and public meeting. Habitat restoration received overwhelming support as a part of the plan. The major disagreement about habitat protection was emphasis: What should be emphasized and how much? In addition, hundreds of people recommended various areas for acquisition and protection—50 areas in all.

Charts showing the public comment responses as part of the environmental impact statement of the Exxon Valdez oil spill restoration plan appear below.

Average Allocation of the Remaining Settlement Fund

Restoration Category:	Origin of Response			
	Spill Area	Other Alaska	Outside Alaska	All[1] Responses
Habitat Protection and Acquisition	60%	42%	81%	66%
Monitoring and Research	9%	12%	9%	9%
General Restoration	16%	19%	8%	16%
Administration and Public Information	5%	5%	5%	5%
Endowment[2] (Including only those who *favored* endowment)	20%	40%	20%	20%

[1] The columns of the table do *not* total 100%. This is because the endowment allocations reflect the views of only those people who favored an endowment. In addition, 1,028 people provided an allocation to habitat protection and acquisition. Many of them did not specify how the rest of the fund should be allocated.

Table 5. Average Allocation of the Remaining Civil Settlement Fund to Administration and Public Information

	Origin of Response			
	Spill Area	Other Alaska	Outside Alaska	All[1] Responses
No. of Responses (%)	408 (63%)	159 (24%)	72 (11%)	651 (100%)
Average Allocation	5%	5%	5%	5%

[1] Total includes 12 responses from unknown origin.

Habitat Protection and Acquisition

Habitat protection and acquisition is one of the principal tools of restoration. It is important in ensuring continued recovery in the spill area.

Resource development, such as harvesting timber or building subdivisions, may alter habitat that supports injured resources or services. Protecting and acquiring land may minimize further injury to resources and services already injured by the spill, and allow recovery to continue with the least interference. For example, the recovery of harlequin ducks might be helped by protecting nesting habitat from future changes that may hamper recovery.

Habitat protection and acquisition may include purchase of private land or interests in land such as conservation easements, mineral rights, or timber rights. Different payment options are possible, including multi-year payment schedules to a landowner. Acquired lands would be managed to protect injured resources and services. In addition, cooperative agreements with private owners to provide increased habitat protection are possible.

Most public comments on the restoration alternatives favored using habitat protection and acquisition as a means of restoration. In addition, most of those who commented also asked that habitat protection and acquisition receive a majority of the remaining settlement fund.

If restoration funds are used to protect a parcel, it must contain habitat important to an injured resource or service. The following injured resources might benefit from the purchase of private land or property rights: pink and sockeye salmon, Dolly Varden and cutthroat trout, Pacific herring, bald eagle, black oystercatcher, common murre, harbor seal, harlequin duck, marbled murrelet, pigeon guillemot, river otter, sea otter, intertidal organisms, and archaeological sites.

Habitat protection and acquisition is a means of restoring not only injured resources, but also the services (human uses) dependent on those resources. Subsistence, recreation, and tourism, benefit from the protection of important fish and wildlife habitats, scenic areas, such as those viewed from important recreation or tourist routes, or important subsistence harvest areas. For example, protecting salmon spawning streams benefits not only the salmon, but also commercial, subsistence, and recreational fishermen.

Habitat protection on existing public land and water may include recommendations for changing agency management practices. The purpose, in appropriate situations, is to increase the level of protection for recovering resources and services above that provided by existing management practices. The Trustee Council may conduct studies within the spill area to determine if changes to public land and water management would help restore injured resources and services. If appropriate, changes will be recommended to state and federal management agencies. Recommendations for special designations, such as parks, critical

habitat areas, or recreation areas, may be made to the Alaska legislature or the U.S. Congress.

Habitat and Acquisition Protection Policies

In addition to the policies of Chapter 2, the following specific policies apply to Habitat Protection and Acquisition.

- *Ranking habitat.* Private land considered for purchase will be ranked according to the potential benefits that purchase and protection would provide to injured resources and services. Those parcels that greatly benefit the injured resources and services will be highly ranked.

- *Willing seller and buyer.* State and federal governments will purchase lands on the basis of a willing seller and a willing buyer.

- *Appraisal process and fair market value.* Land or interests in land shall be acquired in accordance with applicable federal and state laws. In approving the use of joint trustee funds for an acquisition, the Trustee Council will use a standardized appraisal process and specifically consider the restoration benefits to the injured natural resources, services, and the ecosystem relative to the appraised fair market value of the land or interests in land.

- *Ecosystem approach.* Habitat protection will follow an ecosystem approach by emphasizing acquisition of large parcels, such as watersheds, which support multiple injured species and ecologically linked groups of species. Protecting and acquiring small parcels may benefit larger surrounding areas, provide access to public land, or provide critical benefits to a single resource or service.

- *Public comments.* Public comments will be considered when determining habitat protection priorities. Many comments about specific parcels have already been received.

- *Management of acquired land.* Acquired land will be managed by the most appropriate state or federal agency based on the resources to be protected, management needs, and ownership of surrounding and nearby lands.

- *Normal agency management.* Except where specific restoration activities for acquired land exceed normal agency efforts, land management costs will be met from existing agency budgets.

- *Management to benefit injured resources and services.* Lands acquired with restoration funds will be managed in a manner benefitting injured resources and services.

Covenants that outline management objectives will be determined by the time of purchase.

- *Subsistence use.* Subsistence use should not be displaced through acquisition or protection of land or changing management practices.

Making Decisions About Habitat Protection and Acquisition

The Restoration Plan provides general guidance for Habitat Protection and Acquisition activities. More detailed guidance is given in the *Comprehensive Habitat Protection and Acquisition Process: Large Parcel Evaluation and Ranking* (November 1993). This document outlines criteria and procedures for evaluating and ranking large parcels of private lands for protection and acquisition. Further Trustee Council policy is provided in the *Trustee Council Resolution to Proceed with Habitat Protection Program* (January 31, 1993). That short resolution is contained in Appendix B.

The large parcel analysis addresses private property parcels larger than 1,000 acres that are within the spill area and whose owners have indicated an interest in having their lands evaluated for the protection and acquisition program. For each parcel of land, the Trustee Council will decide the type of protection or ownership rights needed for restoration, and how it will be managed. In addition, for each parcel the Council will decide whether and when to begin negotiations with the landowner. The type of protection and management will also be the subject of negotiation with the landowner.

At this writing, Trustee Council staff is analyzing small parcels in the spill area whose owners have indicated a wish to participate in the process. These and similar processes will continue to provide more detailed guidance and information for habitat protection and acquisition activities.

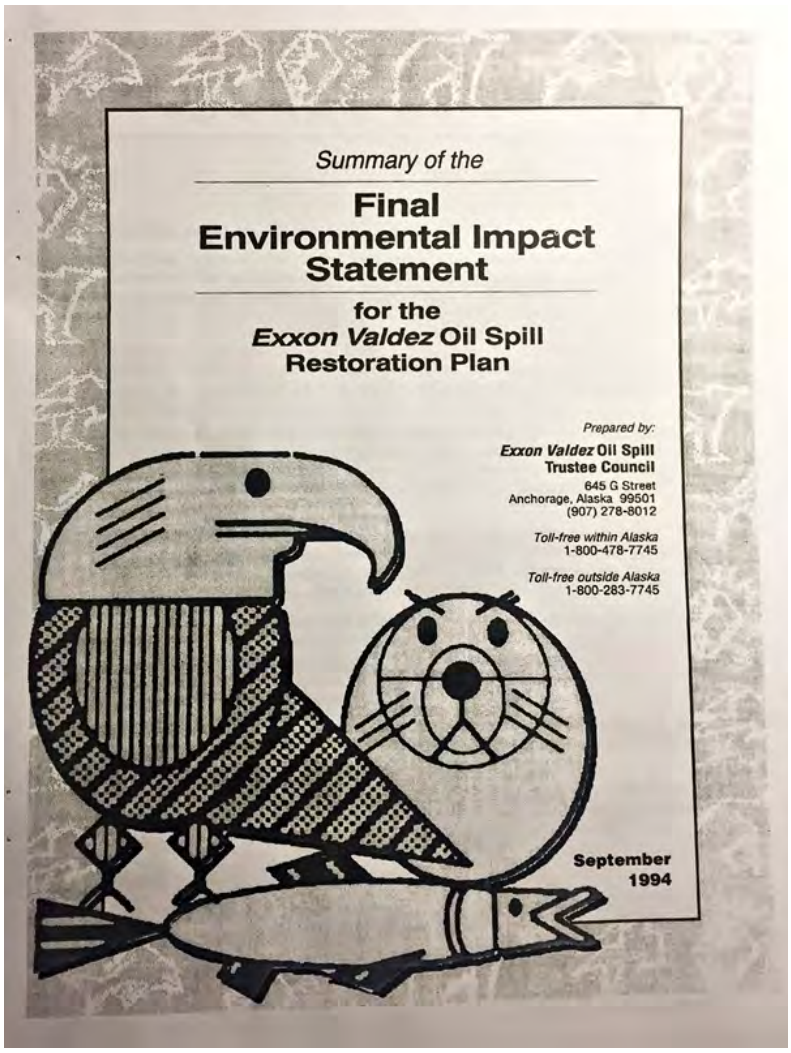
EVOS Large Parcel Habitat Program Outcome

Lands that went to state of Alaska ownership are *italicized* below; otherwise, the lands were added to major federal conservation units in the oil spill region.

	Acreage	Total Price
Prince William Sound		
Chenega	60,001	$34,000,000
Tatitlek	72,129	$34,719,000
Eyak	78,138	$48,576,704
Kenai Peninsula		
English Bay	32,470	$15,156,790
Kachemak Bay State Park	23,701	$29,500,000
Port Graham (pending)		
Kodiak Archipelago		
Afognak Joint Venture	41,376	$73,966,348
Akhiok Kaguyak	113,388	$46,000,000
Koniag	56,674	$26,500,000
Old Harbor	31,609	$14,500,000
Ouzinkie	36,785	$15,000,000
Seal Bay	41,549	$39,549,333
Shuyak Island	26,958	$42,000,000
Total	650,517	$412,243,410

By purchasing land throughout the spill region, the trustee council ensured that key habitats for injured species would not be further damaged by extensive development or logging, serious threats at the time of the spill. In cases where logged over lands were purchased, a permanent ban on logging these coastal areas was put in place. The trustee council felt that in an already spill-impacted environment, purchasing land could go a long way toward allowing the ecosystem to recover.

To date, the habitat protection agreements have been strongly supported by native shareholders. In most cases, shareholders were required to approve the agreements by a two-thirds vote or better. Shareholder approval ranged from 81 to 88%; however, every participating willing-seller native corporation kept substantial portions, usually more than half, of their ANCSA or ANILCA lands in private ownership.



References

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- *Mission Without a Map* by Joe Hunt
- *Kodiak Bears and the Exxon Valdez* by Tim Richardson/Dave Cline

Stakeholder Dynamics in Exxon Valdez Restoration

Tim Richardson
Wildlife Forever
Rockville, Maryland

The geographic setting of the Exxon Valdez oil spill had accidental but lasting influence on the success of the large-scale habitat protection agreements of Exxon Valdez restoration. The basis for the habitat restoration outcome was the unique cultural, historical, and political nature of the Alutiiq Sugpiak Eskimo population that was the largest private landowning group in the Kodiak Archipelago, the Kenai Peninsula, and Prince William Sound.

The Alutiiq Sugpiak were divided into three ANCSA regional corporations (all of Koniag, Inc., most of Chugach Alaska Corp., and some of the Cook Inlet Region Inc.) and nine village corporations located in the path of the oil spill. These corporations owned nearly 100% of the private land inside large federal conservation units prioritized for restoration as well as coastal areas that would either be acquired to expand or create new Alaska DNR or state park units.

Large-scale habitat restoration successes became possible when these native corporation executives, boards of directors, and shareholders designed an approach to restoration that met their goals while enabling the maximum amount of nonnative stakeholders to benefit from the largest ever investment of an environmental fine. This so-called 'triple bottom line' benefiting nature, natives and nonnatives became a lasting and unique feature of Exxon Valdez restoration.

How and why the Alutiiq Sugpiak linguistic group became the aboriginal settlers of the oil spill region is lost in the midst of the post-Pleistocene era in the western Gulf of Alaska and Prince William Sound. The Alutiiq Sugpiak arrived in the region around 7,500 years ago having crossed Beringia or moved by skin boats to Alaska from Asia subsisting on abundant marine mammal and other aquatic organisms that comprised their protein-rich diet. The foundational settlement of the spill-region native people was on the east side of the Kodiak Archipelago at Ocean Bay on Sitkalidak Island. From there, the diaspora spread to the rest of the Kodiak Archipelago, the Alaska Peninsula, lower Kenai Peninsula, and all of Prince William Sound.

The Alutiiq Sugpiak are linguistically related to the Yupik and Inuit peoples who populate Southwest Alaska and the northern Arctic coastline, respectively—with the latter language group extending all the way east to Greenland, Newfoundland, and Labrador.

In 1763, the Alutiiq Sugpiak defeated the first Russian attempt to colonize Kodiak in a battle on the southern tip of Kodiak Island near the present-day village of Akhiok. Twenty-one years later, Gregory Shelikof returned to Kodiak from the Russian American Company's base on Unalaska and this time was armed with a cannon, and shortly after his arrival, which was again opposed by the Sugpiak, Shelikof inflicted a defeat on a large concentration of natives assembled on Refuge Rock and carried out a massacre that led to the surrender of substantially all of Kodiak's indigenous people and was the basis of Russia's colonial claim on Alaska.

In subsequent decades of Russian Alaskan rule, the Kodiak natives made up a large majority of the workforce of the Russian American Company, traveling hundreds and eventually more than 1,000 miles to harvest sea otters. It was the Alutiiq Sugpiak, masters of the sea kayak, who helped Alexander Baranov extend the Russian fur trade empire from the Aleutians to Kodiak, Kenai, and Prince William Sound; down to Sitka, Alaska; and eventually to Fort Ross, California, just north of San Francisco.

As the sea otter population dwindled by the 1850s, the viability prospects for Russia's American colony appeared bleak. There were rarely ever more than 500 Russians in the new colony, and their coastal enterprise was coming under pressure from Britain's Hudson Bay Company already progressing down the Yukon River and from the inevitable arrival of more and more U.S. settlers, fortune seekers, and homesteaders.

In the eventual sale of Russian America to the United States in 1867, the terms of the Treaty of Cession ceded private property territorial claims to the "civilized tribes of Alaska" (the Alutiiq Sugpiak),

who were recognized as citizens under Czar Alexander II. And in the 1884 Organic Act, the rest of native Alaskans ("uncivilized tribes to the Czar") were granted ownership of their traditional hunting and fishing grounds similar to Lower 48 Indian tribes, even though the delineation of all the aboriginal title and claims to property would not become official until 104 years after the purchase of Alaska when the Alaska Native Claims Settlement Act passed Congress and was signed by President Nixon in 1971.

The 1969 discovery of the Prudhoe Bay North Slope oil field had prompted the settlement of the long-standing native land claims. As all the native regional and village corporations were completing their land selections during the Reagan Administration, multinational oil companies reached agreements with willing-seller native corporations whose lands were inholdings in highly significant federal conservation areas such as the Kodiak National Wildlife Refuge, Kenai Fjords National Monument, and the Chugach National Forest. The oil companies' agreements with Sugpiak native corporations that would buy back some of their newly obtained inholdings gave rise to the "megatrade" proposal under the Reagan Administration that would open the Arctic National Wildlife Refuge to energy development in exchange for cash equity positions for native corporations in the new oil and gas production, as well as an opportunity to sell most of their high-value habitat inholdings back into federal ownership on Kodiak Island, the Kenai Peninsula, and Prince William Sound.

However, the March 24, 1989 Exxon Valdez oil spill scuttled the opening of the Arctic refuge to drilling and the megatrade arrangements became null and void in the shocking aftermath of the spill. Nonetheless, the prior megatrade momentum did set the table for an inholding buy-back scenario shifting the source of the funds from Arctic drilling revenues to the $1 billion oil spill settlement once it was reached in October 1991.

Akhiok Kaguyak, Inc., on the southernmost end of Kodiak Island, and nearby Old Harbor Native Corporation, home to the largest original settlement of the Alutiiq Sugpiak, began an aggressive and successful media and public relations campaign to draw attention to the Kodiak brown bear and the opportunity to make the Kodiak refuge whole.

In addition, Akhiok Kaguyak and Old Harbor conducted sustained stakeholder outreach in order to blunt criticism that Exxon Valdez restoration had become a federal land grab, as some Alaska boosters were not shy about alleging. Habitat acquisitions were viewed by some as "lock ups" that were offensive and harmful to the state's economy. Supporters called it a common-sense popular investment to create regional "habitat banks" made up of conserved intact breeding, feeding, and rearing areas for injured species, in case there was another spill disaster in the region.

A public comment process occurred under the National Environmental Protection Act while Juneau and Washington considered their options. Various restoration methods were offered in five alternative approaches—most alternatives offered active restoration projects, research, monitoring, and habitat protection. Alaskans and folks in the Lower 48 aren't shy about their stake in the Great Land. Here are some excerpts reflecting some common themes:

- Habitat protection and acquisition received nearly twice as many comments as any other topic. It was discussed in almost every mailed-in EVOS brochure, every letter and public meeting. More than 90% of the people who commented said that habitat protection and acquisition should be part of the plan.
- As to what type of habitat should be emphasized for protection and acquisition, views were mixed. About one-third of people favored emphasizing habitat important to injured resources, and one-third favored placing an equal emphasis on habitat for injured resources and for human use. Protecting habitat for subsistence ranked high from respondents in the oil spill region.

Specific comments favoring habitat protection made these types of observations:

- Active restoration is ineffective; recovery will occur without our intervention.
- It is better to just acquire habitat and basically say, "God knows best." We know a little bit, but we don't know enough.
- There are some excellent ideas out there, but I believe habitat acquisition is the best way to spend money.
- Recovery of species will occur naturally, even without intervention or spending; you should allocate most funds for critical habitat acquisition.
- We can't fix a broken ecosystem. Therefore, I am recommending that at least 80% of the remaining funds be used for habitat protection.
- Acquisition would at least be a permanent accomplishment for the trust funds as opposed to pumping the respective agencies with funds for a plethora of studies of dubious value.

Critics of habitat protection and land acquisition also expressed strong views but were in the minority inside and outside Alaska; between 5% and 10% opposed the use of habitat protection, either in all cases or in specific places.

- Too much government land in Alaska. Not enough privately owned.
- I can't figure out why we are going to buy land. What is the government doing buying more land when they own 97% (sic) of the state of Alaska?
- How many trees were damaged by the spill?
- Owning land will not help prevent other spills or help injured resources by itself.
- The logging industry has truly blessed our family and benefited our community. Please don't buy this timber—we will be losing our jobs.
- It doesn't make sense to me to buy habitat if you're going to cut back the Department of Fish & Game, so you can't monitor it… If they want habitat and stuff like that…let the tree huggers buy it.

Organizations inside and outside Alaska commented during NEPA. Inside Alaska examples:

- 8 Alaska native corporations commented
- Alaska Center on the Environment
- Alaska Sportfishing Association
- Alaska Wilderness Recreations & Tourism Association
- Cordova Aquatic Marketing Association
- Cruise Lines of Alaska
- Kachemak Bay Conservation Society
- Klukwan Forest Products, Inc.
- Knik Canoers and Kayakers
- Kodiak Audubon Society
- Prince William Sound Aquaculture Corp.
- Valdez Convention & Visitors Association

Lower 48 examples:

- American Rivers
- Boone & Crockett Club
- Federation of Fly Fishers
- Great Bear Foundation
- International Association for Bear Research
- Izaak Walton League of America
- National Audubon Society
- National Rifle Association
- National Wildlife Refuge Association
- Pacific Seabird Group
- Sierra Club
- Wilderness Society

The native village leaders on southern Kodiak recognized that, although they were the furthest away from Bligh Reef where the Exxon Valdez ran aground, the effectiveness of their grant applications for oil spill money would depend on whether they could demonstrate a "link to injury" and that the protection of the habitat on their lands offered a "potential for benefit." Although Kodiak was the least directly oiled sub-region of the spill zone compared to Prince William Sound and the Kenai Peninsula, strange things were happening in their waters, including the highest mortality of bald eagles in the spill region. Nearly all the oil and floating carcasses that made it out of Prince William Sound showed up in Kodiak waters and remained there all of that first oil-spill summer. An enormous mortality rate of perhaps 250,000 common murres occurred outside Prince William Sound in the Barren Islands, which is the northernmost area of the Kodiak Archipelago, and those dead birds seemed to be on every beach and in the tide rips along with tarballs and mousse.

The stakeholders recruited to the native buy-back campaign on Kodiak included the commercial fishing fleets, sport hunters including prominent bear guides, angling organizations and individuals, floatplane operators, and the Kodiak borough assembly and chamber of commerce. In short order, a phalanx of support for solving the "bear-native dilemma" on Kodiak Island through partial buy-back of inholdings proved to be the dominant voice for comprehensive restoration throughout the Clinton Administration, both when Governor Hickel was in office and subsequently when Tony Knowles won the state's highest office in 1994.

During the George W. Bush Administration and the governorships of Frank Murkowski, Sarah Palin and Sean Parnall additional habitat protection efforts won state and federal trustee council support; however, the protected lands typically went to Alaska Department of Natural Resource (ADNR) ownership. The investment by native corporations of substantial habitat sale or easement proceeds into

permanent shareholder trust accounts was a way to keep the oil spill funds working in Alaska, which had been a goal for Governor Hickel's vision of the proper use of the $1 billion fine.

A compromise reached between Secretary Babbitt and Governor Hickel led to the creation and building of the Seward Sealife Center that had obvious tourist destination appeal and not just an Alaska research version of the Woods Hole Oceanographic Institution. Critics saw the Sealife Center as a "whale jail," but Secretary Babbitt viewed the quid pro quo relationship with the state's trustees as vital for the success of major habitat purchases especially on the Department of Interior's Kodiak National Wildlife Refuge.

In 2008, a coastal rainforest habitat protection agreement with ADNR ownership also led to the first forest carbon project in Alaska, sequestering 1.2 million tons of carbon on 8,000 acres of coastal rainforest on the voluntary VCS carbon market. In recent years, more than 500,000 acres of native corporation forested lands, both in the oil spill region and beyond, have been transacted on the California Air Resources Board compliance market.

References

Personal experience by the author in assisting Kodiak native corporations in media and stakeholder outreach from 1990 to 1996; then working on behalf of the Kodiak Brown Bear Trust and the American Land Conservancy on subsequent oil spill comprehensive restoration plan projects.

Extensive personal files of private and public documents and news articles about the spill were utilized. In addition, extensive documentation about all aspects of the Exxon Valdez Oil Spill are available on the Exxon Valdez Oil Spill Trustee Council (EVOSTC) website.

Publications and Documents

Publications and documents that relate to or are produced by the EVOSTC (for project and program reporting and budget forms, see the "Policies & Procedures" page on EVOSTC website).

- Historical Documents
- Status of Injured Resources/Services
- Annual Reports (annual status updates)
- Annual Project Work Plans (annual list of new and continuing restoration projects)
- 1994 Restoration Plan (provides long-term guidance for restoring injured resources and services)
- Annual/Final Project Reports (annual and final reports from restoration projects)
- Proposal Invitations
- Economic Impact Analyses (on fishing, tourism, fauna, and passive uses)
- General Operating Procedures (reporting, data, general procedures)
- Financial Publications (yearly audited financial statements and project costs)
- Community Information (community involvement, regional summaries)
- Bibliographies (general and topical)
- GAO Reports (on EVOS settlement funds)
- Trustee Council Resolutions
- Court Notices
- Meeting Documents (agendas, transcripts, notes, audio, etc.)

Interviews about the settlement negotiations by Tim Richardson with

- Former U.S. Fish & Wildlife Service Assistant Regional Director Glenn Elison

Books:

- *Mission Without a Map* by Joe Hunt
- *Kodiak Bears and the Exxon Valdez* by Tim Richardson/Dave Cline

Panel Summary—Parallels and Differences in Exxon Valdez and Deepwater Horizon Restoration

Tim Richardson
Wildlife Forever
Rockville, Maryland

11 Takeaways from this North American Special Session

1. If an accident such as the Exxon Valdez occurs during your natural resource or government affairs career, be prepared for human tragedy and wildlife losses on a scale you can scarcely imagine. "Business as usual" attitudes won't work in matters that require personal engagement. Your normal job duties will be amplified by aroused concerns of the general public, and in many cases, you may find yourself interacting with federal agencies, if you work for a state or local government, or state agencies, if you work for the federal government or local entities.
2. Negotiators pursuing financial penalties for a major oil spill or incident are urged to act quickly for a settlement while the general public is still aroused and engaged. Timelines matter. The Exxon Valdez settlement was reached in 30 months. The Deepwater Horizon settlement was reached in 27 months with an early payment of $1 billion made under the Natural Resources Damages Act 12 months after the spill that was helpful for the state and federal agencies as well as the public's state of mind.
3. Strongly consider whether the Exxon Valdez and Deepwater Horizon settlement amounts are fair for your circumstances. There is rough parity between the $1 billion Exxon settlement and the $16 billion Deepwater Horizon settlement measured by the quantity of oil spilled in each accident and when the penalty funds are adjusted for inflation (which was from 1989 to 2010 in the Exxon Valdez to Deepwater Horizon cases). Gauge whether Exxon Valdez and Deepwater Horizon fine parity provides a match your circumstance? If yes, urge that
4. The Alaska spill is considered deadlier for wildlife because the cold water led otters and birds to die of hypothermia although the verdict is still out in the Gulf of Mexico.
5. Deepwater Horizon was deadlier for people—11 workers perished.
6. The Alaska spill dollars were more environmentally focused because of the laws in force, including the Federal Water Pollution Control Act and the Natural Resources Damages Act; Deepwater Horizon has more economic sustainability blended in through provisions in the RESTORE Act. Try to find the right win-win balance to earn stakeholder support that will help renew faith in government actions that can carry over to the restoration outcomes you are pursuing.
7. Executive and judicial branches of government are key in giant disaster mitigation. Governors, presidents, and attorneys general will likely matter more than Congress and state legislatures.
8. If your goal is to accomplish projects in a multiagency teamwork setting, a focus on progress is paramount.Letting others demonize the perpetrators of the disaster is recommended while you use your time and energy to focus on finding compromises that work for natural resource recovery as well as the goals of most stakeholders.
9. Media can be a great tool, as it was in Alaska, but there are a lot of good projects being done in the Gulf of Mexico now that are pretty quiet and that may be best in some cases. Ultimately, positive media at the completion of phases of projects should be pursued so that the public is aware of your (their government's) success. This can help restore a healthy sense of civic justice after a major environmental pollution accident.
10. The wildlife community always supports science and usually prefers legal frameworks while looking down on "political meddling," but recognize that in the drama of a big event, you may be able to use politics to improve law. Precedents, boundaries, and limits can be fruitfully tested and

even amended or modified for the better while you are engaged in dynamic large-scale circumstances like the Exxon Valdez or Deepwater Horizon spills.

11. Lastly, look for how the projects you undertake can help conservation evolve—the best example may be the Afognak forest carbon result that led to far more forest carbon projects elsewhere in Alaska conserving hundreds of thousands of acres for forest habitat. In the case of Deepwater Horizon restoration, many suspect that water quality projects are going to gain greater interest within a larger water quality focus such as solving Gulf Hypoxia.

Registered Attendance

Alabama

Jud Easterwood, Chuck Sykes

Alaska

Kristy Craig, Bruce Dale, Christopher Estes, Maria Gladziszewski, Ronald Gunderson, Raymon Hedges, Joel Helm, Cynthia Jacobson, Jess Johnson, Teresa Jordan, Gary Larsen, Elizabeth Neipert, Wayne Owen, Garrett Savory, Cassie Schoofs, Gregory Siekaniec, Mark Sledge, Dan Thompson

Arizona

Kerry Baldwin, Jeff Bousson, Chris Cantrell, Loren Chase, Ron Christofferson, Doug Cummings, Jim deVos, James Driscoll, Albert Eiden, Randy English, Janet Johnson, Scott Lavin, James Odenkirk, Chris Parish, Esther Rubin, San Stiver, Hannah Telle, Kellie Tharp, William Van Pelt, Larry Voyles, Kevin Wakefield

Arkansas

Brad Carner, Allison Fowler, Coleman Little, Jason Olive, Robert Pike, Jennifer Sheehan, Justin Stroman

British Columbia

Ian Barnett, Barry Smith

California

Nina Anderson, Sandra Baldwin, Brandon Barr, Michelle Bates, Bill Berry, Wendy Bogdan, Brian Boroski, Kirsten Christopherson, Diana Craig, Penn Craig, Jan Dizard, John Exline, Nancy Ferguson, Conception Flores, Claudia Gambaro, Geoffrey Geupel, Jason Gibbons, Suzanne Hall, Mark Hennelly, Chris Herbst, Karen Howe, Kevin Hunting, Andrew Irvin, Dawn Lawson, Colin Lee, Stafford Lehr, Benjamin Leslie, Ryan Lockwood, Rob Lovich, Luanne Lum, Lisa Lyren, Kyle McCann, Jeff McCreary, Michael Moore, Kimberly O'Connor, Glenn Olson, Jean Pan, Robert Powell, Wendy Prestera, Fritz Reid, Thomas Sabol, Bob Schallmann, Ilima Segoviano, Shannon Shea, Roland Sosa, Andrea Souther, Paul Souza, Sherri Sullivan, Lisa Talcott, Dan Taylor, Lisa VanAmburg, Valerie Vartanian, Joshua Wabindato, Stephen Watts, Deanne Weber, Tiffany Whitsitt-Odell, Todd Wills, Lauren Wilson, Christy Wolf

Colorado

Jennie Anderson, William Austin, Christine Bern, Zach Bodhane, Bob Broscheid, Jacque Buchanan, Elizabeth Caldwell, Kevin Canestorp, Dustin Casady, Larry Clark, Mindy Clarke, Coralie Cobb, Thomas DeLiberto, Reid DeWalt, Deborah Donner, Patricia Dorsey, James Dubovsky, Matthew Dunfee, Matthew D. Eckert, Brad Heidel, Chris Herron, Matt Hogan, Clark Jones, David Jones, Steve Lohr, Jim McDermott, Craig R. McLaughlin, Ken Morgan, Lynne Neuman, Dennis Ojima, Heath Packard, Roger Peyton, Becky Ralston Hawkins, Brian Reichert, Lisa Reynolds, Rachel Ridenour, Terry Riley, Sylvette Rivera-Eliza, Dawn Rodriguez, Brian Rutledge, Eve Schauer, Natalie Sexton, Pamela Sponholtz, Casey

Stemler, Gene Stout, Jason Suckow, Gary Thorson, Stephen Torbit, Vicki Vargas-Madrid, Tammy VerCauteren, Noreen Walsh, Kenneth Wilson, Mike Wrigley

Connecticut

Min Huang, William Hyatt, Rick Jacobson

Delaware

Rob Hossler, John Lord

District of Columbia

Patricia Allen, Bryan Arroyo, Cyrus Baird, Michael Begier, Michelle Brown, Douglas Burdin, Stas Burgiel, Greg Butcher, Shawn Cantrell, Stephanie Carman, William Carromero, Dan Cecchini, Jennifer Cipolletti, Tammy Conkle, Devin DeMario, Naomi Edelson, Margaret Everson, Jerome Ford, Whit Fosburgh, Carol Frampton, John Frampton, Tom Franklin, Gary Frazer, David Gagner, Nancy Gloman, Estelle Green, Deborah Hahn, Hal Hallett, Robert Harper, Joe Hautzenroder, Betsy Hildebrandt, David Hu, Heather Huddle, Mark Humpert, Rachel Jacobson, Elizabeth Jenny, Lisa Johnston, Gary Kania, Tom Kelsch, Lane Kisonak, Patrice Klein, Greg Knadle, Mike Leahy, Sara Leonard, Matthew Lewis, Brian Logan, Carl Lucero, Colleen Madrid, Peter Mali, Cynthia Martinez, Jonathan Mawdsley, Tom Mayes, Virgil Moore, Chris Moyer, Laura Muhs, Priya Nanjappa, Jennifer Oelke Farley, Jody Olson, Davia Palmeri, Diane Pancoska, Samantha Pedder, Christy Plumer, Frank Quamen, Paul Rauch, Ron Regan, Lorene Reid, Angela Rivas Nelson, Ryan Roberts, John Rothlisberger, Allen Rowley, Mark Salvo, James Sample, Sean Saville, Judith Scarl, Jen Mock Schaeffer, Greg Schildwachter, Andrew Schmidt, Eric Schwaab, Anna Seidman, Dan Shively, Grant Sizemore, Stacy Small-Lorenz, Dean Smith, Bruce Stein, Monica Tomosy, Kim Tripp, Nicole Vasilaros, Geoff Walsh, Bryant White, Ariel Wiegard, William Woody, Silvana Yaroschuk, Libby Yranski, Dorothy Zolandz

Florida

Harry Dutton, Diane Eggeman, Ann Forstchen, Angela Glass, Jennifer Goff, Troy Hershberger, Julio Higgins, Chris Johansen, Catherine Justice, Melanie Kaeser, George Kenny, Susan Lawson, Jerrie Lindsey, Nick Lisac, Miguel Mozdzen, Catherine Phillips, Erin Tindl Rainey, Scott Sanders, Dan Savercool, Robby Smith, Robert Southwick, Bill Tate, Donald Teig, Melissa Tucker, Tamara Whittington, Nick Wiley, Lisa Yarbrough

Georgia

Laurel Barnhill, Tim Beaty, Frank Beum, John Bowers, Steven Camp, Larry Carlile, Gino J. D'Angelo, Cindy Dohner, John Fischer, Rusty Garrison, Tina Johannsen, Michael Juhan, Dennis Krusac, Thom Litts, Brian Murphy, Jonathan Neufeldt, Mike Oetker, Jim Ozier, Michael Piccirilli, David Scott, Roderick Thornton, Robert Trujillo, Jacob Tuttle, Emily Jo Williams, Jenifer Wisniewski

Guam

Shermaine Garcia, MJ Mazurek, Nicole Olmsted, Scott Vogt

Hawaii

Cory Campora, Bill Grannis, J. Mark Ingoglia, Kapua Kawelo, Rebecca Smith, April Teekell

Idaho

Charlie Baun, Chip Corsi, Jim Fredericks, Jeff Gould, Jeff Knetter, Christine Moffitt, Sal Palazzolo, Terry Rich, Rex Sallabanks, Dan Schill, Gregg Servheen, Michelle Shaughnessy, Leona Svancara, Zoe Tinkle, Deb VonDeBur, Lisette Waits, Kevin Warner, Zach Widner

Illinois

Mark Alessi, Randy Berry, Abigail Derby Lewis, Wayne Rosenthal

Indiana

Dave Case, Mitch Marcus, Mark Reiter, John Tomke

Iowa

Todd Bishop, Kim Bogenschutz, Todd Bogenschutz, Dale Garner, Joseph Haffner, Karen Kinkead, Joe Larscheid, Tamara McIntosh, Megan Wisecup

Kansas

Neil Bass, Chris Berens, Jake George, Mike Houts, Laura Mendenhall, Kelley Myers, Jim Pitman, Daren Riedle, Ross Robins, Richard Schultheis, Keith Sexson, Matt Smith, Shawn Stratton, Christopher Tymeson, Steve Wahle, Roger Wolfe

Kentucky

Andrew Ault, Kristie Blevins, Greg Johnson, David Jones, John Morgan, Tim Pickerrell, Karen Waldrop, James Watkins, Ashley Wint

Louisiana

Buddy Baker, Kyle Balkum, Ralph Bond, David Breithaupt, Nicole Caldwell, Kevin Chapman, Mark Gates, Raynie Harlan, Marcy Harris, John Jackson, Scott Knaus

Maine

James Connolly, Robin Dyer, Derek Hengstenberg

Manitoba

Michael Anderson, Rick Baydack, Karla Guyn, Pat Kehoe, Nigel Simms

Maryland

Lowell Adams, Melanie Anderson, Doug Austen, Lowell E. Baier, Seth Berry, Janet Bucknall, Douglas Burkett, Kathy Fleming, Melanie Frisch, Bill Harvey, Jef Hodges, John Houchins, Bridget Kelly Butcher, Jim Lyons, Donald MacLauchlan, Joe Margraff, Rachel McAnallen, Helene Merkel, Dionne Orr, Paul Padding, Corey Plakos, Karrie Reckley, Christopher E. Segal, Katharine Seguin, Steve Sekscienski, Jackie Smith, James Swift, Gary Taylor, Travis Wray, Christopher Wright

Massachusetts

Jack Buckley, Jeremy Coleman, Annie Curtis, Tom Decker, Ken Elowe, Matt Penella, Deborah Rocque, Mike Ruccio, Colleen Sculley, Wendi Weber

Michigan

David Brakhage, Dale Burkett, Jordan Burroughs, Sonja Christensen, Craig Czarnecki, Doug Gorby, Debbie Horak, Patrick Lederle, David Luukkonen, Russ Mason, Chelsea Maupin, William Moritz, Mike Parker, Kristin Phillips, Michael Ravesi, Michele Richards, Al Stewart, Steven Tkaczyk, Gildo Tori, Gary Whelan

Minnesota

Ed Boggess, Pat Conzemius, Thomas Cooper, Steve Cordts, John Erb, Neal Feeken, Douglas Grann, Alexis Grinde, James Hodgson, Matt Holland, James Kelley, Jim Leach, Susan Luetters, Tom Melius, Lori Nordstrom, Paul Telander, Charlie Wooley

Mississippi

Eric Britzke, Jimmy Bullock, James Cummins, Cynthia Edwards, Richard Fischer, Jerry Holden, Jake Jung, Richard Lance, Frank Lockhart, Chester Martin, Jennifer Seiter

Missouri

Jennifer Battson Warren, Doyle Brown, Jane Fitzgerald, Mike Hubbard, Kenton Lohraff, Roger Luebbert, Chris McLeland, Jon McRoberts, Sara Pauley, Lisa Potter, Joanie Straub, Bill White

Montana

Steve Belinda, Chad Bishop, Jodi Bush, Linda Cardenas, Daniel Casey, Colter Chitwood, Christine Dawe, Ali Duvall, Jeff Hagener, Lauri Hanauska-Brown, Jon Haufler, Kevin Hurley, Mitch King, Sam Lawry, Joshua Millspaugh, Jeff Nelson, Peter Nelson, Kathryn Norris, Melissa Reynolds-Hogland, Rory Ruffner, Nathan Schwab, Paul Sihler, Chris Smith, Dave Smith, Land Tawney, Eric Tomasik, Dale Tribby, John Vore, Joel Webster, Kevin Whalen, Catherine Wightman, Chloe Wright

Nebraska

Dan Bigbee, Karie Decker, Jim Douglas, Mike George, Alicia Hardin, Tim McCoy, Kristal Stoner, Larry Vrtiska, Eric Zach

Nevada

Tom Allen, Todd Esque, Ken Mayer, Jennifer Newmark, Nadine Searles, Jon Sjöberg, John Tull, Brian Wakeling, Tony Wasley

New Hampshire

Brian Dresser, Arin Mills, Glenn Normandeau, Ian Trefry, Judy Stokes Weber, Steve Weber

New Jersey

Claire Beck, David Chanda, Larry Herrighty, John Joyce, Paulette Nelson, Deborah Spring, Carole Stanko, Mark Stevenson, Jonathan Van De Venter

New Mexico

Lance Cherry, Dale Earl, Junior Kerns, Stewart Liley, Karl Malcolm, Jim Ramakka, Benjamin Tuggle

New York

Gregory Austin, Gordon Batcheller, Merritt Compton, Daniel Decker, Raymond Rainbolt, Terra Rentz, Kenneth Rosenberg, Christian Soucier, Leonard J. Vallender, Jason Wagner

Newfoundland and Labrador

Shane Mahoney

North Carolina

M. Kyle Briggs, Robert Brown, David Cobb, Bill Creighton, Rod Fleming, Emily Gaydos, Walker Golder, Mark Jones, Robert Montgomery, Gordon Myers, Maria Palamar, Alan Schultz, Sara Schweitzer, David Whitehouse

North Dakota

Steve Adair, Casey Anderson, Jesse Beckers, John Devney, Marshall Johnson, Kevin Kading, Patrick Lantis, Eric Lindstrom, Greg Link, Zachary Miller, Randy Renner, Terry Steinwand, Michael Szymanski, Keith Trego, Rick Warhurst, Jeb Williams

Nova Scotia

Michael O'Brien

Ohio

Jeff Burris, Carolyn Caldwell, Lucas Houghton, Jim Inglis, Greg Lipps, Ray Petering, Nick Pinizzotto, Rob Sexton

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Chris Deurmyer, Gene Gilliland, John Krupovage, Donna Nolan, Josh Richardson, J.D. Strong, Wayne Walker, Glen Wampler

Oregon

Michael Adams, John D. Alexander, Janine Belleque, Ken Berg, Kevin Blakely, Barb Bresson, Joshua Chapman, Vicki Finn, Colin Gillin, Erin Hale, Rick Hargrave, Cris Hein, Kathy Hollar, Bruce Hollen, Jeff Mach, Curt Melcher, Tom Price, Theresa Rabot, Brandon Reishus, Stan Senner, Robyn Thorson, Katy Weil

Pennsylvania

John Arway, Cal DuBrock, John Eichinger, Wayne Laroche, David McNaughton, Mark Swartz, John Taucher, Steve Williams

Puerto Rico

Marcelle Fabregas

Quebec

Jason Okpik-Cutten, Ryan Zimmerling

Rhode Island

Shannon Kam

Saskatchewan

Dave Kostersky

South Carolina

Layne Anderson, Breck Carmichael, Emily Cope, Bryan Hall, Mandy Harling, John Holloway, Tom Hughes, Craig LeSchack, Scott Meister, Lynn Quattro, Aaron Souto, Chris Stone

South Dakota

Jim Faulstich, Kelly Hepler, Ann M. Juette, Tom Kirschenmann, Tony Leif, Rocco Murano, Scott Simpson, Scott Taylor

Tennessee

Joe Benedict, Mike Butler, Ed Carter, Brian Dowler, Mark Gudlin, H. Dale Hall, Dale Humburg, Lisa Irby, Don McKenzie, Dan Thiel, Scott Vance, Bobby Wilson

Texas

Allison Arnold, Perry Barboza, Joe Betar, Linda Brown, Kirby Brown, Tim Buchanan, Lucas Cooksey, Timothy Cooper, Kate Crosthwaite, Jackelyn Ferrer-Perez, Ross Gilfillan, Richard Heilbrun, Steve Jester, Paul Jurena, Nick Kolbe, Chuck Kowaleski, Kevin Kraai, Ken Kurzawski, Sean Kyle, Tiffany Lane, Mitch Lockwood, Matthew Mattox, Ross Melinchuk, Dave Morrison, Leslie Pena, Kevin Porteck, Stephanie Sarver, Wayne Strebe, Mitch Strobl, Richard Trevino, Julie Wicker

Utah

Bill Bates, Mike Canning, Thomas Edwards, Mike Fowlks, Ashley Green, Jacob Hall, Robbie Knight, Russ Lawrence, Kris Lee, Terry Messmer, Greg Sheehan, John Shivik

Vermont

Stephen Brown, Scot Williamson

Virginia

Gray Anderson, Taylor Austin, Lianne Ball, Jessica Bassi, Angelia Binder, Paul Block, Brian Bohnsack, Brad Bortner, Dana Bradshaw, Laura Busch, Tom Busiahn, Bob Byrne, Dawn Childs, Edwin Christopher, Bob Curry, Steve Czapka, Alison Dalsimer, Jeffrey DeBerry, Chris Eberly, Mark Edwards, Verl Emrick, Gregory Fleming, Robert (Bob) Ford, Mark Ford, Mary Gerloff, David Gordon, Lissa Grimes, Steve Hanser, Leslie Hartsell, Elsa Haubold, Julie Henning, Steven Hilburger, David Hoskins, Stephanie Hussey, David James, Michael Jean, Mike Johnson, Becky Keller, Mona Khalil, Cynthia Kolar, Jarrad Kosa, Mike Leonard, Laura MacLean, Brandon Martin, Daniel McGarvey, Lawrence McGrogan, David Miko, Gregory Miller, Seth Mott, Sarah Mott, Moshe Muller, Thomas Olexa, Collin O'Mara, John Organ, Ryan Orndorff, Chris Petersen, Kurt Preston, Jacqueline Rice, Ken Richkus, Jay Rubinoff, Jeff Rupert, Dolores Savignano, Megan Scanlin, Jason See, Preston Smith, Melanie Steinkamp, Josh Taylor, Melina Tye, William Van Houten, Kevin Walter, Brad Watkin, Robert Wells, David Whitehurst, Mary Jane Williamson, Joshua Winchell, Thomas Wray, Michael Wright

Washington

Justin Allegro, Hannah Anderson, Mary Anderson, Mike Atamian, Dana Base, Penny Becker, Candace Bennett, Rachel Blomker, Michael Brown, Dennis Buckingham, Craig Burley, James Castle, Karen Cathey, Jim Chu, Charlie Decker, Karin Divins, Sandy Dotts, Sean Dougherty, Scott Downes, Bob Everitt, Dan Fernandez, Todd Foster, Eric Gardner, Patty Glick, Layna Goodman, Mark Grandstaff, Sally Hansen, Steve Helfert, Steve Holmer, Steven Kallick, Dave Kloempken, Cindi Kunz, Jason Kunz, Mike Kuttel Jr., Alison Kychek, Jeff Lawlor, Carrie Lowe, Madonna Luers, Terry Mansfield, Mike McClellan, Jim McDaniels, Kurt Merg, Bob Munson, Woody Myers, Jared Oyster, Michael Passmore, Daniel Paulus, Eric Pentico, Steve Pozzanghera, Annemarie Prince, Sharon Rainsberry, Sandy Rancourt, Wayne Regelin, Mike Ritter, Kevin Robinette, Mike Rule, Greg Sallis, Todd Sanders, Michael Schroeder, Scott Scroggie, Stephanie Sleeman, Michael Smith, Tim Smith, Rick Spaulding, Julia Stockton, Katherine Strickler, Bruce Thompson, Jim Unsworth, Rowena Valencia-Gica, Matt Vander Haegen, Peter Vernie, Mark Wachtel, Linda Wagoner, Jason Wettstein, Neil Wise, Al Wolslegel, Danielle Zitomer

West Virginia

Mary Hughes, Paul Johansen, Christopher O'Bara, Jay Slack, Ryan Snyder

Wisconsin

David Beckmann, Dan Dessecker, Chandra Harvey, Justine Hasz, Rachel Konkle, Steve Kuennen, Eric Lobner, Duane Meighan, Linda Parker, Jason Riddle, Mike Spors, Kurt Thiede, Christine Thomas, Ollie Torgerson, Keith Warnke, LeAnn White, Timothy Wilder, Mark Witecha

Wyoming

Michael Brennan, Doug Brimeyer, Tom Christiansen, John Kennedy, Larry Kruckenberg, Renny MacKay, Tom Ryder, Scott Smith, Scott Talbott

Other

Peggy Crawford, Yvonne Decker, Camille Dessureault, Charles Dixon, Sue Downes, Cindy DuBrock, Carol Faulstich, Inga Gebhard, Antenor Nestor Guzman, J. Ingoglia, David Kelley, Chiaki Kimura, Julie Kunen, Dana Lujan, Sherry MacLauchlan, Kristin Mansfield, Doug Martin, Hisako Mawatari, Katie McKalip, Becky Moore, Vicki Munson, Christiana-Jo Quinata, Mary Lou Regelin, Tim Richardson, Manfred Rieck, Amy Roberts, William Sadlon, Lorri Schwartz, Casey Snider, Mitch Taylor, Teresa Taylor, Donna Voyles, Gates Watson, Beth Williams