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**Transactions
of the Seventy-Ninth
North American Wildlife
and Natural Resources Conference**

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and Natural Resources Conference**

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Plenary Session.

79th North American Wildlife and Natural Resources Conference

Welcome and Opening Remarks

Steve Williams

Wildlife Management Institute

Gardners, Pennsylvania

Welcome to the 79th North American Wildlife and Natural Resources Conference. WMI thanks you and all the conference cosponsors, exhibitors, state agency contributors, and special session organizers who are critical to helping make this conference successful.

It is great to see the increased attendance this year. Our federal partners are still suffering from travel restrictions, but this is a great turnout and I am glad to see more federal staff could attend. I think we all realize how important partnerships between federal and state agencies are for the work of conservation. Last year at this conference and the fall AFWA meeting, I heard numerous comments bemoaning the fact that the reduced federal presence diminished the work that could be accomplished by committees and work groups. I know from my personal experience, and from my colleagues at the federal and state levels, that this conservation family is strongest and most effective when there is communication, trust, and cooperation. It is worth mentioning each time we meet that the challenges facing conservation today require partnerships among federal, state, and conservation organizations. No one entity is large enough, skilled enough, or funded enough to tackle energy development impacts, climate change impacts, or private land conversion impacts that are occurring almost nationwide. I hope that during this meeting each of you take the opportunity to become engaged and share your knowledge, skills, and abilities with others to advance conservation issues.

We have four special sessions that will follow this plenary session. The special sessions are intended to address current conservation issues and to challenge conventional thinking. Again, I want to thank the session organizers and the speakers for sharing their expertise with us. This year, the sessions will address: human dimensions as a new addition to the North American Waterfowl Management Plan, ungulate migration pathways, the relevancy of conservation in the 21st century, and the Land and Water Conservation Fund. I urge you to take advantage of one or more of these sessions and participate in the discussions.

Each year when I prepare my remarks for this conference and its proceedings, I try to envision my remarks as a small blip on the screen of conservation history. I try to chronicle the achievements of the past year and identify emerging trends. This year, again, I really, really struggled to identify achievements. But there were some. The recently passed Farm Bill recoupled crop insurance with conservation compliance, provided a geographically limited but significant Sodbuster provision, and retained the Wildlife Habitat Incentives Program. I know I speak for all of us in thanking the individuals who worked tirelessly on Capitol Hill for years to achieve the best Farm Bill possible. Each provision is important in its own right but will they collectively offset the losses to energy development on public and private land, grassland conversion and field tiling, and the reduction in Conservation Reserve Program acreage? We will see.

In a strong demonstration of cooperation, the Western Association of Fish & Wildlife Agencies developed a range-wide conservation plan for lesser prairie chickens that was endorsed by the U.S. Fish & Wildlife Service. Recently, five oil and gas companies have enrolled more than 1.5 million acres in the plan. The Sage Grouse Initiative, combining federal and state agencies, conservation districts, conservation organizations, private landowners and corporations, and universities, is a monumental effort to improve sage grouse conservation in order to prevent the species from being listed. These two initiatives are models for the future and underscore the necessity of similar landscape-scale efforts for other species well in advance of listing considerations. The lesson to be learned is that proactive

initiatives provide a carrot for landowners and companies that fear the regulatory stick of the Endangered Species Act. These efforts have shown that habitat improvement and avoiding, minimizing, and mitigating impacts are successful and sustainable business decisions. The Endangered Species Act contemplated these approaches in its findings, purposes, and policies where it is stated (in part): “The purposes of this Act are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved...” Forty years after its enactment and 100 years after the passing of the last passenger pigeon, we are achieving progress on the stated intent of the act—range-wide conservation.

We hope Congress will act on the House-passed Sportsmen’s Heritage and Recreational Enhancement (SHARE) Act and the Senate-sponsored Bipartisan Sportsmen’s Act of 2014. In a time when congressional action and bipartisanship is as common as the passenger pigeon, the House passed the SHARE Act with bipartisan support. The Bipartisan Sportsmen’s Act, introduced as a bipartisan compromise of legislation from the Sportsmen’s and Public Outdoor Recreation Traditions (SPORT) Act and the Sportsmen’s Act of 2013, contains many similar provisions to the House bill and more. When you return home, contact your Senators to move the bill for passage so that a conference committee can work out differences between the versions. The issues at stake include: limiting U.S. Environmental Protection Agency’s authority over traditional ammunition and fishing tackle; enhanced shooting range development; electronic Duck Stamps; a policy of “open until closed” hunting, fishing, and shooting opportunities on Bureau of Land Management and Forest Service lands; a provision that sets aside 1.5 percent of Land and Water Conservation Funds for the Making Public Lands Public program; easing the requirements for small film crews to cover our sportsmen’s heritage on our public lands; and reauthorization of the Federal Land Transaction Facilitation Act, the North American Wetlands Conservation Act, and the National Fish and Wildlife Foundation.

Of course funding for conservation is a paramount concern for all of us. The President’s Budget Request was released last week. The request includes full funding for the Land and Water Conservation Fund, support for the North American Wetlands Conservation Act and an increase in the cost of the federal Duck Stamp, an off-budget wildfire suppression account, a request to increase funding for the Fish & Wildlife Service’s National Strategy for Combating Wildlife Trafficking, and a modest increase in the Service’s operating budget. I believe most of us in this room would support these requests; however, it appears Congress won’t spend much time debating the request and has other plans for the budget. Senate Democrats have decided not to offer a budget proposal rather they would rely on the previous 2015 spending plan enacted last year and House Republicans may develop their own budget. I suspect that in a year, with midterm elections, the path of least resistance will be followed once again and the 2015 spending plan will prevail.

We all know public land and outdoor recreation is important to our nation’s citizens. This fact was readily apparent during the 16-day government shutdown in October. Last year, the U.S. Department of the Interior released their “Banking on Nature” report to highlight the economic importance of the National Wildlife Refuge System. In fiscal year 2011, 46.5 million visitors generated \$2.4 billion in sales for regional economies. About 72 percent of visits were associated with nonconsumptive activities such as bird watching, hiking, and boating. Twenty-one percent fished and 7 percent hunted on refuge waters and lands. Refuge visitors supported approximately 35,000 employees earning \$800 million in employment income. State parks and wildlife management areas also provide an economic boost to state revenues. If we could couple the economic impact of the ecosystem services that these areas provide with the direct economic impacts, we would better compete for the funding necessary to manage these treasured areas.

The U.S. Fish & Wildlife Service released “Conserving the Future,” its vision document to advance the conservation potential of the National Wildlife Refuge System. In keeping with the document’s strategy to engage and support others’ work for conservation, the Fish & Wildlife Service collaborated with individuals, conservation groups, and state fish and wildlife agencies during the 18-month development of the plan. The major themes of the plan include: relevancy in a changing world, climate change impacts, landscape-scale conservation, partnerships, and science excellence.

During the last few conferences, WMI has hosted agency transformation workshops. Experts in our community have described the need for transformation, the process of transformation, and the goals of transformation. Aligning agency programs and budgets to adapt to changing demographic trends will be necessary tasks to remain relevant to the public. Efforts are underway to expand stakeholder involvement, expand partnership opportunities, embrace social science, and incorporate “quality of life” factors into agency structures, functions, and programs.

How dramatic are these demographic changes? Since 1970, the Hispanic population in the United States has increased sixfold to 53 million. Since 2000, Hispanic populations have increased 50 percent while the rest of the nation has increased only 12 percent. According to William Frey from the Brookings Institute, who reported in February 2011, “The Census Bureau released its new statistics on the nation’s children and school enrollment, and it showed something momentous. For the first time since this annual data series has been released, fewer than half of all the children (49.9 percent) in the youngest age group shown, three year olds, were white.” These children are now of age to enter kindergarten.

But it is not only Hispanics who should drive our agencies’ transformations. All minorities demand and deserve our attention. Look around this room today and see if we are a cross section of the American public. Can we relate to people outside our race, religion, gender, age, or place of residence? Recognizing this disparity and at the request of female colleagues, WMI was proud to have hosted the first “Women in Conservation Networking Luncheon” last year. This year, WMI has joined other sponsors of the workshop entitled “Navigating Career Paths for Women in Conservation Leadership,” which was held here yesterday. Even though WMI is primarily a bunch of middle-aged white guys, we get it. Maybe it is because we are a bunch of middle-aged white guys, each with 20 to 30 years of professional experience, that we realize that the diversity of the American public demands transformation in our profession.

Some of our speakers will refer to the changing demographics of our nation. I hope what they say will challenge you to return to your agency or organization with a new sense of urgency, an urgency based on the need to make your organization relevant to the entire population, not just those associated with fish- and wildlife-related recreation. “Conserving the Future” sets a new course for the Fish & Wildlife Service. This course will involve urban constituents in urban settings. The urban refuge concept is essential to connect with the approximately 85 percent of our population who reside in urban and suburban settings.

As a profession we have to become more culturally and economically relevant to our nation’s population. I believe the early heroes of our profession—people like Marsh, Grinnell, Pinchot, Roosevelt, and Leopold—had it relatively easy to convince society that conservation was relevant. They had a more homogenous population with which to deal. The great majority of Americans lived in rural areas with strong ties to and an understanding of the land. Today, neither of these facts is true. Our challenge is to make the connection between fish and wildlife conservation and the well-being of our nation’s population. We know that it is true, let’s just make that connection.

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

Engaging the Hispanic Audience: Inviting Diversity

Ed Cantu

*Lopez Negrete Communications
Houston, Texas*

I'm one of the fortunate few within the Hispanic community who has taken advantage and benefited from the great outdoors all my life. I grew up in the legendary Rio Grande Valley hunting and fishing from a very young age, mostly on private lands. My uncle helped manage a lot of the ranches up in the Zapata and Laredo area—not necessarily down in the Rio Grande—where we did a lot of hunting for white-winged dove, deer, and javelinas and where I caught my first bass in a private tank.

But I'm rare, and I didn't know how rare I was until we actually started doing some work for RBFF (Recreational Boating & Fishing Foundation) and got into some research and found out exactly what percentage of the Hispanic population is involved in hunting, fishing, camping, backpacking, and all the great outdoors.

We're a very small percentage, those folks from the Hispanic population involved in the great outdoors. One of the things we need to do—and if I impress you guys with one thing to take home—it's that we need to consider outdoor recreation from a cultural perspective. In general, the Hispanic consumer has not been involved. When they see individuals who are role models for hunting and fishing and boating, they don't see themselves. We—the Hispanic population—are not going to get to that point unless there's an invitation. That's simply part of this culture. So when you look at the title of this little speech and you see “Engaging the Hispanic Audience: Inviting Diversity,” that's going to be the most important factor here. Hispanics must be invited to join.

I work for a company called Lopez Negrete Communications. We're out of Houston. We are the largest Hispanic advertising agency in the U.S. and have been fortunate to be around for 28 years. One of the most important things I want to impress upon you is that we're in it for the long haul. There are blue-chip clients. We've had Bank of America for more than 20 years. We've had Walmart for 18 years. That's the main thing to think about. We like to keep our clients. This breadth of clients allows us to see the consumer from lots of different perspectives—and that helps.

Let's talk about the Hispanic opportunity. I'm not going to go into a whole lot of detail as to why Hispanics matter other than the population's size and growth. Hispanics are 53 million strong. We represent 17 percent of the population. We are growing rapidly. One of the interesting things to know about the census data is that it actually shows that between 2000 and 2010, there were actually fewer non-Hispanic whites in the U.S. So it's not just that the Hispanic market is growing and the minority market in general is growing; it's that there are fewer and fewer of the people who currently form the foundation, the core, of the outdoors.

Hispanics accounted for 55 percent of all population growth in the United States, and we're projected to reach more than 65 million by the year 2020. That's just five years away. That's a lot of people. The median age is 28 versus 42. Now I'm just barely into this over-42 category, but I can tell you that I act now very differently as a 52-year-old than I did when I was 42, and I certainly was different when I was 28 versus 42. So when you start thinking about the Hispanic population, you're thinking about a target that's much younger, much more active, much more vibrant, and has different expectations (at least, I had different expectations of myself at 28 than I did at 42). We need to think about those comparisons. The point was made earlier in this plenary session that the percentage of kids—one out of every four going into elementary school is Hispanic. If you look at the top 10 markets—the top 10 of what we call DMAs (designated market areas), across the U.S.—Hispanics under the age of 18 are no longer a minority. They're a plurality. We now see 38 percent Hispanics for those under the age of 18 in those top markets. Thirty-five percent are non-Hispanic whites, and about 25 percent are African-American. The remaining balance consists of Asian and other populations.

These kids don't see themselves the way we saw ourselves when we were kids, or the way you might have seen us at that age. We have to think about that as well because they do have different

expectations of themselves and of the companies and institutions they deal with. When you look at acculturation, this is a very important thing.

You know the European model—acculturation occurs with every population. So you have people from that first generation who are going to be under-acculturated—the foreign-born who are coming in. Then the second generation is more bicultural—they encompass a little bit of their country of origin and a little bit of what we have here in the U.S. Then, by the time you're third generation, you're pretty much acculturated and you become totally assimilated.

What's happening here, though, is that there's a retro-acculturation. Hispanics have gained critical mass. We're the size and growth that we are, and everybody knows it. We've become more empowered. And part of that empowerment means going back to our roots and reclaiming our culture and reclaiming our language. And we're seeing a lot of that. So interestingly, Hispanics are not following the European model because they're maintaining their roots and their culture, even as they are adopting those of others within the U.S. We get the best of both worlds.

When you look at a population pyramid of the United States, you'll notice that the baby boom population had a huge impact on the U.S.—on marketing and everything we did. But if you look at the Hispanic influence on the pyramid, you'll notice that it's a young population group, a group that still is yet to come. We call that the critical mass because that's the extra group. We don't even know what they're going to be like when they get to be 18. But we know that that wave is coming, and we need to prepare for them.

If you don't believe what I'm saying, our good friends at Walmart—the biggest marketers in the world—made this statement. Tony Rogers, who was the senior vice president of marketing at the time, said this, “One-hundred percent of the growth in sales is going to come from multicultural consumers, and 70 percent of the multicultural consumer dollar is Hispanic.”

These are all reasons why, as we move forward, we're seeing that Hispanics are critical to the future of the great outdoors.

Hispanic spending is increasing, while non-Hispanic spending is going down in the great outdoors. That's the good news, however. The not-so-good news is that we're still under-indexing in all of the things related to the great outdoors. Hunting, we're down 8 to 11 percent. Boating, we're under index. Backpacking, camping, fishing—in all of these things, we're participating, but we have so much opportunity for growth. And given that we're the future of the population in terms of growth, we have to capture that.

My company's been working hand-in-hand with RBFF, and we've had an opportunity, working with them, to get deeper into the data and find out more about the motivations of Hispanics and the great outdoors. We looked at fishing and boating, and if you look at fishing incidents, right now it's very low. This is from data that comes from syndicated sources. In comparison, Hispanics are less than one-third of what's driving the general market of non-Hispanic whites. And if you look at the total number of anglers between 2006 and 2011, we grew by about 100,000. That's not enough given that our population increased 50 percent. We're actually losing in our percentage of participation. What does that mean? If you were to equalize the percentage of Hispanics, just make it even. If we were to grow just to the point that we were the same as the general, non-Hispanic white market, that's three million anglers. This is just fishing. What about everything else in the great outdoors? How can we grow?

When we looked at our target, we got deeper into this new market. We're not going to get everybody, but who should we be going after? Who are going to be our key influencers? We segmented the Hispanic population, and we looked at people who are already outdoors enthusiasts because that's the low-hanging fruit. There are a lot of people who for whatever reason just don't prefer to go out. They don't take advantage. Maybe they're stuck in urban markets and don't know that there are opportunities around them. There's a big segment who don't participate in outdoor activities. We're not talking to them. We're going to talk to those people who are already outdoors, who are doing something within our parks and our lakes, our beaches, our streams, and we're going to try to capture them and get them to go fishing, to drop a line.

When you look at it, we segmented potential anglers into three groups. Happy hikers—there are about 5.5 million; social anglers—we’re talking a little bit about each one of these; and then our fishing fanatics. Our bull’s eye really is going to be our happy hikers because these are family folks who are already doing stuff outdoors. They’re already backpacking, they’re already doing some sort of hiking, they’re already around water, they’re already around lakes and streams. They’re just not fishing. They just haven’t dropped the line. When we look at them in terms of the activities they are participating in, you can see they’re doing all the things we’ve just talked about. We have a high percentage who are out by the lakes. We love water. Hispanics primarily grew up around places where there’s some sort of water. We’re natural swimmers. I’m not sure that’s actually a data point. But you can see the percentage of the population that’s already involved in some sort of outdoor activity. This is what we wanted to focus on. This is our bull’s eye. The main thing that makes it the bullseye is the fact that they have families, that they have kids, because we know if we can capture them when they are kids then we can get them for life.

So our Hispanics are outdoors, they’re doing something out there. But why aren’t they boating and fishing? There are key barriers to the Hispanics’ participation in the outdoors. This is specific to fishing, but it relates to many things that we’re here for, including lack of exposure and experience. The vast majority of Hispanics in the U.S. are coming from Mexico. Whether you’re born here in the U.S., or whether you were born in that country, your roots are from Mexico. A lot of those folks didn’t grow up fishing and boating. In Mexico, if you’re fishing, it’s probably because that’s your job. It’s not seen as a recreation. People are living hand-to-mouth here, especially the immigrants who come over, and you don’t necessarily think about that.

I was lucky. My uncle taught me how to fish and boat and hunt. But my dad couldn’t have taught me to save his life because he came from that segment of the population for whom outdoor recreation just wasn’t part of his pastime, it wasn’t part of his experience. You can’t teach what you don’t know. Fishing is perceived as passive, as a waiting game. Remember again, this is a very young population—waiting around, not doing anything, holding a rod in your hand, without knowing what happens when that fish bites. If you haven’t experienced it, you’re going to perceive it as kind of a lame event, and you’re not going to try it. So without that exposure, they don’t think it’s fun. For the young population, you’ve got to make things fun. Full family participation is often problematic. Hispanic families don’t do these things alone. We take everybody. When we go shopping, we take everybody. When we go to church, we take everybody. So you have to get people to agree, and if your perception is that it’s not for women, if it’s not for kids, you’re not going to go because we go together.

Outdoor activities in general are waning for the Hispanic population. One of the great things about this group being young, is that we’re adapting to technology very rapidly. The bad thing is we’re spending a lot of time with that technology, and we’re looking down at multiple screens. We have to change that thinking as well in our youth. Money is a major issue, but it’s mostly a perception. People don’t know that it doesn’t cost that much to have a good time outdoors. And once you make that initial investment, it rewards you over and over again.

State licenses and regulations are problematic. We did focus groups with people, we did fish-alongs, and we talked to them about licenses. We had a group of 10 people who went fishing every week. That’s how we recruited them. And then we asked the question: how many of you have licenses? None of them had a license. There is a problem with this, mainly one because people who come from Latin American countries haven’t had to pay to use natural resources. Then there are people who don’t feel like they should—people who have a misunderstanding. They might be thinking: “Well, I’m not sure I’m going to pass the test.” They’re thinking of a fishing license like a hunting license or a like a driver’s license, where you have to take a test. They’re thinking: “There are regulations. I don’t know if I can take a fishing test and pass it.” And then, there are other people who just don’t know.

One of the key things we need to talk to them about is what happens with those funds from our fishing licenses. What happens to the funds we used to register our boats and get hunting licenses? We need to explain that those funds go back into conservation. They go back into making sure our natural resources are going to be available for their kids from generation to generation. That’s a powerful motivator—but they don’t even know that.

And then, finally, a culturally relevant invitation is missing. Again, when you look at these primetime shows popping up (by the way, I love *Wicked Tuna*)—these fishing shows that are on have become more exciting. We don't see any of that reflected. We don't see ourselves reflected. That's got to change. They have to know that this is for them, and there's only one way that that's going to happen, and that's by seeing themselves in these activities. So, how do we overcome these barriers?

We've determined there are at least three key steps: exposure, experience, and invitation. We need to let people know that these outdoor resources exist. We need to let people know where it exists and how they can become a part of it. We need to let them know what the experience is like because once you feel it, once you're out there, you're going to want to come back. And finally, we need to invite them.

So to make it easy, we present a list—a top 10 list.

- Assume Hispanic customers have a limited experience. We say customers—it's also consumers. But don't assume that Hispanics have limited resources.
- When there's something that benefits the family, we're going to find a way to make that happen. Create family-friendly environments. Remember, you're not talking about just two guys going out fishing or going out hunting; you're taking the family, so there's got to be something for everybody.
- One of the things we recommend is incorporating hunting, fishing, and boating into the outdoor activities that they're currently doing so it's part of the day-long event—that's a good way to introduce the kids to the outdoors.
- Offer sensory experiential activities. What that means is we like to touch and feel and smell and spend some time with it. We want that experience that we can bring home.
- Provide in-language help. You would think this would be a no-brainer, but so many places, and so many retailers, just don't have people who can speak the language.
- Build a database that identifies ethnicity, language, relevance, and language preference. We have a lot of databases that capture who our consumers are, but we don't go to that level where we actually find out if they're Hispanic, or if they prefer speaking in Spanish, or if they prefer getting communications in Spanish. That's an easy fix, and it can mean so much.
- Consider Hispanic brand ambassadors. We like celebrities, but we also like people we can relate to who are from the community and are involved.
- Make it fun and exciting. With this younger population, you have to have that.
- Utilize the power of invitation. You can't underestimate that power. Being invited is what it's about. You've got to get people to come in by saying, "Come with us." It's one of the reasons our Spanish language translation for "take me fishing" is "vamos a pescar"—it means "go with us."
- And then commit to the long run—you don't want to go in, then go out, because you'll lose their trust.

Five key things necessary for state and federal agencies to succeed are: understand that there's a misperception and distrust with anything that's related to government or institutions because that's what happens in our country of origin. We bring that with us. Emphasize the positives of natural resource conservation for your kids for generations to come. Focus on the impact to future generations. Make licensing as simple as possible. And let people know what the money is for. There are plenty of leverage opportunities that better publicize experiential events. Get people to actually be part of it.

Conserving the Future, Wildlife and the Next Generation

Jim Kurth

*National Wildlife Refuge System
Washington, DC*

When I was asked to talk about the U.S. Fish & Wildlife Service's vision for the National Wildlife Refuge System, the progress we have made over the years, and how it is leading us into the cities, for some reason I thought about my first course in wildlife management. I'm sure many of you remember reading the wildlife management techniques manual and how it got us clamoring to get out into the field and practice our profession. We are good with the hands-on stuff, we like doing things and seeing results. We are tactically inclined.

Most of us have grown to appreciate the need for strategic thinking. Longer range plans like the North American Waterfowl Management Plan and State Wildlife Action Plans are important in guiding us and assuring we accomplish things that may take many years to get done.

Much less frequently, we think about having vision. A shared vision is an inclusive view of what the future will look like when we have pursued our strategies and applied our tactics. The process of developing a shared vision for the future is time consuming because it must provide opportunity for involvement by all those who will be responsible for accomplishing it. Anytime we involve lots of people, ideas are generated and the brainstormed list of possibilities seems to grow exponentially. It is like boiling a pot of water—the volume expands greatly as liquid turns to gas.

The essential part of developing a shared vision is to distill that expanded volume, all those disparate thoughts and ideas, into a clear picture of what the desired future looks like. And we need to describe a manageable number of distinct actions so that we can move forward.

We did this for the National Wildlife Refuge System in 1998. Following the enactment of the Refuge System Improvement Act, we convened all of our refuge managers and leadership for the first time in our history in Keystone, Colorado. Our goal was to develop a shared vision for the future as we prepared for its 100th anniversary of the Refuge System in 2003. We produced an inspiring vision that was called "Fulfilling the Promise."

"Fulfilling the Promise" contained compelling language that rallied our workforce by not only telling them what we would strive to do, but why this work was important.

Why do we do this work? Why is this work so important? Here's what we said:

The American character has been molded by its connections with the land, and its spirit fortified by a close connection to the wild creatures of prairie, forest, coast, marsh, and river. Our nation's growth across the continent was in part fueled by trade in fur, fish, and shell. Great inland waters became thoroughfares for exploration and commerce. The American spirit of independence and self-sufficiency became legendary. Resources seemed unlimited as the forests were cleared, the prairies tilled, and rivers tamed. For landless servants and immigrants searching for a new life, the prospect of free land became a beacon of hope...

Caught in this slipstream of growth was the untempered exploitation of wildlife and its habitat. The thunder from herds of bison was virtually silenced, and the clouds of passenger pigeons disappeared. These losses did not go unnoticed. The early conservation movement was led by people who were angered by the devastation caused by market hunters, and appalled by the slaughter of birds for the vanity of fashion. They intuitively knew the values to the nation of saving its fish and wildlife, and together stepped forward...

This is why we do what we do. This is why it is important.

We stepped forward and built the North American Model of Wildlife Conservation. The model with its two basic principles—that fish and wildlife belong to all Americans and that they need to be managed in a way that will sustain their populations. Using the principles of the model we restored populations of elk, wild turkey, wood ducks, and myriad other depleted species.

We pursued the recommendations in “Promise” aggressively. It changed the administration of the Refuge System in many ways. Much of the policy development that we have pursued together with the States during the past 15 years came from that vision. The Fish & Wildlife Service’s Strategic Habitat Conservation framework has its roots in that vision.

Many of us have been around long enough to know our vision changes over the years. It requires checkups and corrections. Five years ago, we realized we needed to take another look at our vision for the future. Despite the progress we had made, the world had changed. There was no mention of a changing climate system in “Promise.” The 2000 fire season hadn’t occurred yet; we didn’t have a national fire plan. The tragic events of September 11, 2001, and the wars that followed, were in the always-unknown future. The budget surpluses and booming economy gave way to The Great Recession. Our population was aging, becoming more urban and more ethnically diverse. Young people were becoming increasingly disconnected from nature and technology seemed to rule our lives. States really hadn’t played a big role in developing “Promise,” yet our reliance on their partnership was increasing. It was time to reflect and renew our vision.

We began the process with a steering committee of senior leaders and included a State Fish and Wildlife Agency leader, John Kennedy of Wyoming, in that group. The process included five core teams that examined various aspects of refuge management.

The most interesting part of the discussion was on the topic we called “relevancy in a changing America.” Our traditional partners in the hunting and angling communities wondered if we were dating someone new. States wanted to know we were listening. The Wildlife Hunting and Heritage Conservation Council and the Sport Fish and Boating Partnership Council wanted to be assured we were listening and responding.

In the end, we all had to agree that America is a different place than it was a century or even a decade ago. Our society is more ethnically and culturally diverse, increasingly urban and older—and Americans strive to not only accommodate diversity, but celebrate it. We have moved far away from our agrarian roots, with 80 percent of Americans now living in urban or suburban areas. A smaller percentage of our population has experience in traditional outdoor pursuits like hunting and fishing. People are becoming increasingly disconnected from nature. We recognized the need for a broader base of support, a larger conservation constituency.

In July 2011, 1,100 people convened in Madison, Wisconsin. We listened to senior leaders, young leaders, and we listened to kids. We listened to inspiring speakers, and to long time state partners. We listened to Juan Martinez tell us how he escaped south central Los Angeles by joining an Eco Club to avoid a failing grade in a high school science class. He planted jalapeno peppers. It was a spark. He later received a two-week scholarship to attend Wyoming’s Teton Science School and it changed his life. We listened to Majora Carter talk about investments in green roofs and other green infrastructure in south Bronx. Her vision that you should not have to leave a neighborhood to live in a better one has provided sparks of inspiration to many kids.

We released the new vision, called “Conserving the Future, Wildlife Refuges and the Next Generation,” in October 2011. It is a vision of refuges that look beyond their boundaries and are viewed as part of a greater surrounding landscape. A strategy that recognizes the critical role of protected areas as well as the role of working landscapes in connecting and buffering these areas. It describes refuge management that relies on collaboration with states, on robust science, and invites partnerships with all who share the vision.

The discussions on relevancy in a changing America resulted in a vision for building a connected conservation constituency that we are just now implementing.

Regardless of which piece of the conservation puzzle is your area of interest, unless the people of our country understand what conservation is and why it is important, we will become irrelevant and we will fail.

The people of the United States of America live in cities. They are changing in ethnicity and age and how they spend their time and money. Do they understand what we do? Do they know *why* we do this work we discussed earlier?

That frontier experience doesn't have the same meanings to recent immigrants, to Native Americans, to people of all races who have migrated away from the rural countryside into our nation's great cities where they become detached from the natural world. The North American Model of Wildlife Conservation does not have the same meaning for people who do not hunt as it does for many of us.

Just as the vision in "Conserving the Future" built on and expanded the vision found in "Fulfilling the Promise," so too must we expand and build on the North American Model of Wildlife Conservation. Our model must be open to and inclusive of all who want to conserve wild places and wild creatures. A commitment to diversity and inclusion must be part of a 21st century approach to conservation.

We are rightfully proud of the tradition that hunters and anglers as users of fish and wildlife have always been willing to pay for conservation. We must also be humble enough to recognize the contributions of others in building the early conservation movement in America. John Muir and the Sierra Club had strong influence on Theodore Roosevelt. The National Audubon Society was there with us when Pelican Island became the first national wildlife refuge in 1903.

We have expanded our conservation vision before. Ding Darling left his job as director of the Fish & Wildlife Service to start the National Wildlife Federation. Some of the things he said back in the day are worth remembering. "Wildlife doesn't vote and neither do conservationists," he warned. He also said, "It's hard to start a fire with one stick of wood." He saw the need for broader partnerships and collaboration. Aldo Leopold and Olaus Murie were highly respected within our profession. They joined in the effort to establish The Wilderness Society. These organizations and many others have worked with sportsmen's groups to help to pass the Clean Water Act, the Clean Air Act, the Wilderness Act, the Endangered Species Act, the Farm bills with their conservation provisions, and many more.

These environmental laws have helped clean our nations waterways and rid the environment of toxic pesticides like DDT. They have given birth to an alphabet soup of government agencies that contribute billions to conservation. Nongovernment organizations and philanthropic organizations contribute greatly as well. Clean water, clean air, and healthy lands are essential for all species of life on our planet, including ours. And the people in cities care about these things.

If we are going to be inclusive of all Americans, we have to go to where they live. As much as it may pain some of us, we have to go into the city. And we must make investments there. I know many of you already are. It's not as bad as it may look to some of us old, country game wardens.

Philadelphia, Minneapolis, Denver, and New Orleans. Portland, San Francisco, San Diego, Albuquerque, Detroit. There are so many images from the national wildlife refuges located in those cities.

We have also described standards of excellence for our urban refuge programs so we can measure progress and see if we are being successful. It is expensive to work in cities, we need to assure we are successful or we must adapt and change our approach.

Our urban refuge program requires us to make new investments.

We are redirecting funds to this urban initiative from existing dollars rather than waiting for new ones. We are asking each of our regions to submit proposals on how they invest \$1 million to meet these standards of excellence at an existing urban refuge. The best proposal will get a \$1 million increase in that refuge's base budget. We will seek funding for the others in upcoming budgets. We will add \$500,000 to our new Human Dimensions effort to monitor changing attitudes and follow the young participants in our new programs.

We don't have refuges in every city but we can have partnerships in any city. We can make small investments, have a presence, and empower others to bring conservation into the cities. It looks different, but it connects people to the natural world and it changes them. We invested \$300,000 in piloting these urban refuge partnerships last year in places like Los Angeles, Houston, Seattle, Baltimore, New Haven, and Albuquerque. We are doubling our investment this year.

I found this paragraph from Chicago's recent proposal to continue their Urban Wildlife Refuge Partnership insightful:

Within the United States, communities of color are traditionally underrepresented in conservation groups. This pattern holds true in Chicago, where conservation work is as segregated as the city itself. Organizations and individuals engaged in restoration work in the Calumet region generally do not reflect the demographics of the surrounding neighborhoods and towns, which are primarily African-American. Sustainability of the conservation movement, both nationally and locally, requires that we broaden participation. Toni Preckwinkle, Cook County Board President, recently commented in a letter to *The New York Times*, "While our picnic groves and trails are popular across racial and ethnic lines, more immersive nature opportunities remain dominated by white residents. One of our top priorities is engaging underserved groups through efforts like Wild Indigo Nature Explorations, where outreach fellows from the South Side [of Chicago] lead community excursions to the preserves."

Chicago is not unique. People in cities are anxious to become partners in conservation. We just completed a second round of inviting proposals for urban refuge partnerships. We received 38 proposals requesting \$1.3 million, with \$28 million in match. Tell me how many places we can get that kind of leverage on conservation investments.

At this conference in Columbus, Ohio, in 2006, Jim Martin told us there were only two things we should be working on as the focus of our profession: the effects of a changing climate system on fish and wildlife and the effect of the development juggernaut that was pulverizing and fragmenting habitat. I think he was right. But I am here today to add an essential third task to our list. If you are not working to make conservation relevant in a changing America, if you are not helping to build a connected conservation constituency, then we are doomed to failure.

Our urban conservation initiatives are not something fun to do when we get done with our important work. They are not ancillary to our primary conservation work. They are foundational. They are as important as anything we do. This is about our relevancy in a changing America. It's about building a connected conservation constituency. It is about conserving the future.

Every child who has experienced that spark and had their eyes opened to the natural world, who experiences that sense of wonder and awe for the first time, will be on the road to becoming a supporter of conservation. Some of them will want to hunt and fish. Some of them will want to join our cause and work for our agencies helping us to look more like the people we serve. And some of them, maybe this little puddle stomper from Tualatin River NWR, will lead conservation in the future.

Thank you for your time. Good luck, safe travels, God bless all of you.

Special Session One.

Human Dimensions and the North American Waterfowl Management Plan

Opening Remarks

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Welcome and thank you for attending our special session on Human Dimensions and the North American Waterfowl Management Plan (NAWMP). We have assembled a slate of speakers we hope will achieve the objective of expanding our knowledge about what it may take to affect the attitudes and actions of people toward conservation.

I want to begin by introducing my co-chair, Dr. Mike Manfredo, who is professor and head of the department of Human Dimensions of Natural Resources at Colorado State University. He is founder and co-leader of that unit where his research, teaching, and outreach activities focus on the role of social science in natural resource management. Mike and I also want to acknowledge the leadership of Dean Smith from the Association of Fish & Wildlife Agencies for conceiving this session and doing most of the early work in assembling it. My goal for the next 10 minutes or so is to trace the development of human-dimensions thinking within the NAWMP that led us to this session today.

Work guided by the North American Waterfowl Management Plan arguably comprises one of the most significant conservation achievements over the last 28 years. It has become clear, however, that resting on past achievements will not be sufficient to ensure the long-term sustainability of this conservation enterprise (Canada Ministry of the Environment, U.S. Department of the Interior, and Mexico Secretariat of Environment and Natural Resources 2012). In particular, we believe human perspectives must become an integral and explicit component of waterfowl and wetland management decisions in order to sustain the levels of conservation support needed to meet plan goals.

The original 1986 NAWMP featured explicit waterfowl population objectives, general objectives for habitat sufficient to support those populations, and predicted certain consequences for human users. Specifically, the authors assumed that populations at objective levels would provide adequate hunting and nonconsumptive recreational opportunities (U.S. Department of the Interior and Canada Ministry of the Environment 1986).

Fast-forward 20 years to a point at which several of us recognized that plan population objectives were imposing a perhaps unnecessary constraint on mid-continent mallard Adaptive Harvest Management (Runge et al. 2006). That ambiguity about the environmental conditions and harvest policy under which plan objectives were to be achieved strongly limited the utility of plan objectives as measures of conservation performance.

So the plan committee and the Association of Fish & Wildlife Agencies struck a Joint Task Group on NAWMP goals and harvest management to probe this matter, and they reported in 2007 with an approach—the so-called yield-curve solution—that could bring coherence to harvest and habitat management at a continental scale (Anderson et al. 2007). In getting there, however, people realized we were continuing to neglect another component in decision-making—namely the explicit desires of, and impacts on, hunters and other wildlife stakeholders.

Therefore, in 2008, the waterfowl community convened a summit on the Future of Waterfowl Management in Minneapolis designed to examine, in detail, ways to link our decision processes for harvest, habitat, and people management (Case and Sanders 2008). We were unable to solve all those puzzles that week but developed a strong consensus that better integration of harvest and habitat management seemed possible and that continued work on understanding and incorporating human dimension issues should also move forward. The next scheduled NAWMP update was seen as the vehicle with which to do this.

With such a fundamental re-examination of the plan in mind, in 2009, the plan committee appointed a Revision Steering Committee to oversee the work, and they, in turn, launched an extensive, unprecedented series of consultation workshops in Canada, the United States, and Mexico to engage the management community in shaping the work (Canada Ministry of the Environment, U.S. Department of the Interior, and Mexico Secretariat of Environment and Natural Resources 2012). During these workshops, held deliberately before any writing of the new plan, it became clear that waterfowl managers desired a complementary and integrated approach to managing harvest, habitat, and human users/supporters of waterfowl conservation.

Workshop attendees also encouraged the Revision Steering Committee to focus on what it would take to sustain the NAWMP enterprise in the face of rapidly changing ecological and social systems—issues like accelerated loss of grasslands and wetlands to agricultural intensification, declining hunter numbers, decreasing connections of people to the outdoors, and more. There was also a clear challenge to enhance management efficiency and effectiveness in times of shrinking public sector funding for conservation. So the revision, finished in 2012, focused on three strategic vision elements:

- to be *relevant* to contemporary society;
- to be *adaptable* in response to changing ecological and social landscapes; and
- to be *effective and efficient*—i.e., to feature coherent objectives and management processes that facilitate integration and adaptation.

Three over-arching goals emerged:

- 1) Abundant and resilient waterfowl populations to support hunting and other uses without imperiling habitat.
- 2) Wetlands and related habitats sufficient to sustain waterfowl populations at desired levels, while providing places to recreate and ecological services that benefit society.
- 3) Growing numbers of waterfowl hunters, other conservationists, and citizens who enjoy and actively support waterfowl and wetlands conservation.

Presently, the waterfowl management community is working to elaborate explicit objectives under each of these goals and to do so in a manner that recognizes the interconnected nature of the goals. To make major advances, however, we need a richer understanding of the factors that affect the engagement of hunters, viewers, and the general public in support of wetland and waterfowl conservation. Among other things, the National Flyway Council and the plan committee have created a new Human Dimensions Working Group with a charge to provide science support and strategic guidance about human dimensions to the bird conservation community. But the task is large. Human dimensions comprise a broad collection of social science subjects, and NAWMP is hoping to address many stakeholders—users, supporters, and the general public.

The presenters in this session will explore these social science needs, recent findings, and their relationship to contemporary management challenges. You will hear from several people not considered to be part of the traditional core community of waterfowl conservation, which is a very good thing because they offer new perspectives on the challenges we face and possible paths toward solutions.

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The North American Waterfowl Management Plan: Reflections on the Past, Present, and Future

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Introduction to the North American Waterfowl Management Plan

As wildlife scientists, managers, and historians, we are constantly challenged to think about the causes and influences of our conservation efforts. We spend hours evaluating where we are now, and, in what is often the fun and enlightening part of our work, we stretch our scientific senses to imagine what the future will hold. This past year, I've spent a lot of time pondering these things as Ducks Unlimited Canada (DUC) celebrated its 75th anniversary. What I found is that you cannot consider DUC's past, present, or future without acknowledging the North American Waterfowl Management Plan (NAWMP). I know the same is true for many other conservation organizations across the continent.

This paper offers a reflection on the NAWMP's major accomplishments during the past 28 years. I hope to challenge readers to imagine how conservation partners can work together to embrace the opportunities and overcome obstacles that lie ahead, with a goal of discovering new ways of thinking about waterfowl conservation and putting it into practice. A creative and inquisitive approach will be critical to the future of North America's waterfowl and the people who benefit from the many environmental values of wetland conservation.

NAWMP Accomplishments: 28 Years of Continental Conservation

The NAWMP was established in 1986 during a time when the concept of continental conservation was re-emerging. Continental aspects had been recognized early on with the Migratory Bird Convention (between the U.S. and Great Britain on behalf of Canada in 1916), including the recognition that flyways are important features of migratory bird populations; however, what emerged in 1986 was a new pragmatic way to share the challenges associated with waterfowl conservation throughout the annual cycle.

In the early 1980s, North American waterfowl populations had once again declined to low levels, and habitat loss was particularly widespread on the prairies. However, the major problems could not be fixed by managing harvest and conserving wetlands alone (Batt 2012). International cooperation in planning, funding, program design, and implementation—by citizens, agencies, and private organizations—was recognized as an urgent necessity.

To facilitate this, the NAWMP authors recognized and reinforced some simple but powerful principles: waterfowl are publicly owned resources; science should inform the decision-making affecting waterfowl; and most importantly, the continental nature of waterfowl makes them an international resource for which all of us share responsibility. While there were challenges associated with adopting this continental approach (e.g., concern over state/federal management, the waterfowl regulation process, etc.), the NAWMP's pioneering conservationists did not let these obstacles overshadow the potential rewards. They took bold actions, both creative and calculated, to achieve the changes they wanted to see on the ground and in the skies. The formation of the eco-regional Joint Ventures is perhaps the best example.

Focusing on areas or species of concern, the NAWMP's Joint Ventures delivered conservation work that was collectively international in scope but implemented at regional and local levels. These Joint Ventures brought the NAWMP to life in two important ways: they put conservation into action—executing ideas and theories on the ground; and they fostered strong, effective partnerships—those with shared interests were using their collective strength to influence and deliver results.

The funding mechanisms that support the NAWMP are historically significant as well. The North American Wetlands Conservation Act (NAWCA) revolutionized wetland conservation by setting an expectation of public-private cost sharing. The central condition that all funds be matched by nonfederal partners has resulted in unprecedented private and public funds being made available to waterfowl conservation programs across Canada, the U.S., and Mexico.

The numbers themselves tell an inspiring story of success. Since the NAWMP's inception in 1986, \$4.5 billion has been invested in waterfowl habitat across the continent, resulting in the conservation of 15.7 million acres (North American Waterfowl Management Plan Committee 2012).

The birds also point to the NAWMP's positive impact. The U.S. Fish & Wildlife Service's (USFWS) 2013 survey on *Trends in Duck Breeding Populations* estimated a total of 45.6 million ducks in the traditionally surveyed area of the mid-continent. That was 33 percent above the long-term average (Zimpfer et al. 2013). While favorable environmental conditions in recent years have certainly influenced these populations, effective habitat conservation has helped set the stage and provided species with the opportunity to respond.

Much of this long-term success can be attributed to the NAWMP's focus on adaptive management and a strong commitment to remain nimble amid changing environments. This became immediately evident from 1986 to 1989 with the funding path of the NAWMP. The emphasis of the NAWCA quickly changed from waterfowl to wetlands for a much more encompassing perspective. This was a clear sign of the importance and willingness to adapt to changing political views as well as environmental conditions. Five-year updates of the NAWMP also provide important opportunities for conservation leaders and NAWMP partners to prepare proactive strategies to look confidently to the future.

Contemporary Challenges and the 2012 Revision

To keep pace with today's environmental and social changes, the NAWMP needed to make some key adjustments and developed the 2012 revision. An important element was to more explicitly incorporate people—users, supporters, and the general public—in the suite of NAWMP goals and conservation strategies. Born out of concern for the ongoing loss of waterfowl hunters and the broad disengagement of people from the natural world, the 2012 revision underscores the importance of the growing number of people who pursue waterfowl with cameras and binoculars as well as shotguns.

A USFWS survey in 2011 identified 47 million birders in the United States (Carver 2013). When you compare that to 13.7 million hunters, which include 2.6 million migratory bird hunters, it becomes clear that the NAWMP will only succeed if waterfowl conservation is relevant to broader audiences (U.S. Fish & Wildlife Service and U.S. Census Bureau 2011).

It's no secret that society is becoming increasingly urbanized and disconnected from the natural world. The experiences of young people—those who represent the next generation of citizens and conservation leaders—are of particular concern. In a world dominated by video games and electronics, encouraging kids to get outside and get active is critical in curing the next generation from what's been dubbed the "nature-deficit disorder."

Richard Louv coined this term in his well-known book *Last Child in the Woods*. As outdoor enthusiasts, it's hard not to cringe when you read a quote in Louv's book from a fourth grade student who says: "I like to play indoors better 'cause that's where all the electrical outlets are" (Louv 2005). In Canada, the situation is much the same. Seventy percent of 13- to 20-year-olds from most provinces and territories say they spend an hour or less per day outside (Active Healthy Kids Canada 2013). Unfortunately, while society's awareness of the world around them shrinks, environmental issues and problems continue.

Where do waterfowl fit into all of this? For a society that seems to care less and less about ducks and geese, how can we write them into the equation? How can we make them part of the solution?

Opportunities Ahead

An important first step is to sustain the traditional support base for waterfowl conservation—hunters. Statistics show there are fewer hunters across North America, and those who do hunt are getting older. Of the 13.7 million hunters identified by the USFWS, about 5.9 million (or 43 percent) were aged 45 and older (U.S. Fish & Wildlife Service and U.S. Census Bureau 2011). While the number of all hunters increased by 9 percent between 2006 and 2011, the longer historical trend is still downward. When you consider some of the important factors at play, an interesting paradox is revealed. On one hand, North America is experiencing record numbers of waterfowl, and shotgun sales, particularly in the United States, remain strong. On the other hand, we continue to see this downward trend of hunters.

To counteract the decline in hunter numbers, perhaps wildlife professionals need to consider ways of making hunting more accessible and familiar to all North Americans. Regulations are important but some may be deterring some hunters from becoming more engaged conservationists. Do these regulations and policies really reflect hunters' interests, or have they been written more to coincide with the personal interests of wildlife professionals?

Hunters will always remain an important force for waterfowl conservation, which is why a concerted effort is needed to ensure their views are represented and understood in the context of North America's wetland conservation work. At the same time, however, waterfowlers alone cannot deliver the scale of success needed on the landscape. Garnering the support of others is the only way forward.

In the 1980s, the Joint Ventures generated great success by engaging a specific group of stakeholders. Using this same collaborative approach, conservation professionals have the opportunity to create a more powerful impact by embracing an even broader suite of people and pulling together their collective political and financial support to achieve important conservation goals. For example, agricultural groups, industry representatives, indigenous peoples, urban dwellers, and more all have a stake in the future of North America's wetland and waterfowl conservation efforts. The challenge, and also the opportunity, is to mobilize them by appealing to both their hearts and their minds.

Many people have an interest in the natural world that has been built around memories or family traditions in the outdoors. Such people appreciate and relate to conservation on an emotional level, as the efforts undertaken in support of waterfowl also support the places and recreational pursuits they cherish. However, people who are not waterfowl hunters, or who have little affinity for nature, may still appreciate and support wetland conservation if they can recognize the value of wetlands beyond the immediate benefit as habitat for wildlife. For these people, wetland conservation is a tool in the practitioner's conservation tool kit, which they need to understand is important in their lives.

Regardless of which category people fall into, mobilizing them to put the power of their hearts and minds into action to support conservation policies is a tremendous opportunity.

Highlighting the ecological goods and services that wetlands provide is an important first step. Science clearly shows how wetland loss is affecting communities both economically and environmentally. In Manitoba, for example, much of Ducks Unlimited Canada's work has focused on the deteriorating health of Lake Winnipeg—the 11th largest freshwater lake in the world. Wetland drainage in the surrounding watershed is causing more nutrient-loaded runoff to be carried directly into the lake. As a result, the lake is turning green. In fact, the algae blooms have grown so large they can be seen from outer space. The lake is becoming unsafe for recreational users and beachgoers. Risks of dog fatality due to the toxic algae are keeping pet owners from taking their four-legged friends for those enjoyable runs and cool downs by the water. Having one of the largest freshwater lakes in the world right in your backyard should be a tremendous asset; but when it becomes unfit for us and even our pets to enjoy, what value does it provide?

Flooding is another topic of general interest. Extremely wet conditions during the past few years in areas of Prairie Canada have resulted in extensive drainage, which as a result only pushes water problems downstream. Wetland policies that, for example, will help clean up Lake Winnipeg or prevent costly and destructive flooding in communities have the ability to engage much broader public support

because people can see and experience the direct impact that rapid runoff, exacerbated by wetland drainage, has on their lives.

The next step should be taking this support for conservation policies and transforming it into a deeper conservation ethic. The ideal is an engaged community, represented by people of all kinds, who live and pursue their passions with an awareness and ownership for the role they play in creating a sustainable future.

Becoming More Efficient

In addition to reaching new audiences, future success of the NAWMP requires expanding the suite of conservation programs. The NAWMP has set ambitious habitat goals, which will only be achieved by employing some novel approaches.

In 1986, the NAWMP recognized the role of working landscapes and the significance of private land stewardship. This has not changed—continuing to think about strategies that help keep lands with conservation value in private ownership will be important. Conservation easements or agreements and forage programs, as well as revolving land programs, appear to offer the greatest incentives for participation. When operating efficiently, these strategies will create a cycle of conservation while helping keep small, rural communities alive and thriving.

Looking to the future, mitigation work will also remain instrumental. As industry and development grows, offsetting losses of wetlands and other habitats will be key. The concept of “no net loss” is alive on the landscape; however, it is intriguing to think about the possibility of moving beyond “no net loss” toward an ideal of “net gain.”

Consider once again the deteriorating health of Lake Winnipeg. Employing the concept of “no net loss” here may mean the Lake’s problems may not get worse, but they may not improve either. To leave the land in a healthier state, conservation leaders must aspire for more. People and communities must also aspire for more. This is where larger urban audiences can be engaged. As they become more aware of, and involved in, conservation, they will begin to set higher expectations that the areas around them remain clean, healthy, and sustainable.

Striving to make changes that will deliver results beyond what we currently have will not be easy. It will require that North America’s entire conservation community embrace more risk, exhibit more leadership, and be prepared to make some sacrifices along the way.

Imagining the Future

To sustain waterfowl populations and their habitats at desired levels, a more complete understanding of societal values and motivations with regard to conservation is needed. Fortunately, the NAWMP has a solid reputation for forging new frontiers in conservation, and the next 30 years are poised to be colored with the same kind of courage, innovation, and positive results as the first. While the overwhelming success of the North American Waterfowl Management Plan is often viewed in terms of the plan itself or its implementation, its true power stems from the people who bring it to life through their interest in conserving habitat now and for the future.

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Explicit Assumptions for Changing Wildlife Management Outcomes

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Wildlife management is based on many assumptions regarding the outcomes wildlife management actions will have on human-wildlife interactions. The evolution in waterfowl management provides an opportunity to examine how these assumptions have changed over time and to consider how more explicitly addressing these assumptions may result in more desired outcomes of wildlife management. The nature of past, present, and future held by the waterfowl management community can be described by three phrases. First, past assumptions can best be characterized by the quote from the movie *Field of Dreams*: “If you build it, he will come.” Second, present day management assumptions can be characterized as managing the “tip of the iceberg.” And third, the future direction proposed by the North American Waterfowl Management Plan (NAWMP) can be described as “pushing the envelope.”

Past Assumptions: “Build it and they will come.”

“If you build it, he will come” is often quoted from the movie *Field of Dreams*. In the movie, the main character builds a baseball park in an Iowa cornfield. Initially, he is ridiculed, but by the end of the movie people are filling the bleachers at the new field. Similarly, in the 1980s and before, the foundation of waterfowl management was based on the assumption: “Build it and they will come.” In this case, building it refers to providing sufficient wetlands and associated habitats to sustain waterfowl populations and the hunting and viewing opportunities they provide. This perspective is reflected in the 1986 North American Waterfowl Management Plan. The authors wrote: “The overall aim of this continental habitat program is to maintain and manage an appropriate distribution and diversity of high quality waterfowl habitat in North America...” (Plan Committee 1986).

If they built it—that is, provided habitat—they expected they could achieve the following duck population goal: “Maintain the current diversity of duck species throughout North America and, by the year 2000, achieve a breeding population level of 62 million during years with average environmental conditions” (Plan Committee 1986).

If waterfowl populations responded, it was expected people would come. The authors note:

Meeting these goals would provide the opportunity for 2.2 million hunters to harvest 20 million ducks annually. The harvest would include 6.9 million mallards, 1.5 million pintails and 675,000 black ducks. It would also provide the benefits to millions of people interested in waterfowl for purposes other than hunting (Plan Committee 1986).

It is often overlooked that waterfowl hunter numbers were rapidly declining at the time the NAWMP was unveiled. Waterfowl hunter numbers in the U.S., as reflected in the sales of Migratory Bird Hunting and Conservation stamps, excluding philatelic sales, had declined 30 percent from 1971 to 1986 (U.S. Fish & Wildlife Service 2012). By 1986, Canadian waterfowl hunter numbers as reflected in Migratory Bird Hunting Permit sales had declined 27 percent from a high-water mark of nearly 525,000 in 1978 (L. Ugarenko, personal communication 2012). Although the focus of NAWMP was to achieve a population goal, this goal was based on an assumption of what size population was needed for people. The NAWMP authors note that the period of the 1970s reflected a time when duck populations and habitat levels were acceptable to the people who used and enjoyed them (Plan Committee 1986). In other words, “Build it and they will come.”

Present Assumptions: Managing the Tip of the Iceberg

Today, the waterfowl management community is beginning to recognize that waterfowl management thus far has only addressed the “tip of the iceberg” (Figure 1). From a waterfowl population and habitat perspective, NAWMP has been tremendously successful. Ultimately, it led to the conservation and restoration of 15.7 million acres of wetlands, grasslands, and other key habitats for waterfowl, and many waterfowl populations are now at or near record highs (Plan Committee 2012, U.S. Fish & Wildlife Service 2013b). Hunters now have more waterfowl harvest opportunities than at any other time in modern history, especially when considering the dramatic increases in season lengths and bag limits for Canada geese and snow geese. In many states, hunters now have the opportunity to harvest waterfowl from September through April.

In the case of waterfowl management, the assumption reflected in the phrase “build it and they will come” did not come to fruition. Instead, participation in waterfowl-related recreation continued to decline. Hunter numbers fell 16 percent in the U.S. from 1986 to 2011 based on federal duck stamp sales, excluding philatelic sales. The most recent five-year average in duck stamp sales is now 42 percent lower than the high mark of 2.4 million in sales that occurred in 1971 (U.S. Fish & Wildlife Service 2012). The drop was even more dramatic in Canada where average permit sales from 1986 to 2011 declined 55 percent; sales have declined at an even higher rate of 67 percent from the high-water mark year of 1978 (L. Ugarenko, personal communication 2012). Hunter numbers no longer track changes in waterfowl populations as they once did (Vrtiska 2013).

It is more difficult to determine long-trend terms in waterfowl viewing, but best available data suggests the increase in waterfowl populations did not lead to increased waterfowl viewing. The number of individuals who participate in birding declined from 51.3 million in 1991 to 41.3 million in 2011 (U.S. Department of the Interior et al. 1993, 2012). The number of individuals who traveled a mile or more to view waterfowl declined from 14.3 million in 1996 to 13.3 million in 2011 (U.S. Department of the Interior et al. 1997, 2012).

In addition, those who participate in waterfowl-related recreation and conservation appear to be aging. In 1991, 10 percent of migratory bird hunters were 55 years of age or older; by 2011, this percentage had increased to 27 percent (U.S. Department of the Interior 1993, 2012). Similarly, 15 percent of individuals who traveled away from home to view birds in 1991 were 55 years of age or older, and by 2011, the percentage had climbed to 35 percent (U.S. Department of the Interior 1993, 2012). In contrast, the U.S. population as a whole in this age group only increased from 27 to 32 percent (U.S. Department of the Interior 1993, 2012). The average age of Ducks Unlimited members is now over 50 years of age, which would also suggest that the base of support for conservation is aging (D. A. Humburg, personal communication 2014). The changes observed involving waterfowl-related recreation reflect broader concerns about declines in hunting, fishing, and outdoor recreation and a growing disconnect between society and nature (Louv 2005; Responsive Management/National Shooting Sports Foundation 2008; Pergams and Zaradic 2008).

It is now apparent that past assumptions regarding the outcomes of waterfowl management for people no longer hold true. An exclusive focus on habitat and population management is actually only addressing the tip of the iceberg (Figure 1). While population and habitat management continue to be important, the waterfowl management community is now recognizing the need to pay greater attention to the changing social landscape and its influence on participation in waterfowl-related recreation and conservation.

Whether discussing the digital revolution or globalization of the economy and culture, there is agreement that society is rapidly changing (Castells 2010; Friedman 2000; Inglehart 1990). Changes to the social landscape influence the way we interact with one another and with nature (Fitchen 1991; Putnam 2000; Wilkinson 1991). Just think for a moment how many individuals you have communicated with in the last week from other towns, cities, states, or even countries. Now think about the different forms of communication you have recently experienced simultaneously with multiple people from different locations. Compare these communication experiences to those available in the 1980s when even

conference calls were much more difficult to make than they are today.

In a similar fashion, consider the way you interact with nature today compared to the ways individuals did in the 1980s. Is part of your experience checking current weather conditions or the local radar map on your smart phone, computer, or tablet? Do you use trail cameras to monitor wildlife, use GPS units to navigate, or view wildlife activity on webcams? Do you have an app for bird identification? These all represent new forms of interaction with nature. The changes in the way we interact with one another and nature will require consideration of the social factors that lead to participation in activities that strengthen the bonds between individuals, communities, and their surrounding landscapes.

The Future: Pushing the Envelope

The revision of the North American Waterfowl Management Plan pushes the envelope with an expanded focus to address the rapidly changing social landscape as well as the threats to waterfowl populations and their habitats. This expanded focus is apparent in the new vision statement, “People Conserving Waterfowl and Wetlands” (Plan Committee 2012). An entire section is devoted to increasing the relevancy of waterfowl management by strengthening the emotional and pragmatic ties to waterfowl and wetlands, fostering a growing and supportive core of waterfowl hunters, promoting an engaged conservation community and supportive public, and developing productive collaborations. The three new NAWMP goals each include at least some mention of people:

Goal 1: Abundant and resilient waterfowl populations to support hunting and other uses without imperiling habitat.

Goal 2: Wetlands and related habitats sufficient to sustain waterfowl populations at desired levels, while providing places to recreate and ecological services that benefit society.

Goal 3: Growing numbers of waterfowl hunters, other conservationists, and citizens who enjoy and actively support waterfowl and wetlands conservation (Plan Committee 2012).

Population Management and People

The first goal highlights the role waterfowl plays in supporting hunting and other uses and raises the question of what size population will be needed to provide the greatest public good. It is uncertain if hunters desire the opportunity to see more ducks while hunting or have more liberal harvest regulations. Nor is it certain what size waterfowl populations would provide the most satisfaction to birders and others who enjoy waterfowl without exceeding social carrying capacity. Setting population objectives to maximize harvest or provide opportunities for viewing involves tradeoffs. To illustrate, a recent analysis suggests that if maximum harvest is the primary objective in the mid-continent, it could be achieved with a mallard population in this region of 5.9 million compared to the current population objective of 8.8 million mallards (Anderson et al. 2007).

In a similar fashion, population management actions based on implicit assumptions rather than focusing on achieving explicit outcomes for both people and waterfowl populations may lead to unintended consequences (Driver 2008). For example, waterfowl harvest management is mainly predicated on the assumption that maximum harvest results in the greatest public good (U.S. Fish & Wildlife Service 2013). To maximize harvest, waterfowl regulations have become complex. They include a variety of bag limits and season lengths for individual species that can vary on an annual basis along with a variety of hunting zones and split season combinations that change less often. It is uncertain how the regulation complexity influences hunter satisfaction or participation (Case 2004).

The potential unintended consequences of basing waterfowl regulations on implicit assumptions may extend beyond consideration of complex regulations. Higher and less obtainable daily bag limits

potentially reduce the frequency in which hunters experience the satisfaction of achieving a daily bag limit. Hunters may also feel compelled to stay out hunting longer in hopes of achieving bag limits and reduce opportunities for others to hunt in those same locations or cause waterfowl to abandon these locations due to hunting pressure. As of yet, these are all untested assumptions, similar to the assumption that maximizing harvest opportunity best serves the public.

Habitat Management and People

The focus of habitat management has also changed with the revision of NAWMP. Previously, NAWMP almost exclusively emphasized habitat management for achieving waterfowl population objectives. NAWMP continues to affirm the importance of habitat for waterfowl but now encourages the waterfowl management community to consider the role wetlands and their related habitats play in providing places to recreate and enhancing ecological services that benefit society. Similar to population management, this new goal will influence the development of habitat objectives and the selection of habitat management strategies.

To set habitat objectives sufficient to strengthen emotional ties people experience with wetlands and waterfowl, it will be incumbent upon the waterfowl management community to determine how much habitat is needed and where it should be located to provide desired recreational experiences and sustain waterfowl populations. This effort will first require an understanding of what individuals desire in their recreational experiences. For example, how much crowding will individuals tolerate before they decide hunting in those conditions is no longer desirable? Determining the social carrying capacity will influence how much habitat is needed to positively influence participation in hunting.

Implementation of NAWMP will also require the consideration of how habitat management activities may be crafted to achieve both population and people-related goals (Enck et al. 2006; Riley 2002). Simply more places to hunt may be insufficient to garner participation. The types of experiences these places afford may be equally important (Manfredo et al. 2004; Schroeder et al. 2006). For some, it may be the opportunity to hunt or view waterfowl away from others that is essential to their experience. In contrast, others may desire ease of access and low travel costs. Satisfaction with recreational experiences can be influenced by a range of habitat management activities in addition to simply providing more access (Manfredo and Larson 1993). Limiting access to a certain number of people at a time may reduce negative experiences associated with crowding. Providing conveniences through infrastructure development may help provide opportunities for positive experiences to a greater number of individuals. Limiting portions of public areas to specific uses may reduce potential conflict among visitors expecting different outcomes from their experiences (e.g., waterfowl viewing versus waterfowl hunting). Minimizing human disturbance either temporally or spatially may sustain larger numbers of waterfowl within a local area for longer periods of time providing greater opportunities for positive encounters either while viewing or hunting.

The specific mention of people in NAWMP population and habitat objectives highlights the social underpinnings to waterfowl population and habitat management. In the case of population management, it draws explicit attention to the fact that setting population objectives is less of a biological exercise and more of a social exercise of determining what population size would provide the greatest public good for current and future generations. In a recent Harvest Management Working Group report, the authors note that waterfowl biologists seem more comfortable assessing potential ecological impacts rather than crafting management objectives that reflect social values (Harvest Management Working Group 2013). In a similar fashion, setting habitat objectives and developing habitat management strategies will require consideration of both social and ecological elements.

To set population and habitat objectives and implement management actions that provide for people as well as waterfowl, it will require developing a better understanding of what stakeholders desire in their recreational experiences (Chase et al. 2004). The waterfowl management community is already taking the first steps to improve this understanding. The newly formed Human Dimensions Working Group is working with partners to initiate a series of focus groups and a continental survey of waterfowl hunters, viewers, and the public. This effort will potentially result in the development of objectives and

management actions that are more relevant and more likely to strengthen the emotional and pragmatic ties individuals and communities have with waterfowl and their habitats.

Public Engagement

The revision of NAWMP highlights that population and habitat management alone will be insufficient to sustain the waterfowl management enterprise and mandates the establishment of objectives and management actions to achieve the third goal of NAWMP: “Growing numbers of waterfowl hunters, other conservationists, and citizens who enjoy and actively support waterfowl and wetlands conservation” (Plan Committee 2012). While this goal is new, many agencies and conservation organizations are already actively involved in public engagement, including recruitment and retention activities. Recent reviews suggest agencies and organizations are involved with more than 400 hunting, shooting, and fishing recruitment and retention programs (Byrne 2009; Responsive Management 2011).

The current approach to public engagement, including hunter recruitment and retention, is similar to the approach the waterfowl management community took to manage waterfowl habitat prior to the NAWMP in 1986. Conservation agencies and organizations are often implementing public engagement activities independently from one another. Their focus is frequently on changing the behavior of individuals without consideration of the social systems in which they are located. The selection of public engagement strategies usually can be characterized by a shotgun approach of just trying a variety of strategies rather than more strategic or deliberate methods of decision-making used to target specific limiting factors and facilitate learning from the outcomes of public engagement decisions and management actions.

Similar to the changes in habitat and population management approaches that occurred after the implementation of NAWMP in 1986, the waterfowl management community is now taking the initial steps to apply some of these same approaches to the development of public engagement strategies. These changes include an emphasis on coordination across scales, taking a systems approach to affect change, and improving decision-making through the use of structured decision-making approaches. The coordination across scales will increase opportunities to learn from one another and to coordinate activities that will build upon one another to increase the likelihood of success. Taking a systems approach will provide the opportunity to affect change by considering the relationships between individuals, social groups such as families, friends, and communities, and broader institutions that influence how we interact with one another and nature (Larson et al. 2013). The use of structured decision-making approaches result in more strategically targeted public engagement actions and provide opportunities to learn from these actions (Decker et al. 2012).

The institutional arrangements that have facilitated coordination across scales for waterfowl habitat and population management may also facilitate public engagement efforts across scales. These include spatial and temporal scales as well as scales of social organization. The hierarchy of social scales ranges from individual behaviors and decision-making, to the socialization processes that occur through interactions with families, friends, and communities leading to the formation of shared values and identities, to the role social organization and institutions play in sustaining the capacity for conservation and sustainable relationships between society and the environment (Larson et al. 2013).

The waterfowl management community has benefitted from the progress made in developing science-based, structured, and adaptive approaches to habitat and population management. Joint Ventures successfully introduced these types of approaches through the implementation of Strategic Habitat Conservation. The two most fundamental features of Strategic Habitat Conservation are to establish explicit, measurable objectives and to use models relating populations to limiting factors so that management can be targeted and its impacts assessed (U.S. Fish & Wildlife Service 2008). In a similar fashion, the U.S. Fish & Wildlife Service and flyways have successfully implemented adaptive approaches to waterfowl population using a structured-decision framework (Williams et al. 2012; U. S. Fish & Wildlife Service 2013a).

In both population and habitat management, the implementation of structured decision-making approaches has resulted in four positive outcomes. First, it provided a framework to facilitate coordination

and incorporation of diverse and even conflicting perspectives. Second, it fostered the integration of scientific and experiential knowledge. Third, it led to more strategic implementation of management actions to address predicted limiting factors rather than more haphazard methods based on implicit assumptions and the hopes they would work. Fourth, it accelerated learning and improved decision outcomes through an iterative process.

The waterfowl management community is now poised to apply science-based, structured decision-making processes to public engagement. The NAWMP Human Dimensions Working Group has already begun developing conceptual models that reflect practitioner and social science perspectives regarding components of social systems that will need to be addressed to strengthen the connections between society and nature. The NAWMP Human Dimensions Working Group and Public Engagement Team will be working with the waterfowl management community to develop explicit measurable public engagement objectives, identify sources of uncertainties that can be addressed through research or adaptive management, select best management practices to target limiting factors, and monitor to determine success and learn.

As social and ecological systems continue to change, it is becoming increasingly important that institutions adapt to keep pace. Social sciences provide a number of perspectives on factors leading to institutional change as well as to processes that may be used to promote adaptation (Powell and DiMaggio 1991; Pahl-Wostl 2009). Perhaps one of the most overlooked successes with the implementation of NAWMP was the ability of the waterfowl management community to retool the institution of waterfowl management. Through NAWMP, the waterfowl management community has adapted the structure of governance and culture of management through the development of Joint Ventures and the partnerships they sustain. The community redefined the scale of waterfowl management to focus on ecological systems rather than just isolated patches of habitat and introduced new methods to affect these systems. Finally, the community increased institutional capacity by expanding the knowledge base to include perspectives from geographers, hydrologists, soils experts, and a host of other disciplines to better understand system dynamics. Today, many individuals involved in waterfowl management occupy positions that did not exist prior to 1986 and work with partners well beyond those who were traditionally involved with waterfowl management. Similarly, the waterfowl management community now includes new organizations and committees such as the NAWMP Science Support Team and other NAWMP committees to support activities that help sustain the institution of waterfowl management.

The waterfowl management community has already taken the next steps to further retool the institution of waterfowl management to more explicitly include people. Formation of a Human Dimensions Working Group and a Public Engagement Team demonstrate a commitment to expand institutional capacity to address changing social systems. All four flyways also now have human dimensions committees. Through the establishment of an Interim Integration Committee, the waterfowl community is also taking the first steps to address governance and other institutional arrangements that may be improved to better equip the waterfowl management community to respond to more rapidly changing social and ecological systems.

Conclusion

The waterfowl community is at a critical juncture that will shape not only how waterfowl management professionals conduct their work but also the potential for current and future generations to enjoy the many benefits provided by waterfowl and wetlands. It is apparent that the old paradigm characterized by the phrase, “Build it and they will come,” is no longer sufficient. Today, we recognize that this paradigm only addresses the “tip of the iceberg” and that the revision of NAWMP is “pushing the envelope” and challenging the waterfowl management community to more explicitly consider how to manage with and for people. This not only involves considering how people may contribute to waterfowl conservation but also how the waterfowl management community can strengthen the emotional and pragmatic ties individuals and communities have to waterfowl and their habitats.

To summarize the future direction, I provide a “back of the envelope” illustration in Figure 3. The

revision of NAWMP continues to build on the success by using Joint Ventures to increase carrying capacity for waterfowl populations through management across scales and using flyways to guide population management. It challenges Joint Ventures to consider managing habitat to provide desired recreational experiences and ecological services as well as for increasing carrying capacity for waterfowl. It challenges flyway councils to reconsider the current foundation of population objectives and harvest management strategies to maximize harvest and to more explicitly consider the roles waterfowl populations and harvest management play in providing desired experiences for current and future generations. This transition will require paying greater attention to the changing social landscape and how it influences participation in waterfowl-related recreation and conservation. It will require effectively integrating social and ecological systems to produce sustainable landscapes contributing to the overall quality of life and the material basis needed to support society. And finally, it will require increasing the institutional capacity to support this new emphasis on people and a commitment to use social sciences as well as ecological sciences to achieve NAWMP goals.

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Figure 1. Tip of the Iceberg.

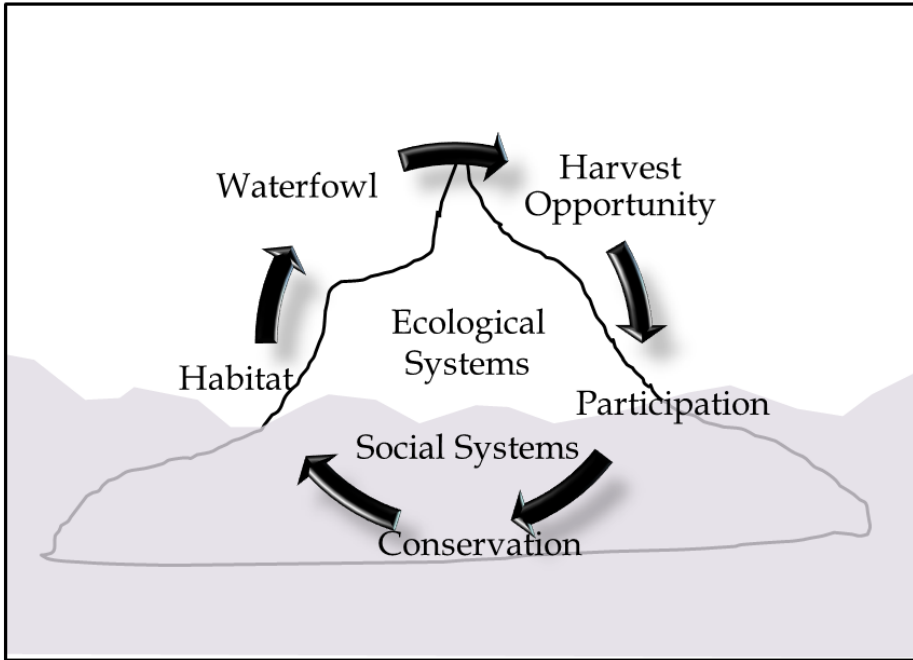
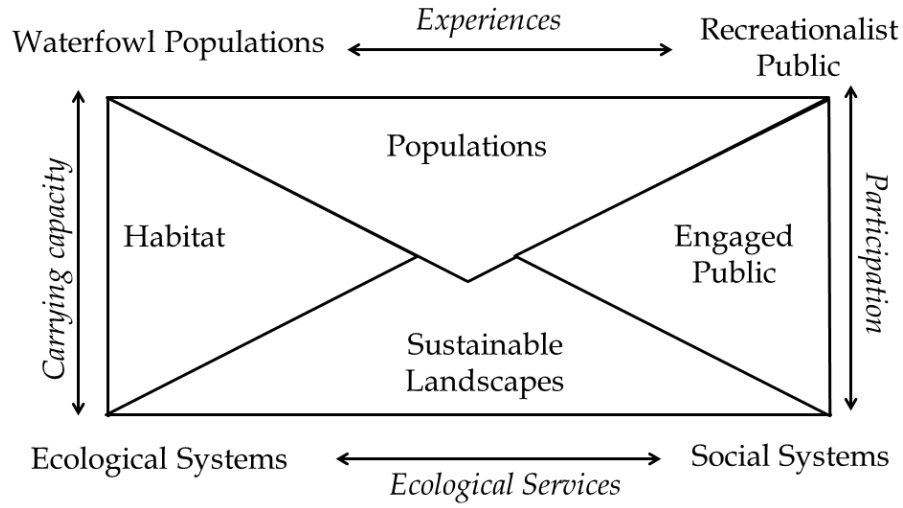


Figure 2. Pushing the Envelope.



Figure 3. Back of the Envelope.

People Conserving Waterfowl and Wetlands



Public Values and Wildlife Management: Exploring the Social Context of the North American Waterfowl Management Plan

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Introduction

States are experiencing a number of social and demographic changes that have affected and will continue to affect wildlife management. Changes include human population growth and expansion, changes in in-migration rates and land use patterns, demographic shifts such as increasing income and education levels, growth in technology, and urbanization. These changes are contributing to the many challenges that increasingly define the context of wildlife conservation today, such as habitat loss and fragmentation, loss of biodiversity, hunting declines that raise concerns about the adequacy of current funding structures, acceleration of human-wildlife conflict, and a rise in social conflict over wildlife-related issues and management as evidenced by the rise in ballot initiatives in recent decades (U.S. Fish & Wildlife Service 2007; Madden 2004; Distefano 2005; Minnis 1998). Further, these changes have redefined the public interest agencies are charged with representing in decisions and provision of opportunities under the North American Model of Wildlife Conservation.

This array of challenges facing wildlife professionals today also sets the stage in defining the context for the recent revision of the North American Waterfowl Management Plan, which rallies around a desire to motivate a broad set of constituencies to work together to support conservation of waterfowl and their habitats (U.S. Fish & Wildlife Service 2012). This goal inherently demands an understanding of current public interests, which can be garnered through human-dimensions research. More specifically, key questions that can be informed by human-dimensions investigations include:

1. What is the current situation with respect to trends in public values toward wildlife?
2. How are values shaping behavior and response to wildlife management issues?
3. How can agencies engage and build trust among emerging constituents?

To improve understanding in these areas, we draw upon results of a long-term research program designed to assess and monitor public values toward wildlife in the United States over time. The program is an initiative led by the Western Association of Fish & Wildlife Agencies Human Dimensions Committee in cooperation with Colorado State University. Here we present highlights from the first phase of this initiative, involving a survey of residents in 19 western states ($n = 12,673$) that was completed in 2005 (for more details, see Manfredo et al. 2009; Teel et al. 2009). We conclude with a brief discussion about future research directions and how values information can be useful in understanding diverse publics and planning for the future of wildlife management.

Current Trends in Wildlife Values

Our research builds upon a theory of value shift advanced by Inglehart, who contends that changes associated with modernization have played a primary role in producing the mix of values evident in contemporary societies around the world (1997; Inglehart et al. 2005). Using Maslow's (1943)

hierarchy as an analogy to depict how societal-level change occurs, Inglehart argues that values are changing in response to shifting need states. Prior to World War II, in countries like the United States, values for most people formed around concern for economic well-being and basic utilitarian needs (e.g., safety, physical security). The period of economic growth and development that occurred following the war then spawned a transition, leading to greater emphasis on higher-order psychological needs (e.g., belongingness, self-expression, quality of life), which in turn has fostered a new set of societal values. According to Inglehart, this change occurs gradually over time through intergenerational shift. Results of Inglehart's "World Values Survey," administered longitudinally across many different cultures, support the basic tenets of his theory. These findings show how country-level variables indicative of modernization (e.g., income, education, urbanization) are related to the composition of values within a country. Countries with higher levels of wealth, for example, have lower percentages of people with values emphasizing utilitarian-based needs.

As an extension of Inglehart's conclusions, we sought to explore whether trends in public values toward wildlife in the United States are reflective of this broader societal shift. Specifically, we hypothesized that modernization is producing a shift away from a utilitarian view of wildlife, toward a "mutualism" value orientation that places greater emphasis on notions of belongingness, equality, and caring for wildlife. As we define in greater depth in Manfredo et al. (2009) and Teel et al. (2009), value orientations are networks of beliefs that organize around values and provide contextual meaning to those values in relation to a particular domain such as wildlife. A *utilitarian value orientation* (also referred to elsewhere in our publications as a "domination value orientation") promotes a view that prioritizes human well-being over wildlife. In the ideal world for those with a utilitarian orientation, there would be an enduring abundance of wildlife for human use, wildlife would be managed for human benefit, and human needs would take precedence over the needs of wildlife. A *mutualism value orientation* views wildlife as capable of relationships of trust with humans and is defined by a desire for companionship with wildlife. In the ideal world for those with a mutualism orientation, humans and wildlife would live side-by-side without fear, and wildlife would have rights like humans and be considered part of an extended family. With improved socioeconomic well-being, a shift toward mutualism is believed to be occurring as wildlife is now viewed less as a commodity for meeting subsistence needs and more as a source of social support deserving of equal treatment.

Results of our 19-state survey effort reveal patterns of variation in the composition of wildlife value orientations in the western United States (Manfredo 2008; Teel et al. 2009). As an illustration of these findings, Figure 1 displays the percent of people with a utilitarian value orientation in states throughout the region. Higher percentages were found in the Rocky Mountains and Midwestern states, with the highest in Alaska and South Dakota (50 percent). Lower percentages were found in coastal states, with the lowest in Hawaii (25 percent). Results also shed light on societal-level factors that may be responsible for this variation and that may be affecting change in value orientation composition. We reported elsewhere using multilevel modeling that state-level indicators of modernization (i.e., income, education, urbanization) explained a significant amount of variance in wildlife value orientation scoring in the western region (Manfredo 2008; Manfredo et al. 2009). As a graphic illustration of these findings, Figure 2 displays the relationship between urbanization and the percent of people in a state with a mutualism value orientation. States with higher percentages of residents living in urban areas had higher percentages of mutualists. While it is worth noting that these baseline data are merely cross-sectional, as opposed to longitudinal in nature, they reveal patterns that are consistent with our overall hypothesis, suggesting that some of the same socioeconomic factors Inglehart argues are driving a change in societal values may also be contributing to a shift in wildlife value orientations at the state level.

Values Affect Wildlife-Related Attitudes and Behaviors

Wildlife value orientations play an important role in explaining variation in individuals' wildlife-related attitudes and behaviors (Manfredo et al. 2009; Teel et al. 2009). They shape how people respond to wildlife management issues and actions and also form the basis for participation in wildlife-related

recreation activities. Those with a utilitarian value orientation toward wildlife, for example, are more likely to participate in hunting, whereas mutualists are more likely to express interest and engage in wildlife viewing. An illustration of this trend is depicted at the state level in Figure 3, which shows the percent of hunters who remained active in the sport in relation to the percent of people in a state with a utilitarian value orientation. States such as Montana, Alaska, North Dakota, and South Dakota that had higher percentages of utilitarians also had higher percentages of hunters indicating they participated in the activity in the last 12 months. Conversely, states with lower percentages of utilitarians (and higher percentages of mutualists), including Hawaii, Nevada, and California, had fewer hunters who remained engaged. These results not only demonstrate the connection we tend to find *within individuals* between wildlife value orientations and wildlife-related recreation behaviors, but they also suggest that declines in hunting may be part of the broader mix of societal changes happening as a result of modernization at the *state level*.

As another example, Figure 4 shows how wildlife value orientations can impact individuals' preferences for wildlife management activities. As part of the 19-state survey effort, each state had the opportunity to obtain public input on state-specific issues of interest. In Montana, one of the areas of inquiry dealt with how residents perceived different programs that entailed the state agency (Montana Fish, Wildlife & Parks) working with private landowners to accomplish certain goals. Programs included Habitat Montana, Upland Game Bird Enhancement, Block Management, and Fishing Access Site (see Figure 4 notes for a brief description of each program). When asked to rate the overall importance of these programs, utilitarians placed greater emphasis on programs focused on provision of hunting and fishing access (i.e., Block Management and Fishing Access Site). In contrast, those with a mutualism value orientation tended to express a broader concern for wildlife habitat protection in their importance ratings (i.e., Habitat Montana). These findings reveal differences that can often form the foundation for conflict among segments of the public, particularly with respect to how people perceive agency resources and effort should be allocated.

Values and Agency Trust

One of the outcomes of value shift, according to Inglehart, is a gradual loss of faith in government (1997; Inglehart et al. 2005). This decline in trust stems from the emergence of new expectations for government institutions that are slow to change and unable to keep pace with the demands of a changing public. To explore this phenomenon in relation to the suggested shift from utilitarian to mutualism wildlife value orientations, we examined questions of trust from the 19-state survey. Figure 5 contains an illustration of our findings that shows a relationship at the state level between the percent of people expressing trust in the state wildlife agency and the composition of value orientations in a state. States with lower percentages of mutualists were more trusting of the agency, whereas states with higher percentages of mutualists assigned lower trust ratings. These results are indicative of the trend Inglehart describes, and they suggest that with modernization there may be a growing disconnect between emerging publics (i.e., those with a mutualism value orientation) and the agencies charged with representing them in decisions. An important question raised at the outset of this paper was: How can agencies build greater social capital among new constituents to address this disconnect in the future? Response to this question begins with an understanding of the underlying characteristics and preferences of emerging groups.

Conclusions

As a whole, findings from our 19-state study suggest that public thought regarding wildlife is changing in the western United States (i.e., a shift from utilitarian to mutualism value orientations) and this change is part of a broader value shift occurring due to modernization. Changes in economy, technology, and demography are producing a different set of lifestyle circumstances in America which are in turn impacting how people raised in this new environment think about and relate to the natural world.

This shift is believed to be at the root of many of the challenges that increasingly define the context of wildlife management today, including heightened public controversy over wildlife-related issues, declines in hunting, and lack of trust in managing authorities. Our results offer support for this conclusion, showing how people with different wildlife value orientations respond differently to wildlife management issues, have different preferences for wildlife-related activities, and express different levels of trust in wildlife agencies.

An understanding of the current situation as well as future trends in public values, which can be facilitated by human-dimensions research, is a critical first step for agencies and organizations wanting to remain relevant and garner greater support among diverse constituencies. Achieving the vision of the new North American Waterfowl Management Plan, which centers on building a broad support base for conservation, will demand this understanding to inform ways to reach underrepresented interests. For future human-dimensions research in this area, we recommend investigators continue to explore the social and ecological factors that shape human thought about wildlife. We also recommend continued research that contextualizes the individual in a multilevel social framework. In other words, there is a need to explore not only how individuals think about wildlife and the natural environment, but also how individual thought is impacted by broader societal forces and interactions with community and other social networks. Greater attention to these questions will improve our ability to anticipate and plan for the changing social context of wildlife management in the future.

Acknowledgements

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Figure 1. Distribution of people with a utilitarian value orientation toward wildlife across states, from a 2004 survey of western U.S. residents. Shading used to enhance visibility of distribution patterns; darker shades signify higher percentages. (Figure adapted from Manfredi 2008, reproduced with kind permission of Springer Science+Business Media.)

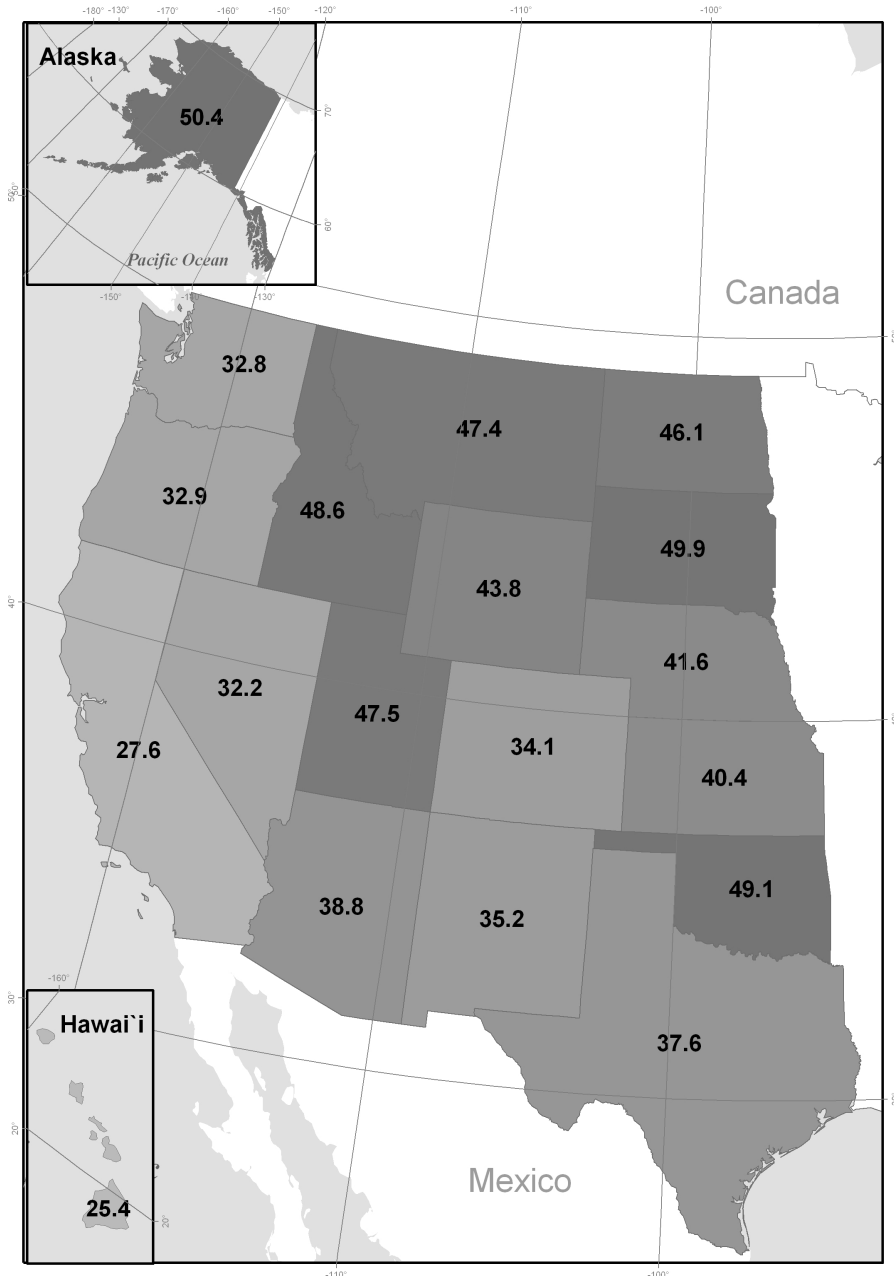


Figure 2. State-level relationship between urbanization and percent of people with a mutualism value orientation toward wildlife, from a 2004 survey of western U.S. residents. Urbanization was defined as the percent of people residing in areas with a population size of 50,000 to 249,999 (city) or 250,000 or more (large city). (Figure adapted from Manfredi 2008, reproduced with kind permission of Springer Science+Business Media.)

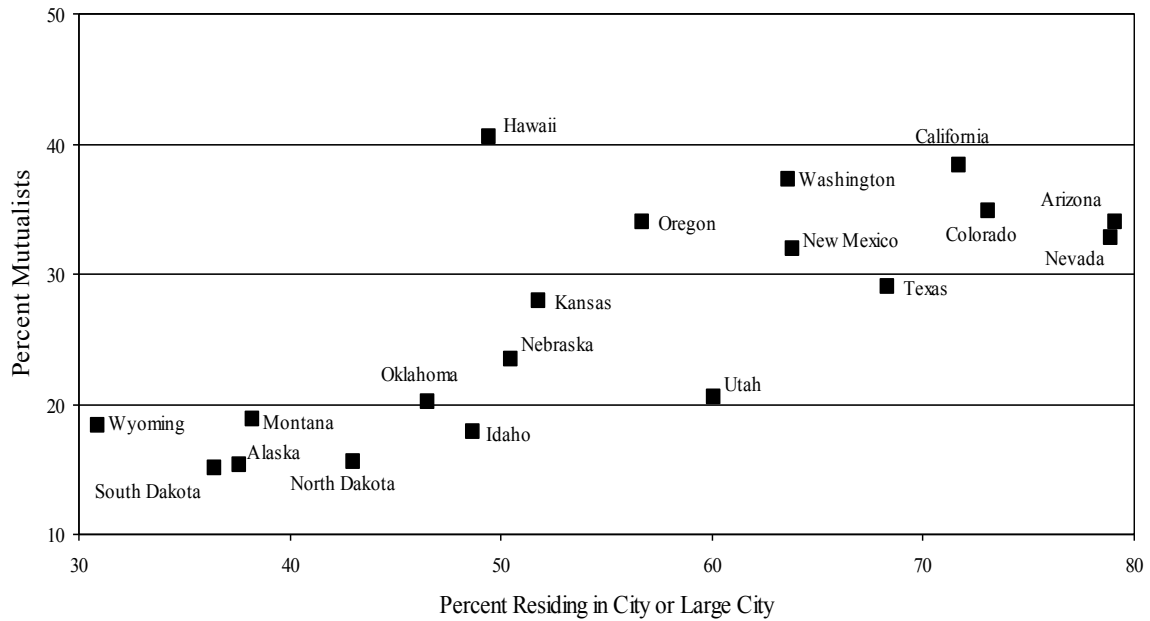


Figure 3. State-level relationship between percent of people with a utilitarian value orientation toward wildlife and percent of hunters who remained active in the sport, from a 2004 survey of western U.S. residents. Hunters who remained active were defined as those who indicated having participated in hunting in the past (yes/no) and also in the last 12 months (yes/no).

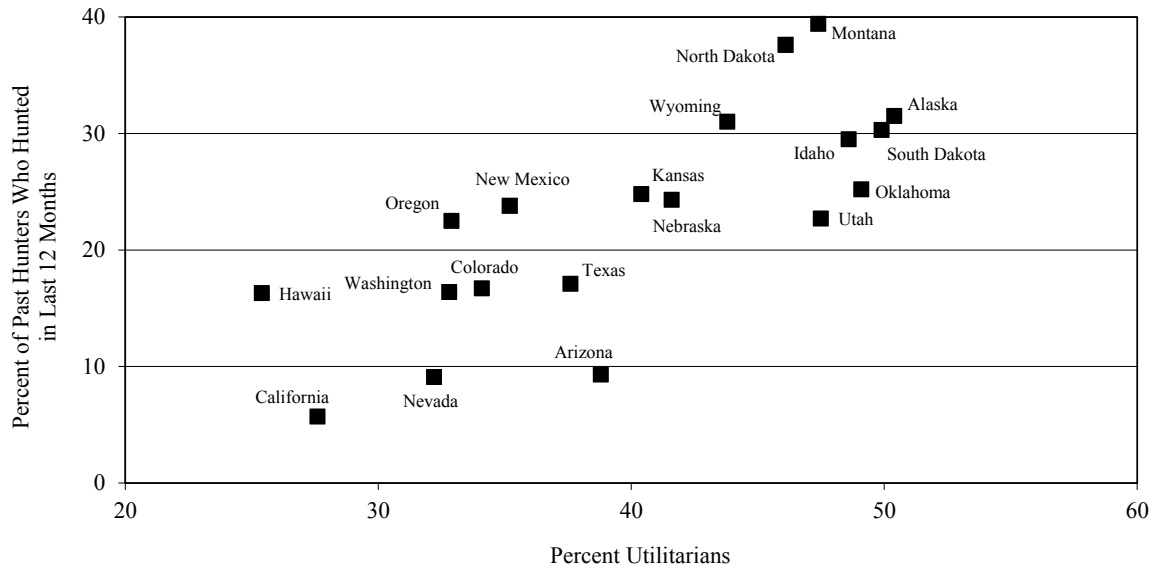
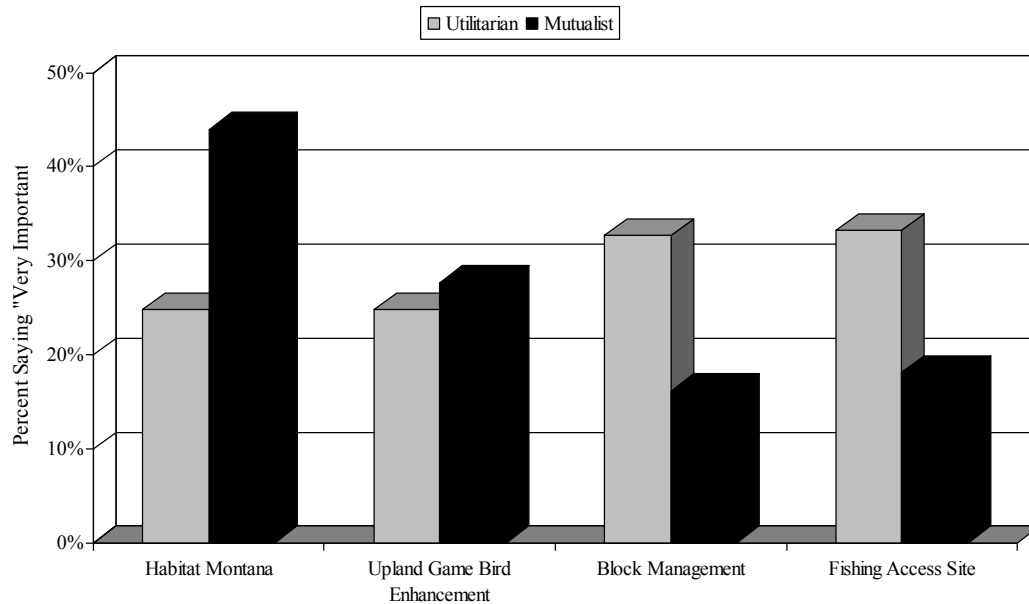


Figure 4. Ratings of importance for Montana Fish, Wildlife & Parks (FWP) private landowner programs¹ by wildlife value orientation type, from a 2004 survey of Montana residents. Respondents were asked to indicate how important they think it is that FWP continue to fund these programs on a scale from 1=very unimportant to 5=very important.



¹Programs were defined on the survey as follows:

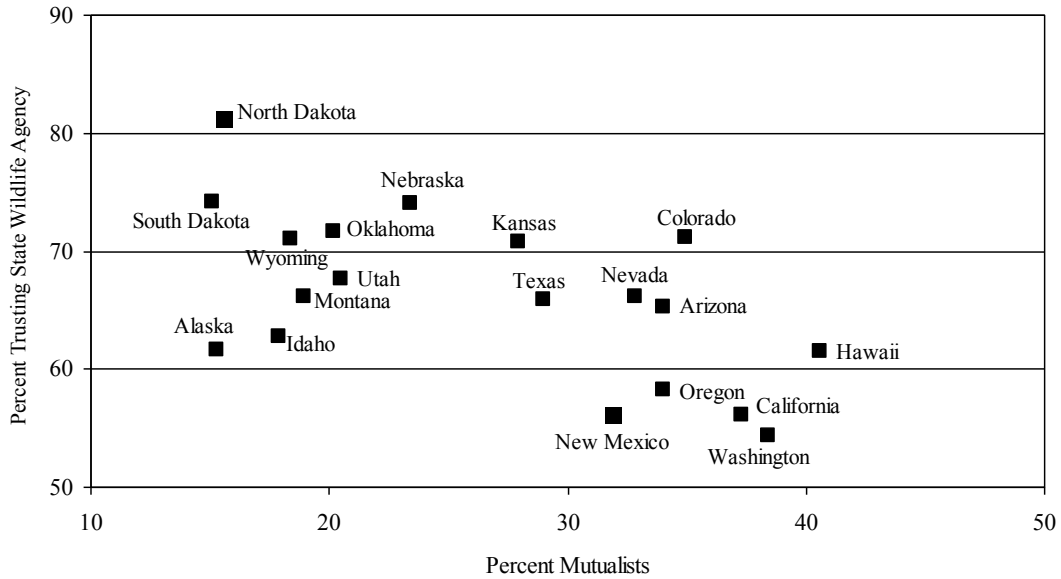
Habitat Montana Program. FWP offers tangible benefits (both monetary and nonmonetary incentives) to landowners to conserve habitat for fish and wildlife on private lands, including in some cases the purchase of conservation easements.

Upland Game Bird Habitat Enhancement Program. Landowners can benefit from a cost-sharing program while improving their land and making it more inviting for Montana's upland game birds. Landowners may work with FWP biologists to develop upland game bird habitat projects and FWP will share up to 75 percent of the project costs (for example, establishing and maintaining shelterbelts, planting nesting cover and food plots, and implementing improved grazing management systems). Projects must be open to some free public upland game bird hunting.

Block Management Program. FWP offers tangible benefits (both monetary and nonmonetary incentives) to encourage free public hunting access to private lands and assists landowners in managing public hunting activities on lands under their control.

Fishing Access Site Program. Landowners with suitably located lands may be compensated for providing public fishing access. Lands may be purchased or leased under a contractual agreement. The program's aim is to acquire sites within a four-hour float distance of each other on Montana's larger rivers and to increase fishing access to smaller streams.

Figure 5. State-level relationship between percent of people with a mutualism value orientation toward wildlife and trust in the state wildlife agency. Trust was defined as the percent of people selecting a 3 or 4 on the following response scale: 1=almost never, 2=only some of the time, 3=most of the time, and 4=almost always.



Achieving Behavior Change to Promote Protection of Wetlands in the Prairie Pothole Region

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Agencies and organizations worldwide spend millions and millions of dollars educating people to do the right thing for health, safety, or the environment. There is a large body of research that shows that education campaigns can positively affect knowledge and attitudes, but they are largely ineffective at creating lasting changes in behavior. During the past 100 years, the field of social psychology has amassed a tremendous base of knowledge about human behavior. Unfortunately, this knowledge is underutilized. Many organizations create programs, design business plans, or implement policies that are based on invalid assumptions about human behavior. What does research say about the best way to introduce new policies or rules to constituents, reduce human-wildlife conflicts, or increase environmentally responsible behaviors near water sources? New behavior-based approaches have emerged to support resource management professionals in their efforts to promote behaviors that protect wildlife and natural resources, increase the safety of their constituents, and spur support for policies and initiatives.

Community-based social marketing (CBSM) combines psychological knowledge with applied research methods in a way that provides a usable framework for practitioners working to promote behavior change. This paper will explain the CBSM process and basic behavior change principles, as well as demonstrate the efficacy of the approach by sharing a case study. Although the project is currently not complete, there will be a brief discussion of how CBSM is being used to develop a program for Ducks Unlimited Canada to promote protection of wetlands in the Prairie Pothole Region of Canada.

Community-Based Social Marketing

Community-based social marketing is a five-step process. Each step in the process is data driven and informs the next. The steps are: (1) selection of a behavior, (2) identifying the barriers and benefits to the selected behavior, (3) developing a strategy to engage the target audience in the selected behavior, (4) piloting the strategy with a control and treatment group, and (5) implementing the project broadly with ongoing evaluation.

Select a behavior. Changing behavior is a process. Programs to promote conservation or environmental protection involve human behaviors. In order to conserve or protect, people have to do something. For an organization to realize the program goals, the selected behaviors must be directly linked to the program goals. In other words, if the program goal is to increase the number of mountain bluebirds in a particular region, what actions are directly related to providing that increase? Are actions related to the bluebird's food sources or nesting places likely to result in success? This step in the process usually entails gathering stakeholders and conducting research in order to create a preliminary list of behaviors related to the program goals. The preliminary list of desired behaviors can then be evaluated for three attributes:

- 1) Penetration—i.e., how many people are already engaged in the behavior?
- 2) Probability that the target audience will engage in the desired behavior—i.e., can the program increase motivation and/or remove or lower barriers sufficient for the target audience to engage in the desired behavior?
- 3) Impact—i.e., will the behavior result in a successful program?

The one-time or repetitive nature of the behavior can greatly affect penetration, probability, and impact. For example, planting trees is a one-time behavior, whereas removing invasive plants is likely a repetitive behavior.

Conduct barrier and benefit research with the target audience. The target audience is the group of people not engaged in the desired behavior. Conducting barrier and benefit research with the target audience provides the data necessary to understand what prevents people from engaging in the desired behavior. Target audiences can be reached through direct behavioral observations, intercept interviews, focus groups and telephone surveys, or in-depth interviews. Program success hinges on identifying why people are not engaging in the desired behavior. As subject-matter experts, program managers are tempted to design programs based on their viewpoints or hunches. However, programs created without information directly from the target audience are destined to fail. Behaviors are sometimes complex and barriers to engagement may vary by context, demographic variables, region, and even season of the year.

Develop a strategy. The program strategy springs directly from the barrier and benefit research. The strategy should focus on one behavior at a time. Although it is tempting to nest several behaviors into one program message, communicating a laundry list of behaviors is overwhelming and confusing and is unlikely to result in behavior change. Messages should be clear, concise, and tell people exactly what to do. Whenever possible, utilize personal contact in conveying the message. While mass media is a good tool for reaching large numbers of people in order to raise awareness or increase knowledge, it is a poor tool for changing behavior. Community-based social marketing utilizes a vast array of tools from the social sciences in order to highlight motivations, as well as lower or remove barriers to engagement in the desired behavior. Barriers may be internal to the person (e.g., lack of interest or time) or external (e.g., lack of equipment or infrastructure). Social science tools can include commitments (i.e., people tend to behave in ways consistent with what they have said they would do), prompts (i.e., a simple reminder in close proximity to where the behavior is to occur), and social norms (i.e., how others behave highly influences our own behavior).

Pilot test using a control and treatment group. Designing a pilot project for implementation with a small portion of the target audience provides important data about efficacy of intervention. A well-designed pilot allows an agency to assert that the program strategies directly caused the desired behavior change. In addition, piloting before full implementation of the program is a cost savings designed to test the most successful means of achieving the desired behavior change while identifying areas that might need modification.

Implement broadly and evaluate. Once the program strategy has been piloted and any necessary adjustments have been made, the program is ready for full-scale implementation. Ongoing evaluation will provide valuable data for measuring program success. Measuring program outcomes may be needed in order to justify the program's existence, prepare for upcoming budget decreases, or inform future program activities.

Case Study

Action Research worked with the City of Oceanside Clean Water Program to develop a community-based social marketing campaign aimed at decreasing the amount of dog waste left along the San Luis Rey River Trail in Oceanside, California. The San Luis Rey River Trail extends from a trailhead in North Oceanside 7.2 miles alongside the San Luis Rey River westward to the Pacific Ocean. It is reserved for use by cyclists and pedestrians. No motor vehicles are allowed on the trail. The trail is popular with cyclists, runners, and people walking dogs. There are two trailheads with parking that allow access to cyclists who drive in from throughout the region, as well as residents from the surrounding neighborhoods. The Clean Water Program regularly monitors the water quality of the river.

Identify the desired behavior and target audiences. Picking up dog waste was selected as the desired behavior. Dog waste was observed in sufficient quantity along the trail as to be a contributor to bacterial levels found in the river. In order to identify the target population, we conducted a brief intercept survey of trail users. The survey was used to identify the characteristics of people who visited the trail. The survey showed that the majority of trail users who walk their dogs on the trail live in close proximity to the trail access points suggesting our outreach efforts should focus on the local neighborhoods.

Barrier and benefit research. In order to identify the barriers and benefits to picking up dog waste for those who walk dogs on the trail, we conducted a mail survey of a random selection of residents living in the neighborhood surrounding the trail. The survey asked about dog ownership, current dog waste pick-up behavior, and barriers and benefits to proper dog waste disposal. The results were incorporated into a series of structural and motivational program recommendations.

CBSM program design. The results of the neighborhood survey showed that residents believed dog owners should pick up pet waste because it is their social responsibility. In addition, some dog owners stated they don't always have dog-waste bags with them while walking their dog along the trail. Based on these results we developed signage that communicated a motivational message leveraging social responsibility. To address structural barriers, dog waste bag stations were installed at trail access points.

Pilot test. The program was implemented and evaluated using an experimental methodology to measure the impact of the program strategies on the amount of dog waste left on the trail. Observations of existing dog waste were conducted in pilot and control areas along the trail prior to the start of the campaign and following the first phase. Results of the pilot phase showed that the CBSM program produced a 23 percent decrease in the amount of pet waste left on the trail in the pilot area compared to control area.

Implementation. With the success of the pilot program the City of Oceanside has installed doody signs along with bag stations and garbage receptacles on other parts of the trail and in the city.

Discussion. This project is a good example of the advantages of utilizing the community-based social marketing approach. Data from the target audience

(i.e., residents who walk their dogs on the trail) showed that social responsibility was a stronger motivation for picking up dog waste than was reducing pollution in the nearby river (i.e., the program focus for the city). Signage typical for this type of dog waste program was not motivational for this audience (see Figure 3).

Social Marketing Strategies to Encourage Public Support for Wetland Protection in the Prairie Pothole Region of Canada

Action Research is currently working with Ducks Unlimited Canada (DU) on a community-based social marketing project aimed at encouraging public support for wetland protection.

Identify the desired behavior and target audiences. In order to gain an understanding of the behaviors associated with and target audiences essential to wetland protection we conducted in-depth interviews with retired politicians and political advisors in Alberta, Manitoba, and Saskatchewan. The in-depth interviews were qualitative in nature but gleaned a wealth of information on how to encourage wetland protection in the three provinces. Several potential protection-related behaviors were identified through this process. Results from the interviews led us to focus new research efforts on two target audiences—DU members and the general public.

Barrier and benefit research. Foundational research was conducted with the general public and DU members. A telephone survey was conducted with 2,400 residents across the three provinces (i.e., 800 in each province). In addition, we conducted a telephone survey of 300 DU members. The telephone



Figure 2. Program Signage.



Figure 1. Signage with Bag Station and Waste Receptacle.



Figure 3. Typical Dog Waste Signage.

survey was preceded by focus groups with DU members in each of the three provinces. The focus groups informed the development of the telephone survey instrument. The telephone surveys measured perceptions of the participants' own wetland knowledge, identified the barriers and benefits to selected wetland protection behaviors (e.g., letter writing), and determined participants' willingness to engage in the selected behaviors.

Develop audience-specific strategies. We are currently in the process of developing strategies specific to the two target audiences that will directly address the barriers and benefits identified by each audience. While there were differences in the research findings, the two groups did share some common outcomes: (1) neither group perceives themselves to be very knowledgeable about the functions of wetlands; (2) both groups stated that wetlands are important to providing habitat to wildlife, especially waterfowl; (3) both groups stated that protecting wetlands is everyone's responsibility (i.e., provincial government, local government, and individuals); (4) both groups stated that the current laws are not sufficient to protect the wetlands; and (5) a reasonable percentage of participants stated they are willing to take protective actions.

The research outcomes will be utilized to develop strategies to encourage public support for wetland protection in Canada's Prairie Pothole Region.

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Final Thoughts for The Session: New Directions for Examining the Human Dimensions of Waterfowl Management

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In 1971, at the North American Wildlife and Natural Resources Conference, John Hendee and Dale Potter announced the need for research on human behavior to assist wildlife management. They suggested four basic research priorities:

- understanding hunters and hunter satisfaction,
- understanding how to accommodate nonconsumptive users of wildlife,
- understanding of the economic value of wildlife, and
- providing information to assist legal and political issues.

In 1989, I edited a special section of the *Wildlife Society Bulletin* on Human Dimensions of Wildlife. In my introduction, I noted that the issues raised by Hendee and Potter were the same in 1989 as they were in 1971. I think you can see by today's presentations that now in 2014, 43 years after Hendee and Potter, we are fundamentally discussing the same topics. Clearly, there are enduring needs and concerns that we talked about in today's presentations. However, what I would like to do in my wrap-up is highlight flashes of what is new, as touched upon by today's presentations. While the problems in wildlife management have been enduring, there have been transformative changes in the sciences. In particular, there has been an emphasis on examining problems as emerging from a social-ecological system (SES). In that system's view, society and environment are mutually constructed, dynamic, and multilevel. While I have no intention of going deeply into the SES concept, I do want to highlight a few practical implications for the human dimensions of waterfowl management planning.

First, *we need to start examining people in context*. The social part of "social-ecological" must be envisioned in multiple layers. There are individuals who have the attitudes and opinions we often measure, but these individuals exist within groups, within institutions, within societies, and within cultures. Recognizing these added layers are important because 1) groups, institutions, and cultures have a profound impact on how people think, and 2) groups, individuals, and cultures have separable characteristics of their own that are important to study. Let me give you a concrete example of what we can miss by looking only at individuals. Dr. Teel talked about how value shift is affecting trust. But she also told us the shift depends on the conditions of the state one lives in. In fact, this finding only was revealed when the analysis was conducted at the state level.

This brings me to the following conclusion: North American waterfowl management planning should examine the psychological attributes (things like attitudes and values) of hunters and other constituents but also explicitly take into account the context in which these people are nested. This might include geographic regions, political or agency regions, and/or social, cultural, or ethnic groups.

Second, *we need to consider human thought as dynamic and changing*. Prior approaches to human dimensions implicitly assume stability in people's thoughts. For example, we take attitude surveys at one point in time and assume stability in these attitudes over time. But social-ecological systems view humans as dynamic—constantly in modes of adaptation. Part of adaptation is in how people respond to new information. Of course, affecting the thoughts and actions of people with new information is always a vital concern of management, as Lori Brown Large talked about today. And as Greg Siekaniec reported, the North American Waterfowl Management Plan is targeting how we can engage and attract new constituents. How can we adequately inform managers about the causes and processes of such change if we do not study thought as a dynamic process? This leads me to my second conclusion: North American

waterfowl management planning should take a longitudinal and dynamic view in examining the human-dimensions component.

Third, *we need to examine the structure of governance*. The final advancement I want to mention is in the area of governance. Interest and activity in this area has exploded since Elinor Ostrom received the 2009 Nobel Prize for her work in common pool resources. Ostrom's work challenges the assumption that a strong centralized institution is the most effective way to govern resources, such as fish and wildlife. She found that many organizations and multiple levels of government tend to be far more effective than centralized institutions. I want you to think about that for a minute: whether it is a local group of landowners who create a land trust initiative or the proliferation of joint ventures, multiple organizations empowered to act together in governing their common pool resources are more effective than a central authority. Before she died, Ostrom proposed we find ways to diagnose governance ills, just like a physician. From this diagnosis, she proposed, we could recommend new, more effective means of governance. So my final suggestion is that, from a human-dimensions perspective, it will be important to examine the multilevel, multiregional governance structure in which waterfowl decisions are made because findings might guide innovations that will engage, attract, and sustain new constituencies.

Finally, I must say that these new directions will not occur without a desire for innovation and a real investment in embracing what the sciences of human dimensions can offer. I can only hope that the person revisiting this talk in 20 years can say: thanks to our study of human dimensions, we have made a real breakthrough in engaging people in waterfowl conservation.

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Special Session Two.

Managing and Protecting North America's Ungulate Migratory Pathways

Opening Remarks

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When we think about ungulate migrations we often picture the long-distance African migrations of zebras or wildebeests. In North America, most are familiar with caribou migrations but may be less aware of the specifics of most ungulate migrations including mule deer, pronghorn, elk, and moose. Some of these migrations have been documented to be as long as 150 miles and involve thousands of animals. Expansive largely undeveloped landscapes in the western U.S. have allowed these migrations to persist, and recent technologies allowing for GPS radio-tracking have brought to light the specifics of these migrations, including timings, fidelity, and distances traveled. Traditionally, migration routes were considered important as a means to get ungulates between summer and winter ranges. Historically, wildlife managers placed an emphasis on the importance of winter range and birthing areas as limiting factors to ungulate populations, and wildlife agencies identified these habitats and provided protection typically through seasonal restrictions of human activities. Most migration routes are poorly defined and typically given no protections.

New technologies and research have led to a new and much more detailed understanding of migrations. Recent research efforts in Wyoming and elsewhere shed light on migration more as an ecological process than a means to move animals between seasonal ranges. As an example, we are now learning that migrating mule deer may spend two to four months of the year migrating and most of that time is spent in distinct “stopover” areas that allow animals to maximize their use of nutritious vegetation as they migrate. These “stopovers” provide insight into areas that may warrant additional protections or management emphasis. Additionally, the timing of migrations may be linked to the phenological changes of the landscape and researchers have observed varying degrees of fidelity to both seasonal ranges and routes of travel between individuals and species. This new awareness of the importance of migration to ungulate populations and the lack of protection for these important resources leaves a policy gap for the protections of migration corridors.

Ungulate migrations are a large landscape phenomenon, which present unique challenges for the documentations of migratory pathways and our understanding of how migrating animals interact with their landscapes. Additionally, we are just now learning how these processes may be affected by anthropomorphic disturbances. With the recent focus on the Intermountain West as a source for global energy, it is imperative that we strive to better understand these relationships and more importantly apply what we have learned, in order to maximize opportunities to conserve these migrations. As animals migrate long distances, they may cross multiple ownership patterns and jurisdictional boundaries. These varied ownership patterns require a significant coordination with agencies, nongovernmental organizations (NGOs), private landowners, and others to ensure these routes are conserved for the future.

Conversely, although risks are high, conservation options are greater than ever. Crossing structures for ungulates are a proven technique to get animals safely across highways, and fences can be built to keep animals off roads or to funnel them to crossings. We have better GIS tools that are easier to use and more sophisticated than ever and they are becoming more accessible to managers. Additionally, we are gaining experience with large landscape conservation as people are forming functional groups to exchange ideas, concerns, and identify potential solutions. Lastly, well-funded NGOs are willing to help and have the resources to make significant contributions to the conservation of important wildlife resources including migrations. With our current knowledge regarding migrations and the availability of conservation tools, the time is right to develop policy regarding protections of these important habitats.

This special session will summarize what has been learned through several decades of efforts in Wyoming, Colorado, and elsewhere to understand, document, and increase public awareness of the importance of ungulate migrations. We will explore the “Path of the Pronghorn,” a pronghorn migration from Grand Teton National Park through the Upper Green River to areas more than 150 miles to the south in Wyoming. Additionally, speakers will review recent ungulate research and describe what it tells us about the ecology of ungulate migration. The session will review how we can use newly developed tools to assess risks to these important resources and how to best prioritize our efforts in order for managers to focus on the most important routes and those facing the greatest risk. Lastly, the session will look at effective ways to coordinate across jurisdictional boundaries and to develop conservation policies that can provide for the long-term protection of these corridors.

Migration Patterns of Adult Female Mule Deer in Response to Energy Development

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Introduction

Migration is an adaptive strategy that enables animals to enhance resource availability and reduce risk of predation at a broad geographic scale. Ungulate migrations generally occur along traditional routes, many of which have been disrupted by anthropogenic disturbances. Spring migration in ungulates is of particular importance for conservation planning because it is closely coupled with timing of parturition. The degree to which oil and gas development affects migratory patterns, and whether ungulate migration is sufficiently prepared to compensate for such changes, has recently been investigated in Colorado and Wyoming (Lendrum et al. 2012, 2013; Sawyer et al. 2012).

Lendrum et al. (2012, 2013) and Sawyer et al. (2012) address mule deer (*Odocoileus hemionus*) migration patterns in relation to energy development from northwest Colorado and south-central Wyoming, respectively. We address results from the Colorado and Wyoming studies and then compare similarities and differences. Management and conservation implications are proposed for consideration and future investigation.

Piceance Basin Mule Deer Migration

Lendrum et al. (2012, 2013) investigated spring migration patterns of adult female mule deer in the Piceance Basin of northwest Colorado from 2008 to 2010. They used Global Positioning System (GPS) collars (five location attempts per day) to address habitat use patterns and factors influencing timing and synchrony of spring migration by comparing areas with ongoing natural gas development activity to areas with little to no development (Lendrum et al. 2012, $n = 167$; Lendrum et al. 2013, $n = 205$). Mean migration distances among study areas varied from 36 to 53 kilometers (distance traveled; $n = 4$ winter range study areas), averaging 36 kilometers between seasonal ranges (linear distance; study area range: 32–40 km). Piceance Basin mule deer demonstrated rapid spring migration exhibiting median durations of three to eight days among areas. Stopover use (areas used to increase energy reserves during migration) along migration paths was rare for Piceance Basin mule deer. Well pad densities along migration paths within the two developed study areas were 1.5 to 2.0 pads per square kilometer.

Mule deer migrated more quickly through the most developed areas compared with deer in less developed areas. Additionally, deer migrating through the most developed study areas tended to select habitat types that provided greater amounts of concealment cover, whereas deer from the least developed areas tended to select habitats that increased access to forage and cover. Deer selected habitats closer to well pads and avoided roads in all instances except along the most highly developed migratory routes, where road densities may have been too high for deer to avoid roads without deviating substantially from established migration routes.

Environmental factors influencing timing and synchrony of spring migration included snow depth and emerging vegetation, which varied among years but was highly synchronous among study areas within years. Migration timing was also influenced by development disturbance, rate of travel, distance traveled, and late-winter body condition. Rates of travel were more rapid over shorter migration distances in areas of high natural gas development resulting in delayed departure—but early arrival for females.

These results indicate that behavioral tendencies to avoid anthropogenic disturbance can be overridden during migration by the strong fidelity mule deer demonstrate towards migration routes. If avoidance is feasible, then deer may select areas further from development, whereas in highly developed areas, deer may simply increase their rate of travel along established migration routes.

Atlantic Rim Mule Deer Migration

Sawyer et al. (2012) used GPS data (location attempts every 2.5 hours) collected from two subpopulations of mule deer ($n = 97$) in the Atlantic Rim region of Wyoming to evaluate how different densities of gas development (coal-bed methane) influenced migratory behavior, including movement rates and stopover use at the individual level and intensity of use and width of migration route at the population level. They characterized the functional landscape of migration routes as either stopover habitat or movement corridors and examined how the observed behavioral changes affected the functionality of the migration route in terms of stopover use. Atlantic Rim mule deer exhibited relatively longer migration duration averaging about three weeks, with distances averaging 40 kilometers between seasonal ranges, and common stopover use along migration paths. Well pad densities were more concentrated and higher than in the Piceance Basin increasing from 0.8 to 2.8 pads per square kilometer in the most developed study area.

Sawyer et al. (2012) found migratory behavior to vary with development intensity. They suggest that mule deer can migrate through moderate levels of development without any noticeable effects on migratory behavior. However, in areas with more intensive development, animals often detoured from established routes, increased their rate of movement, and reduced stopover use, while the overall use and width of migration routes decreased.

In contrast to impermeable barriers that impede animal movement, semipermeable barriers allow animals to maintain connectivity between their seasonal ranges. Their results identify the mechanisms (e.g., detouring, increased movement rates, reduced stopover use) by which semipermeable barriers affect the functionality of ungulate migration routes and emphasize that the management of semipermeable barriers may play a key role in the conservation of migratory ungulate populations.

Discussion

Environmental conditions were similar between study areas, whereas development intensity and migratory behavior differed in some respects (Table 1). Migration distances, elevation gradients, and general habitat types were similar (Table 1), but overstory cover was typically higher in the Piceance Basin where migratory mule deer took advantage of security cover to avoid development activity, without detectable deviation from migration paths. Migratory mule deer in both areas traveled more quickly through developed landscapes, but permeability of migration routes was only inhibited at the more concentrated development intensity evident in Atlantic Rim, Wyoming. Nonetheless, increased movement rates through developed areas can discourage use of stopover habitat and reduce the ability of animals to optimally forage and track vegetation phenology. Whether such behavioral changes have demographic consequences is unknown, but given the importance of summer nutrition for body condition and reproduction, any lost foraging opportunities during migration have the potential to incur energetic and demographic costs and the resulting effect may act as de facto habitat loss. Increased energetic costs associated with strong deviations in traditional migration routes, and reduced energy intake resulting from poor timing of arrival on summer range relative to forage conditions, could compromise long-term fitness of migratory mule deer populations. Thus, conservation measures may be warranted in areas where expansive and concentrated development activities occur or are planned within the range of long-distance migratory ungulates.

Interesting differences between the two migratory mule deer populations, which likely was not related to energy development activities, included the relatively rapid migration duration and reduced stopover use exhibited by Piceance Basin, Colorado, mule deer (Table 1). The reason for these differences

is unclear, but could be related to forage conditions and mule deer body condition prior to migration. Lendrum et al. (2013) noted that mule deer in relatively good condition migrated earlier than deer in poor condition, which required improved body condition prior to long-distance movements, and it is intuitive (although speculative) that individuals with improved energy reserves could migrate more quickly without stopping along the way to “refuel.” It may also be that stopover use in Wyoming reflected an optimal foraging strategy relative to the timing of green-up as deer progressed in elevation. Where stopover use is common, identifying and incorporating stopover sites into energy development planning is critical to sustaining migratory ungulate populations (Sawyer et al. 2012).

Implications

The interactions between migratory mule deer and energy development identified by Lendrum et al. (2012, 2013) and Sawyer et al. (2012) suggest mule deer may benefit from energy development planning by considering thresholds of development that may alter migratory behavior. It appears that migration rate, migration routes, and stopover use, if present, may be altered at high development intensities. In addition, migratory mule deer may benefit by maintaining security cover along migration paths, and improved habitat conditions may facilitate more direct and rapid migration requiring less energy to complete migration. Enhancing permeability along migration routes by applying dispersed development plans (<2 well pads/km²) and minimizing disturbance to vegetation types by maintaining security cover should reduce impacts to migratory mule deer as well as other migratory ungulates. Where feasible, habitat improvement projects on winter range and possibly stopover sites would also enhance migratory mule deer populations by enhancing energy reserves for long-distance movements and parturition shortly after summer range arrival. Where possible, directional drilling could be used to extract energy resources from underneath migration routes while maintaining no surface occupancy. Lastly, we emphasize that GPS studies now allow managers to accurately map migration routes for entire populations and identify relatively narrow corridors that are most heavily used thus allowing for the identification of the most important corridors for migrating ungulates. Where available, we encourage agencies to incorporate such migration corridors into land-use plans (e.g., resource management plans) and National Environmental Policy Act documents.

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Table 1. Comparison of two migratory mule deer populations from Piceance Basin, Colorado (Lendrum et al. 2012, 2013), and Atlantic Rim, Wyoming (Sawyer et al. 2012), in relation to environmental conditions, migration behavior, and well pad density of developed landscapes along migration paths.

	Piceance Basin, CO	Atlantic Rim, WY
Mean dist. between seasonal ranges	36 km	40 km
Range in elevation	1,980–2,400 m	2,065–2,385 m
General habitat types	PJ woodland, mtn. shrub, Aspen/conifer	Sparse PJ/sage, sage, Aspen/sage
Stopover use	Rare	Common
Well pad density ^a	1.5–2.0/km ²	0.8–2.8/km ²

^aWell pad densities in the Piceance Basin, Colorado, were averaged along entire migration paths of the two developed study areas (Lendrum et al. 2012). Well pad densities in Atlantic Rim, Wyoming, represent phased development over a five-year period within a concentrated area along the migration corridor of the most developed study area (Sawyer et al. 2012).

Path of the Pronghorn: Lessons Learned and Future Directions

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The “Path of the Pronghorn” is a conservation story involving a unique small herd of pronghorn that migrates annually between Jackson Hole and the sagebrush deserts of the Upper Green River Valley in western Wyoming. This story has been celebrated in documentaries and public media and has captured the imagination and emotions of the American public. It started with improved scientific information on wildlife movements that had been generally acknowledged for decades but not documented in detail. It took more than a decade of work by a variety of interest groups to capitalize on the documentation and work toward protection of a significant part of the migration route. It may serve as a model for future public actions on behalf of migrating ungulates, identifying both opportunities and obstacles to preserving their migration routes.

In the Upper Green River Valley, tens of thousands of pronghorn, mule deer, and elk have been visible in migration for as long as humans have lived in the area. A concentrated spring and fall, north and south migration of thousands of pronghorn and mule deer that crossed U.S. Route 191 west of the town of Pinedale was well known to hunters and local residents. As highway improvements and oil and gas exploration became a reality in the area, archaeological investigations at the one-mile wide crossing documented that Native Americans had hunted pronghorn and mule deer there for thousands of years. That story received wide distribution through local and national media and other outlets. An historical addition was that the most constricted migration passage is an area known as Trappers Point that overlooks the Green River bottom where six of the Mountain Man Rendezvous occurred in the early 1800s. Both Trappers Point and segments of the Green River bottom are designated as National Historic Monuments.

Documentation of the Path

A relatively small herd—hundreds—of pronghorn were known to summer in Jackson Hole 60 miles north over the Gros Ventre mountains. Pronghorn were also seen by ranchers and recreationists crossing streams and mountains in between, but details of their movements were unknown. To put this in perspective, more than 30,000 pronghorn inhabit the Upper Green and move north and south in migration annually, and the animals that use the route to Jackson Hole are somewhat invisibly mixed with the larger herds until they continue on to cross the mountains.

Research through the Wyoming Cooperative Wildlife Research Unit (now Fish and Wildlife Unit) in the late 1990s looked at ungulates in the Upper Green in an attempt to gather baseline data prior to the onset of major oil and gas development. Through marking pronghorn with radio transmitters to track their movements, the unique migration between Jackson Hole and the Upper Green was documented. As intensive energy development on winter ranges began between 2000 and 2005, the story of the migrating heard was publicized to engender support for conserving the route.

It soon became apparent that the scientific evidence of the migration alone would not ensure the necessary protections for the migration route or the animals themselves. Major industrial development, increased housing, traffic, and subdivision of ranchlands resulted in greatly increased human presence, which projected an uncertain future. The new science provided detailed information on where migrating pronghorn encountered roads, fences, livestock, urban and suburban development, energy fields, and other impediments to continuing their normal migration movements. A key scientific contribution was that the migration route for the specific animals that go to Jackson Hole was usually less than one mile wide as they moved north of Pinedale. This greatly focused the area for consideration of necessary protections on both government and private lands. This new knowledge formed the core of the argument for being able to protect this migration.

Campaign to Secure the Path

The complexity of the challenge faced by these pronghorn included land management by three federal agencies, the state of Wyoming, and private landowners—all with different interests in the use of these lands. A campaign called Path of the Pronghorn was started by the Wildlife Conservation Society, a group that was also conducting research on pronghorn in Jackson Hole and the Upper Green.

This campaign soon included an individual who traveled to various communities in the region to inform them about the migration and its need for protection. Citizens and local communities and wildlife and environmental organizations were recruited to publicly express their support. A photographer with the National Geographic Society traveled with the pronghorn as they traversed their migration across highways, through active ranches, through housing and energy development, across rivers and streams, and over the mountains into Jackson Hole. This photographic documentation communicated the needs of these pronghorn in a way the science could not.

Land Management for Pronghorn

The complexity of land ownerships on the route necessitated more than one process to achieve some measure of protection. Land protection organizations worked to secure easements on specific parcels of private lands directly in the documented migration corridor. Work with private landowners was done sensitively regarding their needs in order to gain their cooperation.

A major issue for pronghorn and mule deer in ranching country is fencing, and an assessment showed 120 miles of fences with inappropriate or degraded construction directly in the line of migration. Through the Green River Valley Land Trust, a cooperatively funded and volunteer effort to replace fencing took several years working directly with landowners to greatly improve targeted migration pathways. Various organizations such as the National Fish and Wildlife Foundation, Safari Club International, and Pinedale Anticline Project Office helped support this ongoing effort.

Key parts of the migration route are across lands managed by the Bureau of Land Management (BLM). Challenges here include fencing, grazing, energy development, and an agency philosophy that they manage for “multiple uses” and are reluctant to put in place restrictions that might inhibit future uses. Energy development was and is expanding in the southern part of the path of the pronghorn and no specific protections other than periodic land-use planning are in place for this migration. Priorities for uses change, and there is a need for better balancing of these priorities for wildlife issues including migration routes.

More than a decade ago, deep concerns about the integrity of the narrow migration route at Trappers Point led to an array of interests being brought to the table to try to negotiate protections. Subdivision of private lands had already closed off about a mile on the eastern approach to Trappers Point and leasing for gas drilling was proposed directly in the main route. The area was justifiably considered a “bottleneck” that if functionally lost could drastically affect migration. These negotiations resulted in agreements by BLM to avoid leasing directly in the area under their current Resource Management Plan. The area is currently designated as an Area of Critical Environmental Concern. While this is an important step, it is not permanent protection of one of the most critical sites and could be changed in future planning.

Continuing new scientific documentation of ungulate migrations in the Upper Green has confirmed that other areas between Trappers Point and the Gros Ventre Range (a 20-mile distance) are equally important to both mule deer and pronghorn. BLM manages a 14-mile stretch of the Green River for public fishing access and camping. Large numbers of mule deer and pronghorn, having passed successfully through Trappers Point, cross a several-mile segment of the river twice each year in migration. The area is increasingly managed for recreational access and is included in land planning categories that clearly allow reconsideration of priority uses in future years.

The U.S. Forest Service manages a 30-mile stretch of timbered mountains through which the last phase of the northward migration of pronghorn traverses into Jackson Hole. Part of it is designated

wilderness, but there are also private ranchlands in the corridor toward the end of that migration. Conflicts over proposed uses on Forest Service lands directly in the migration route led to litigation that helped convince the Service that the route needed greater attention. The forest supervisor took administrative action in 2008 to incorporate protection of the migration route into Bridger-Teton National Forest planning to manage on-site uses, referring directly to the need to protect the corridor. New supervisors have come and gone, but the area is still being protected by the Forest Service. Again, this is an administrative, voluntary protection—not statutory.

Grand Teton National Park, where the pronghorn herd spends the summer, is managed by an agency with the strongest protection mandate. Their interest has strongly been in assuring that pronghorn remain a part of park fauna for visitors to enjoy. Once on park property within Jackson Hole that protection is assured. Most of the corridor is not protected to that extent.

Other Conservation Actions

Highways in the Upper Green and elsewhere in Wyoming have been the scene of seasonal carnage as ungulates cross them in migration. Reducing this significant mortality became a goal that created partnerships to get the work done. Successful combinations of fencing, overpasses, and underpasses elsewhere in Wyoming helped form the basis for a major project between Pinedale and Trappers Point in main migration routes, about 20 miles wide. Wyoming Department of Transportation funding, aided by mitigation funding from the gas industry, and Wyoming Game & Fish Department funding and technical assistance very recently completed this large project that has demonstrably reduced highway mortality of mule deer and pronghorn. The scientific data that mapped precise migration routes was a strong basis for project implementation.

The people who live in areas where the migrations are evident can have an impact on their future. During the gas-drilling boom between 2000 and 2010, the town of Pinedale was highly impacted both positively and negatively by development. With development comes the need for more housing, lodging, and further infrastructure. Highly visible, annual migration of a thousand or more pronghorn was severed by four new hotels, a handful of businesses, subdivision, and even a new BLM office. When the county commissioners had this brought to their attention—a fact that every driver in and out of Pinedale could see for themselves, as the animals migrated across the highway—the response was that they should have been told about it earlier. But there is hope—public awareness in a recent “Pronghorn Love” benefit supported purchase of a Path of the Pronghorn bronze sculpture to be erected in town to commemorate this tremendously valuable resource that is one of the things that brings people to stay and do business.

This growing interest in migration of ungulates is not just an artifact of science. In fact the abundance of large ungulates in Wyoming is a specific product of migration that enables seasonal utilization of rich resources in the mountains in summer, especially during reproduction. Secure wintering areas out of the mountains allow animals to make it through often-severe winters. The rest of the 30,000-plus pronghorn that utilize the Upper Green River Basin move seasonally to access sagebrush in areas of less snow depth. Some of them utilize sagebrush ridges that rise into the mountains in summer but move down as these areas are covered with snow in winter. The mule deer from the Pinedale Anticline Mesa (or Pinedale Anticline Project Area) move into the mountains in spring and summer to utilize the rich resources available for reproduction and fattening for the winter, but when they come down in late fall, their winter range is now occupied by industry. Lacking that combination of access to both winter and summer ranges has led to a much-reduced population. Migration itself is an essential adaptation for these ungulates and that fact alone supports the need to conserve their migration corridors.

Learning From This Story

So, what does this story teach us and how might we use what we have learned as we attempt to conserve the array of other migration routes that are being documented?

First, the value of scientific studies that sort out sometimes-complex animal and habitat relationships is firmly established by this example. More understanding of migration corridors for pronghorn and mule deer is being sought through broader studies.

Second, evaluation of the status and land uses within migration corridors can be done based on scientific information to provide a sound basis for conservation action as needed. With the likelihood of further industrial development and subdivision, application of science can help avoid critical habitats.

Third, conservation actions can be closely targeted to avoid concerns about “locking up” large areas or interfering with the activities of private landowners.

Fourth, engaging the public with information presented in a way that captures their emotions and imagination can be a powerful tool in achieving wide support for protection of migration routes. Science alone is clearly not enough.

Fifth, working with the complexity of land ownerships and the needs of the owners or managers must be done sensitively with the goal of working positively toward a common objective, while recognizing the differing needs of ownerships.

Sixth, the operational culture of agencies may require a different approach with each.

Seventh, in some cases multiple species—e.g., pronghorn and mule deer—may be served by the same actions, such as solving road mortality or fencing problems. But the unique nature of the migration in each case may require innovative solutions that differ between species.

Eighth, a wide variety of individuals and organizations are likely necessary to provide solutions because of the complexity of migration routes.

Ninth, efforts like Path of the Pronghorn take a lot of time and dedicated continuing effort and in a practical sense may not be easily considered finished. Human-driven changes in uses of these habitats will require continual vigilance and new conservation efforts to protect migrations long-term.

Tenth, as strong as the initial steps are in this case, protections in place are not likely strong enough to serve needs across the array of ungulate migrations. The probability of need for new policies, even new laws, is strong. Since 2008, the western governors have been working through state wildlife agencies to consolidate what is known about migrations to support long-term conservation efforts. In 2010, federal legislation was introduced to establish wildlife corridor conservation, but has not progressed. More focus on these needs will be essential.

Large-scale wildlife habitat conservation has been successful where it reaches well beyond just those of us interested specifically in wildlife to capitalize on mutual needs for land conservation actions that will also benefit wildlife. The North American Waterfowl Management Plan and its many land-based Joint Ventures are a large-landscape example. Work with carbon offsets to save native prairies and also help ducks shows promise. New efforts to link needs for conservation of pollinators—especially honeybees—with changes in agricultural practices that may also benefit other wildlife are another example. New approaches, new partners, and a landscape view are going to be necessary to deal effectively with wildlife migration corridors. Perhaps we should consider a joint venture for each migration corridor.

Coordinating Across Boundaries: Challenges to Landscape Scale Conservation

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History

Recently, western wildlife managers have recognized the importance of ungulate migration corridors, their importance in maintaining connectivity between seasonal ranges, and ultimately their role in maintaining population performance. Conservation of and consideration for wildlife impacts were implemented as a consequence of development proposals and were constrained by the project evaluation time frames and ultimately the decision deadlines. In this context there was little time to be proactive in the consideration of the importance and specific spatial components of migration pathways and the impacts associated with the proposed developments. In some cases, migration routes were spatially represented by simple lines drawn on maps that were not scientifically robust and displayed significant incongruity at political borders—i.e., county lines, management unit boundaries, etc. (Torbit et al. 1982; Swift et al. 1985). Further, there was little information available about those ungulate populations that crossed state boundaries.

Emergence of Western Governors' Association

As energy development escalated in the western United States, the Western Governors' Association (WGA) convened a wildlife corridors initiative in 2007. The purpose of the initiative was to identify important wildlife corridors and crucial habitat areas and subsequently assess the possible conflicts between energy development and wildlife resources. The initial results of this initiative were summarized in a report (Western Governors' Association 2008). Initial results revealed significant data gaps, data collection differences among states, and, again, data incongruities at political boundaries. As a follow-up to the initial effort, WGA commissioned a Western Governors' Wildlife Council and commissioned a follow-up effort to resolve data collection inconsistencies and develop a decision-support system within each state that could be "rolled up" across the west (Western Governors' Association 2009). Additionally, working groups were established to assess possible impacts from and mechanisms to minimize conflicts between wildlife and energy, private-land uses, transportation, and climate change. Further, WGA charged the groups to assess these issues by utilizing the latest and best science available. This follow-up effort resulted in improved data acquisition and analysis and a decision to develop a decision-support tool across the West. This decision-support tool was named Crucial Habitat and Assessment Tool (CHAT) (Western Governors' Wildlife Council 2013). An agreement to coordinate data development on mapping of crucial habitats was developed between WGA and federal resource management agencies and was formalized in a Memorandum of Understanding (U.S. Department of the Interior et al. 2009).

U.S. Department of the Interior's Response

Shortly after the release of the wildlife corridors initiative report in 2008, the Department of the Interior launched the Landscape Conservation Cooperatives (LCC) (Salazar 2009). These large landscape efforts were designed to strategically assess constraints and opportunities for conservation across the landscape. The LCC were designed to support development and implementation of priority decision-

support tools and strategically significant science needed by the land and wildlife managers in the landscape to more effectively conserve the prioritized natural resources on the landscape (U.S. Fish & Wildlife Service 2010).

The LCC established a steering committee composed of the affected states, industries, and land management agencies to assist in strategic assessment of the landscape. The steering committee serves as a conservation forum. Rather than reacting to individual development proposals, this forum serves to take not only a broad look at the landscape but also a long-term view of the status, trends, and ultimately the future of the wildlife resources on the landscape. This forum thus provides a timely and unique opportunity to develop a conservation plan for the landscape, develop decision-support tools for use in the landscape, design delivery of conservation, and monitor the results of conservation actions. The forum then has become an effective mechanism to review and display ungulate migration data across the landscape and reach agreement on conservation value and spatial components of the corridors. Several western LCCs have supported the continued development of the CHATs and have continued to ensure use of the CHATs within the appropriate LCC.

Developing Tool Sets

Recent improvements in decision-support tools, spatial analysis, and strategic conservation design have provided biologists with a rapidly improving set of tools to use in assessing habitats, especially seasonal habitats, and the migration pathways that link them. These tools reveal data and assist in highlighting conservation needs and priorities as well as spatially displaying and integrating conservation and development actions. Although these tools greatly assist the wildlife conservation community, many are static (requiring frequent updates), and each tool reveals information about a limited number of species. A need was recognized for a tool that could integrate multiple decision-support tools, access data sets in real time, and provide analysis for scenario testing in a spatial context. Recently, the western LCCs and U.S. Geological Survey developed and refined a broadly available analytical tool—the Landscape Conservation Management and Analysis Portal (LC MAP)—to share, access, and analyze common datasets (Akin et al. 2012). The LC MAP was developed to aid resource managers in sharing data across partner agencies and to perform analyses on a landscape scale, thus allowing multiple users to collaboratively discover, assess, edit, analyze, and model common data themes. This allows for powerful geospatial analysis to assess management options to prioritize conservation actions in support of desired resource outcomes.

However, these tools alone or used in isolation are not sufficient to conserve or enhance important ungulate conservation areas or to mitigate the effects of land uses that may impact seasonal habitats and corridors. A forum must be convened of land and natural resource managers, private landowners, and other stakeholders to work through the conservation challenges and opportunities within a specific landscape and then design the conservation framework for the landscape. Such a collaborative conservation forum already exists within the LCC.

The steering committees and technical teams developed through LCC have already developed agreements on the use of data, analysis tools, and decision-support tools (including CHATs). Use of these tools within the LCC geography can facilitate resource assessment within biologically meaningful units rather than political boundaries. In essence, the analysis can allow the political and administrative boundaries to disappear and conduct a more broad ecological assessment of the habitat values and risks to those values across the landscape. Subsequently, the land management goals for federal, state, and private managers can be “rolled up” across the landscape to integrate the various land management goals with the conservation assessment. Finally, the forum can design consensus based conservation action priorities that can then be organized into cooperative, and in some cases independent, conservation actions.

There are many benefits to utilizing our new and evolving set of tools within the context of a collaborative forum similar to LCC. This type of forum can strategically assess conservation needs and opportunities and rate the urgency of addressing the highest needs. The group can prioritize the most important conservation actions and provide their spatial context for those actions. Public and private land

managers will be able to evaluate various alternatives in an information rich environment where their decisions can be made within the spatial context of other decisions. These tools and forums may provide the best current opportunity to understand cumulative impacts of the various actions occurring on the landscape. Further, if certain land-use decisions negatively affect ungulate corridors or other important habitats and those impacts cannot be avoided, the tools implemented through the forum will provide an improved context for discovering and recommending mitigation to ameliorate those impacts. Ultimately, land and wildlife managers will be able to have a real-time view of the landscape that will provide a level of understanding not previously possible.

The use of these new sets of tools within the context of conservation collaborative also offer an improved opportunity to study and document the response of wildlife populations to the conservation delivered on the ground. Our new tool set can be used to provide more immediate evaluation of effectiveness—not just on a site-specific basis, but when integrated with existing or other recently acquired data will continue to build the (spatial analysis capability for the landscape). This spatial synthesis can then be used to update the risk assessments and help managers understand constraints to conservation effectiveness. This monitoring and evaluation process will deliver improved and refined conservation and more rapidly provide feedback to managers.

Opportunities

Through the leadership of the WGA, their support and refinement of the western CHATs, and the development of data integration and analytical and spatial analysis tools such as LC MAP, we have a new and highly powerful array of spatially explicit conservation prioritization and assessment tools to apply to the conservation issues of our time. Further, LCC already provides a conservation collaborative that can convene and facilitate the discussions, interrogate a multitude of contributory datasets, and propose decisions that lead to cross-jurisdictional consensus for our land-use decisions. The tools and forums are in place and can provide improved decision-making for the benefit of people and wildlife; we must seize the momentum and take full advantage of these new opportunities.

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Special Session Three. *Making Conservation Relevant to Society in the 21st Century*

Conservation Relevance: Aligning Funding and the Public Trust Doctrine

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Introduction

Making conservation relevant in the 21st century depends on how one defines the idea. Use the word “conservation” in the company of farmers and they will likely think of cost-share, buffer strips, no-till, and CRP. For people who love animals, it might mean rescue and protection from the many threats imposed by human development and consumption—the kind of stuff featured often on shows like *Animal Planet*. Similarly, conservation can be confused with preservation for the millions who visit parks and other natural areas. Within the broader reaches of our urban, digital, self-involved society, conservation may be equated with recycling or remembering to turn off the lights, if it is considered at all. Perhaps even more frustrating is the well-meaning but misguided segment of society who recycle their beverage containers, buy “green” products, and write a check to the local wildlife rehabilitation center or environmental organization thinking they have contributed to wildlife conservation but have not. Thus, one of the largest challenges in our profession in achieving relevance is the need for our paradigm to be flexible and adaptable enough to integrate a diversity of views about the scope and goals of conservation and to make sure everyone is invested personally and financially.

While variation in meaning can also be found among wildlife agency professionals and our university and nongovernmental partners, at this conference the term conservation is generally viewed through the common lens provided by our shared history, recalled as the North American Model of Wildlife Conservation (NAMWC) (Geist et al. 2001). Under this paradigm, conservation is a verb and one that is directed toward sustained human use and benefits. This framework seeks to find balance between two extremes: unregulated, unplanned exploitation of natural resources and preservation in the name of the intrinsic value of nature. Classifying wildlife as either traditional/consumptive or nontraditional/nonconsumptive is both artificial and counterproductive. Everyone uses the resource and everyone both creates and must deal with the impacts. In this respect, wildlife and the land dedicated and managed for conservation should be, by definition, relevant to everyone, whether recognized or not. In this paper, we argue that societal recognition of conservation benefits (i.e., relevance) can only occur when the public trust responsibilities of government are fully realized—and that can only occur when funded by all citizens.

In considering how to best introduce this session and the papers that follow, we considered what relevance might look like if achieved. In other words, how would we know if conservation was fully relevant to all citizens? We initially considered relevance as a situation where citizens were full partners and participants in wildlife conservation. But that generates more questions, like what kind of participation? What if everyone hunts, fishes, visit parks, recycles, and remembers to turn the light off—is that relevance? While each of those things may contribute to conservation in their own way, being relevant means everyone pays to sustain the work done on their behalf by state and federal agencies executing the public trust doctrine (PTD).

Conservation is certainly not the exclusive purview of government agencies. Many nongovernmental organizations play significant roles in research, policy advocacy, habitat protection, and partnership support of state and federal agency programs. In many cases, citizens financially support those efforts through donations and memberships to organizations like Ducks Unlimited, Pheasants Forever, Rocky Mountain Elk Foundation, The Nature Conservancy, and others. While conservation work by NGOs is vital and may become even more so in the future, it is government that will ultimately be held accountable by current and future generations for the long-term sustainability of wildlife in North America by virtue of the responsibility ascribed through the public trust doctrine (Organ and Mahoney 2007). Therefore, it is logical to consider the relevance of conservation efforts undertaken by government on behalf of society.

The public trust doctrine is the legal and philosophical backbone for the North American Model of Wildlife Conservation. It is a far-reaching and fundamental tool that provides a clear rationale for government-led management of natural resources. It recognizes that ownership of wildlife is held in common for all people and manifests the need for what Garrett Hardin (1968) called “mutual coercion, mutually agreed upon.”

To recap, the PTD provides:

- a clear legal declaration that public good trumps individual rights where common property resources are concerned;
- consequently, a rationale to protect against the over exploitation of resources; and
- government agencies wide latitude in exercising regulatory control of behavior to ensure a fair allocation to all, now and in perpetuity.

Courts have generally expanded the scope of the PTD beyond its original applications to protection of navigational waterways and public ownership of wildlife resources to include a full range of benefits including protecting scenic beauty and provision of ecosystem services (Ruhl 2007; Kearney and Merrill 2004). The scope of the trust responsibilities is consistent with the general tenants of ecosystem management.

PTD and the Barriers to Relevance

Funding Gap

While the public trust doctrine is a significant cornerstone in our paradigm of wildlife conservation, it has several features that contribute to our challenge of being relevant. The first and most obvious one is the disconnect between the broad scope of the responsibilities assigned through the PTD and narrow sources of funding available to fully implement those duties. The obligation to provide the full range of trust benefits owed to our trustees and necessary to support the human enterprise is incongruent with our user-pay funding model (Williams 2010). It is incongruent because everyone is a beneficiary, yet only hunters and anglers provide the lion’s share of the funding to ensure conservation of these benefits. Though not the fault of the PTD, per se, this mismatch reminds us that the historical purpose of what we later described as the NAMWC was to maintain game species for their food and recreational benefits.

The funding gap manifests itself in three ways. One, there is simply not enough money to address all of our contemporary conservation needs and the severity of this shortcoming is growing all the time. For example, our profession has long acknowledged that the vast majority of wildlife—those referred to as nongame—are seldom explicitly addressed through agency programs, budgets, and staffing. Only when species decline are they prioritized as targets of “greatest conservation need,” and even then, funding is marginal. Modest support provided through the State Wildlife Grants Program has been reduced in the proposed fiscal year federal budget. Even more problematic is that many of the emerging threats to wildlife—like invasive species, diseases, and climate change—do not have straightforward

solutions, and the system of harvest regulations and habitat protection developed in the pioneering days of wildlife conservation are not sufficient to meet these challenges.

Two, our funding model relies on license fees and federal excise taxes on the purchase of sporting arms and fishing equipment; thus, the burden of funding falls on the nation's hunters and anglers. The system has too many free riders. Imagine if McDonald's ran their business where they provided their same menu but only charged the customers who ordered the Chicken McNuggets; Big Macs and other burgers were simply given away. Furthermore, as our McNuggets eaters have declined, we devoted much of our energy toward ways to recruit more people to eat McNuggets instead of reframing our approach and leveraging support from the growing segments of customers seeking other menu options. We have operated in conservation for far too long with that illogical business model that is not adapting with a changing culture.

While nonpaying wildlife users are one way to represent the problem with our funding model, this segment can be alternatively viewed as paying customers who we have lost to competing markets by not serving their needs. Many people who never buy a license do instead volunteer and financially support nonprofits that work in wildlife conservation and preservation. This choice likely reflects a perceived match between personal interests and organization mission, as well as an alienation created by a sense that state agencies cater only to license buyers. This reality serves to drive a wedge between hunters, anglers, and others who appreciate wildlife.

Three, part of the reason we have been slow to serve and charge nonhunting and nonangling users results from constraints imposed by the sporting public itself. Hunters and anglers prioritize recreation opportunities for game species and may resist attempts to pursue broader conservation benefits. For example, the Wisconsin DNR drew opposition from some sportsmen recently when it attempted to spend a portion of Pittman-Robertson research funding to monitor bat populations for white-nose syndrome. Despite the huge economic benefits that bats provide by way of insect control, as well as their contribution to biodiversity, taking action to conserve these nongame animals was perceived by some hunters as an illegitimate use of "their money" (Boyles et al. 2011). This illustrates an important issue that has not always been fully acknowledged within our ranks: whether funding and support from hunters reflects a value for all wildlife or solely those species tied to recreational self-interest.

Limits to Benefits

Besides inadequate funding, a second barrier to relevance posed by the PTD is that its mission is divorced from system limits. The obligation created by the PTD also does not explicitly recognize the inherent limitations in the supply of the trust benefits. The analogy of a trust account suggests that proper management can yield perpetual growth. While it is true that fish, wildlife, and other commodities are renewable to a point, there are limits to the supply of benefits our land base and ecosystem can provide whether we want to acknowledge them or not. The PTD does not address finite resources. It just says it is the job of government agencies to make sure there is a continuous supply of pie, no matter how many people are getting a slice and no matter how big those slices are. Unlike a bakery or any other business, we cannot order supplies, hire more people, and increase our pie-making capacity. The laws of nature impose limits that the trust laws do not recognize.

Providing outdoor recreation for the public creates a curious catch-22 that will ultimately test system capacity. Our most tangible product, at least from a market standpoint, is wildlife recreation. Recreational benefits also give us the clearest case on which to charge people. You will be hard-pressed to find someone who will argue against the need to get people outdoors, especially children. Yet, our finite public lands already bear the brunt of the demand for those seeking to hunt, bird watch, hike, camp, and otherwise enjoy nature. Data shared by West et al. (2014) in this session indicates increasing demand for recreation in the next 50 years on public lands. Meanwhile, access to quality public land hunting has emerged as a source of hunter decline. Given that most big game tags in western states now require multiyear waiting periods, we need to be cognizant that our capacity to deliver some trust benefits may have already been exceeded. In the future, we will need to generate additional ways to provide service

and opportunity to the public besides bringing more people outdoors, including through digital and electronic “uses” of wildlife in order to remain relevant.

Conservation is Not Free

In addition to funding and system limits, the PTD gives all of the responsibility for these complex projects to resource managers and places no individual responsibility on the citizens to participate in or fully invest in the perpetuation of the benefits they enjoy, and indeed need for maintaining their quality of life. Casting the public in the role of beneficiaries of the trust as opposed to participants in conservation negates the need for personal relevance because personal obligation is relegated to government to safeguard the system. This is really the antithesis to Hardin’s (1968) speculation that private ownership of a resource can foster individual incentive to conserve. If wildlife resources are provided free to all citizens as a birthright, then there is danger that they can be taken for granted as an entitlement.

There are already some troubling trends apparent in contemporary attitudes about our obligations to community and to others. In the span of 50 years, we have transitioned from John F. Kennedy’s call to “ask not what your country can do for you, ask what you can do for your country” to Mitt Romney’s observation during one of the 2012 presidential debates: “You deserve more.” This is not a partisan observation; the fact that JFK was a Democrat and Romney a Republican is beside the point. Both men were merely reflecting dominant cultural values of their day. Recent evidence suggests that a sense of entitlement and declining civic engagement are hallmark characteristics of the millennial generation (Twenge et al. 2012). Now more than ever, people need to understand that they are not simply entitled to reap the benefits of conservation; they have an obligation to bear a portion of the responsibility for attaining those benefits. The PTD may inadvertently reinforce these societal trends without expecting people to invest in conservation.

Relevance Has a Price Tag

So how do we fix these shortcomings left by the PTD? We start charging people for conservation of natural resources. We expand the scope of our user-pay model so that it fully encompasses all of the uses of, and impacts to, our land, water, and wildlife. We recognize that calling for additional or alternative funding sources is not a novel idea. Indeed, many in our profession have marshaled efforts at the state and national level to create a broader base of funding for wildlife conservation. In almost all cases, these efforts have fallen short of their mark.

Our call for new funding carries with it some new dimensions that hopefully add to the political imperative to get it accomplished. Charging the trustees is about more than just getting desperately needed revenue to run agency conservation efforts. It closes all three holes we just described. Besides increasing the money available to fully implement our trust responsibilities, it eliminates free use and free impacts to natural resources. In doing so, it also provides agencies with greater flexibility to broaden their programs beyond game species programs. Finally, when people pay, it forces them to take responsibility for what they consume. It alters supply and demand curves in ways that take pressure off of the resource (recognizing this is not true in all cases, e.g., clear air/clear water). Providing a mechanism for contributing brings our funding model in line with the job that has been established under the PTD.

There are three primary approaches to generating revenue to fund government-led conservation. One is the creation of a variety of willingness-to-pay or voluntary contributions. These include such things as vanity license plates and income tax check-off donations, which are already in place in a number of states. By and large, the collective experience with these types of mechanisms is that they do not generate sufficient funds to adequately address the conservation needs and that contributions tend to decline over time.

The second available option is to create markets that reflect the cost of what it takes agencies to provide and maintain available use. This is essentially what we do already with respect to the sale of hunting permits, where there are different market values assigned for big versus small game and for resident versus nonresident customers. In theory, the cost of the product should be commensurate with its

demand as well as the cost of implementation by the agency to provide those benefits. For example, nonresident elk tags have a higher market value because there are fewer available to allocate (high demand) and agency program costs are higher than they are for more common species like squirrels.

We need to consider multiple creative ways to expand our market approaches. One approach is to capture revenue from the previously mentioned group of people who use and impact wildlife resources through nature based recreation other than hunting and fishing, but do not pay for those services. While this immediately calls to mind the Teaming with Wildlife effort to create an excise tax on select outdoor equipment, we ought not limit our thinking to this avenue alone. There may be ways to place surcharges on trails, parking, access, or other existing revenue streams to public land and recreation areas that are earmarked for wildlife. The second way to expand our markets is to charge for impacts in addition to or as an alternative to benefits. Under this thinking, activities that are more expensive for conservation, like riding off-road vehicles with their array of negative impacts, would pay a higher use fee than activities such as day hiking (Holsman 2005).

The third available approach is a departure from a recreational user-pay model in which the government assumes the role of a monopsony or a single buyer of all conservation benefits including ecosystem services, and then taxes for their allocation. This approach theoretically would extend the investment in conservation to all citizens through general-purpose taxes, the basis of which could be assessed to reflect the annual cost of providing the full array of conservation benefits to society. As unrealistic and politically untenable as it sounds at first, consider the ways in which government already serves this function in the provision of other community services. Residents wanting access to sewer and water are charged an annual fee to support that infrastructure. We charge people for police and fire protection. We charge for schools. Certainly, the life-sustaining benefits derived from natural resource conservation are on par with these other institutional monopsonies.

Need to Get Outside the Box

We have presented the need to align our funding base with our legal obligation under the PTD and have reviewed the broad options available to achieve this need. Our intent was not to advocate for a particular approach but to highlight some important considerations and opportunities that are available. Recently, AFWA (the Association of Fish & Wildlife Agencies) commissioned a Blue Ribbon Panel of government and agency leaders to seek a solution for broader funding. Perhaps future readers of this paper will be able to point to this effort as the catalyst of change that is needed for us to secure much needed changes to our current user-pay system. Whether it be that commission, the existing coalition of groups behind Teaming with Wildlife, or some yet to be organized entity, there is a need for innovative approaches that make conservation all of society's investment of choice. Finding solutions will require creativity to avoid similar unsuccessful outcomes as past efforts. It also may require the courage and willingness to challenge some of our sacred cows. For example, among noble and idealistic rhetoric surrounding the NAMWC is the notion that all people get the benefits that flow from conservation for free. They are not free in an economic sense and we can no longer afford to pretend otherwise.

Regardless of the mechanism that we seek for funding conservation, there is every reason to anticipate public support. Despite the political polarization of recent years in America, a national poll commissioned by The Nature Conservancy (TNC) in 2012 reveals strong bipartisan support for natural resource conservation (Metz and Weigel 2013). For example, 77 percent of respondents agreed that conservation is one of the best things government does and 58 percent support a tax increase to pay for it. Eighty-three percent believed wildlife conservation is patriotic. With poll numbers like these, it makes one wonder how a coalition led by industry and conservation organization leaders could possibly fail?

In the final analysis, the TNC numbers—along with robust demand for wildlife and outdoor recreation—suggest that conservation is already relevant. American's continue to express a fascination for wildlife that may even be rooted in our genes (Kellert 1997). Our challenge is to leverage that relevance into investment that fully articulates the public trust doctrine and ensures our ability to meet our

obligations to future generations. It takes money to be relevant and sometimes it takes people paying their share to remind them of why it is relevant to them.

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On the Front Lines of Making Conservation Relevant and Valued: A Florida Case Study

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Introduction

We've heard at the North American Wildlife and Natural Resources Conferences and other professional gatherings during the past several years that state fish and wildlife management agencies (SFWAs) need to become more relevant to society. But what does this mean? We suggest that being relevant means having a vital connection to issues of social significance (e.g., the economy, job creation, energy development, transportation, health care, education, climate change) *and being recognized as having such a connection*. But where or how does fish and wildlife conservation fit into these significant social issues? Unfortunately, wildlife conservation is usually being negatively affected or stands in the way of "improvements" in these high-level societal issues, so relevance of SFWAs is often cast in a negative light—as an antagonist with respect to the big issues of societal importance. Our situation today is unlike a century ago when conservation was made a national issue of social significance by the tireless efforts of Theodore Roosevelt and other celebrated individuals of his time. In the late 1800s, when many wildlife species were in decline, state fish and wildlife agencies didn't exist, and nongovernmental organizations with missions to promote species or habitat protection were few, a relatively small cadre of influential leaders such as Roosevelt instigated the development of a vast infrastructure that over the last century reversed the decline in many species of wildlife (especially game) in North America. Fast forward to today and we have not only the infrastructure but a trained profession with significant (though incomplete) knowledge of coupled social-ecological systems in which wildlife conservation is embedded, yet we struggle with reclaiming relevance to a large portion of American society.

Society

Who are we trying to be relevant to? If we are striving to be relevant to society, who is "society"? Is it everyone (i.e., the general public)? Is it our stakeholders—those who are significantly affected by or significantly affect wildlife or wildlife management decisions or actions (Decker et al. 2011)? Is it our customers (i.e., those who buy licenses)? Is it just citizens or visitors to our state, as well? Do they all have an equal standing or are those who buy licenses more important? Or will those who are impacted most by wildlife have a greater voice? If so, how do we weigh their interests in our decision-making processes? Public trust doctrine principles suggest that the beneficiaries of the public trust (fish and wildlife resources) are all citizens (society) because wildlife are a public resource held in trust for us all. From a public trust resource perspective, all interests in wildlife should be considered, and no interest should be privileged over another (Decker et al. 2014).

Thus, although from a legal perspective all citizens have claims to wildlife, as a practical matter agencies need to place a priority on attending to needs of stakeholders—those affecting or being affected by wildlife and wildlife management in a significant way. It follows then that for wildlife management, societal relevance means relevance to the issues stakeholders hold dear that intersect with wildlife, and these issues tend to be health, safety, economic security, food security, ecological integrity of the environment, and pursuit of happiness. On the surface these issues do not appear to be a significant focus of SFWAs, but dig a little deeper and it is not difficult to see the intersections of fish and wildlife management with such issues:

- SFWAs monitor fish and wildlife health and take action to reduce the potential transmission of disease or parasites that might negatively impact livestock or human health.
- SFWAs collaborate with public health agencies to provide fish consumption advisories to protect public health.
- SFWA staff study and communicate how humans and wildlife can safely coexist with campaigns such as Be Bear Aware.
- SFWA staff are often called upon to assist after natural or manmade disasters because of their ecological and technical expertise, capacity, and equipment, much of which is designed for use in remote or inhospitable locations.
- The work of SFWAs contributes to local, state, and national economic security. For example, the 2011 USFWS national survey on hunting, fish, and wildlife recreation reported that 6 percent of the U.S. population went hunting and spent over \$38 billion on equipment, licenses, and trips—spending that helped create and maintain more than 680,000 jobs. Likewise, anglers (salt and fresh) spent \$41.8 billion on trips, equipment, licenses, and other items to support their fishing activities.
- Management of important recreational and game species and the habitats they depend on contributes to the persistence and well-being of wildlife such as bees and insects that pollinate crops important to humans.
- Wildlife directly supports subsistence hunters in some areas but also is a significant source of low-cost and locally harvested protein for many recreational hunters and anglers.
- Humans value fish and wildlife for aesthetic, educational, historical, recreational, and scientific benefits.
- Management of fish and wildlife habitats contributes to providing clean air and water and open spaces for people to enjoy.
- Many people also have a deep affinity to the values that wildlife represents—freedom, beauty, an integral part of a larger inter-connected system, or a source of inspiration.

Clearly fish and wildlife, and management of these resources, intersect with important societal issues, but the benefits of fish and wildlife are not being communicated in ways that help the public understand the role of SFWAs.

Relevance Resisted

With so many potential points of intersection, why is it difficult for wildlife management to be relevant to society? Some may say it's because many people in the wildlife management institution are resistant to change. If that's true, a "selective resistance to change" must be at work. Otherwise how do we explain why many of us stay connected to work via the latest electronic gadgets like smart phones or tablets while traveling? Why is it that we can use the latest technology to track—in real time—a great white shark (*Carcharodon carcharias*) swimming along the East Coast, distinguish different species of trees from a satellite photo, or get a hunting license online? This suggests that we embrace change when it makes our work easier, faster, or more effective and efficient. We submit, however, that when it comes to adopting new ideas about why and for whom we should manage wildlife, essentially marking a cultural shift in the profession, wildlife management is just as resistant to change as any institution.

Traditional and New Fish and Wildlife Management Paradigms

Let's consider the premise that fish and wildlife management needs to be more relevant to contemporary society. Specifically, are we framing the question correctly—are we asking that our current

or “traditional” paradigm of fish and wildlife management is (or should be) relevant to current society? Or are we asking if a different paradigm is needed to be relevant?

We define the fish and wildlife management paradigm as the combination of professional values and norms, structures and processes, behaviors of professionals towards each other and stakeholders, management practices, and professional rules, rewards, and sanctions. Are SFWAs contributing to a perception of being irrelevant because they are attempting to overlay the traditional paradigm of wildlife management on people who may not share our values, accept our assumptions, or embrace our purposes? Are we missing opportunities for connecting with new and emerging stakeholders because we base interactions on where *we* want them to be with respect to our paradigm rather than where they actually *are*? Given the changes in the last few decades, is the traditional paradigm the best model for conservation now and for the future?

The current or “traditional” fish and wildlife management agency paradigm has focused on hunters, anglers, and trappers—the stakeholders who paid for and benefited directly from wildlife restoration successes of the 20th century. Relevancy to these beneficiaries of management has not been difficult to sustain. Most state agency cultures are mainly if not nearly exclusively committed to the paradigm that delivers the goods to these traditional stakeholders. This is not surprising because the paradigm has been sufficient until recently. The internal and external forces acting within this paradigm were known and relatively stable. The agency culture was strengthened and validated by influential user groups who shared agency values and behaviors. New agency staff were hired directly from a university wildlife program or from within the conservation community and they looked and behaved like the existing staff. The passion and deep, commonly held values of staff and key stakeholders resisted any pressure to change (Guynn 2002). Management paradigms are hard to change simply because they have been shown to work in solving problems in the past (Demming 2012). But living in the past is risky because the social-ecological landscape is different now and still changing. Traditional fish and wildlife users are becoming a smaller percentage of the overall population with relatively less direction and influence over societal issues. The scope of conservation issues now are sometimes global; the complexity and interdependencies of conservation issues have vastly increased; the number and diversity of the stakeholders and potential stakeholders have dramatically expanded; and the practices we use don’t always work like they used to. This uncertainty is unnerving and potentially paralyzing.

The combination of these trends and conditions have led many SFWA leaders to contemplate that perhaps it’s time to consider creating a new fish and wildlife management paradigm from a perspective that seeks out, understands, and embraces the growing diversity of perspectives and needs of society relative to wildlife.

How Can a New Management Paradigm Help Agencies Be Relevant, or Perhaps Even More?

As noted earlier, being relevant has taken on great importance of late for SFWAs. “Relevant” has been used quite a bit (including by us) in recent discourse about the future of SFWAs and our profession more generally. Definitions of relevant tend to be: having significant and demonstrable bearing on the matter at hand, having a logical connection to important current social issues. Despite its prevalence, we are increasingly finding the goal of being “relevant” inadequate. SFWAs need to be more than relevant, because one can be relevant to society but still inconsequential. Rather, to be effective, SFWAs must be valued, defined as: considered to be important or beneficial, cherished. If valued, then SFWAs will necessarily be relevant, but more importantly they will be recognized for positive and significant impact. This means that SFWAs need to understand what the important social issues are and how fish and wildlife, and management of them, intersect with those issues. This also means that we accept a basic premise about fish and wildlife management—that it’s largely about people. Reorienting a SFWA to focus on the people part of fish and wildlife management is an uncomfortable idea for many SFWAs. Fueling the discomfort in some agencies, a people focus also requires SFWAs to be adaptable because of immigration and migration of human populations, and changes in peoples’ experiences, attitudes,

opinions, and behaviors towards fish and wildlife. Being adaptable means embracing change, which as we indicated earlier is not a common trait of SFWAs.

Characteristics of an Adaptive Agency—Principles and Practices

Capacity is the ability to do things. Effective organizations have the capacity to generate:

- **value**—through programmatic capacity—the ability to create value in fulfillment of a mission;
- **stability**—through organizational capacity—the ability to organize and deploy resources efficiently and to promote stable operations; and
- **change**—through adaptive capacity—the ability to advance the organization’s mission by strategically changing in anticipation of and in response to changed circumstances and in pursuit of enhanced results (Sussman 2004).

An adaptive organization is one that is able to detect positive or negative impacts to the organization and change itself to take advantage of opportunities or mitigate problems. Adaptive organizations favor simple, universal principles over rigid rules about how staff should interact with others internal and external to the organization and make decisions (Kamener et al. 2010). Principles are the higher-level values, ideology, or philosophies that guide the actions or operational practices that a SFWA uses. We suggest some concepts that are candidates for inclusion in foundational principles that agencies can use to become and remain relevant and valued. We also suggest some practices that SFWAs can adopt that are consistent with the principles.

Principles of a Relevant, Valued, and Adaptive Agency

- Contemporary with respect to social values, needs, and interests
- Wildlife-values focus (rather than wildlife-use focus)
- External orientation—engage partners, understand stakeholders, form coalitions
- Good governance (e.g., open, transparent, inclusive, and fair decision-making processes)
- “Safe haven” work environment where opinions are freely expressed
- Receptive to new perspectives and alternatives; risk taking within reason
- Anticipatory, proactive, and responsive
- Nimble and flexible
- Evaluative and continually learning, improving
- Accountable, proactively seeking feedback
- Strong and broadscale partner relationships
- Coupled social-ecological systems approach

Practices of a Relevant, Valued, and Adaptive Agency

- Rely on human dimensions insight (from social science and stakeholder engagement)
- Collaborate across disciplines
- Exercise comprehensive, analytic, critical, and integrative thinking skills
- Encourage free flow of information
- Use interdependent units working in an integrated system
- Promote productive dissidence
- Seek professional training opportunities
- Learn how to evaluate and do new things quickly
- Build capacity to manage complex issues
- Detect changes that may impact the agency (positive or negative)
- Identify uncertainties and risks

- Produce recognized and valued benefits to a broad suite of stakeholders
- Adopt open, transparent, inclusive, and fair decision-making processes

Outcomes of a Relevant, Valued, and Adaptive Agency

In a relevant and adaptive SFWA we would expect to find staff at all levels who seek out, understand, and embrace diverse stakeholder interests. Stakeholders would be informed and engaged with the agency and each other. SFWAs and stakeholders would work together to design and implement actions to address conservation challenges. Dialogue among staff, stakeholders, and partners would be frequent, open, and transparent. Trust would build and be maintained between and among staff, stakeholders, and partners. All would trust the agency's decision-making processes to produce fair outcomes. Decisions would be supported and more durable because stakeholders were involved in the process. In general, society would recognize and appreciate the products, services, and benefits provided by the SFWA and understand the linkages of fish and wildlife management to other important social issues.

How Has Florida Become More Relevant to and Valued by Society?

During the merger that created the Florida Fish and Wildlife Conservation Commission (FWC) in 1999 and the reorganization several years later to improve internal integration and effectiveness, FWC leadership focused on increasing and improving staff engagement with stakeholders. This move to focus on the people part of wildlife management required a shift in staff thinking and skill sets. A tiered internal leadership development program was created and the agency sought out training opportunities that would improve staff and stakeholder interactions. FWC relies heavily on its system of multidisciplinary standing and ad hoc teams to address conservation and operational issues. Teams typically work under a "safe haven" principle that encourages productive disagreement and expression of innovative ideas. The Association of Fish & Wildlife Agencies' Management Assistant Team course "Publics, Problems, and Politics" has been modified into a Florida specific course, "Publics, Problems, and Politics: Florida Style." This two-day workshop is offered to FWC staff periodically and provides an introduction to basic stakeholder management practices. FWC provides a stakeholder engagement manual to complement the course which offers explicit guidance on the creation and use of technical working and advisory groups. A second training course, "Facilitation Tools and Techniques," is a five-day workshop that improves the skills of staff who design and conduct stakeholder engagement activities. A monthly stakeholder initiatives forum, in a "lunch and learn" format, provides an opportunity for staff to learn from each other's stakeholder engagement experiences. FWC creates time to be reflective and strategic by holding workshops or trainings on topical issues such as adaptive impact management, working with social scientists, public trust doctrine and the North American Model of Wildlife Conservation, limited market hunting, and even characteristics of an adaptive agency.

FWC has committed to improving staff understanding of the broader context or social-ecological system in which wildlife is managed. Toward this objective, FWC has incorporated a critical, systems-thinking and stakeholder-focused management approach. This approach has been introduced to staff through a workshop, "Thinking Like a Manager" (TLAM), initially developed for FWC in 2006 and 2007. The training emphasizes examining a fish or wildlife management issue from a systems perspective and provides a tool to describe the system, to identify and understand the interdependencies of the components of the system, to determine the ends before the selecting the means for management action, and to explicitly identify and consider the collateral and subsequent impacts of management actions. The workshop also emphasizes the importance of including social science information in the wildlife management system. Participation in the TLAM workshops and practicing the principles of TLAM reinforces and improves the agency's relationships with stakeholders. More than 60 staff, most of them in key leadership positions, have attended the weeklong TLAM workshop and model these thinking styles so the impact and adoption of this approach has been experienced almost agency wide.

When FWC began to write management plans for more than 60 state-listed imperiled species, staff recognized the need for increased engagement of stakeholders in plan development. A stakeholder coordinator was hired to manage these planning efforts to ensure all who cared to engage could do so without overburdening them. FWC has formalized the use of and need to include social science information into its decision-making processes. Additionally, FWC has a Human Dimensions Coordinator whose role is to increase awareness and use of social science (human dimensions (HD)) information. She creates opportunities for training related to HD, manages some contracts to acquire HD information, and acts as a liaison to external sources of HD expertise. FWC has also funded a tenure-track faculty position at the University of Florida to develop a HD research and extension program that focuses on FWC's fish and wildlife management issues.

FWC is working to better understand Florida's rapidly diversifying human population. State demographers and social science inquiry companies have provided information about our changing state to senior leadership and our Commissioners. FWC is working with the Recreational Boating and Fishing Foundation to pilot a program to increase fishing and boating among the Hispanic community. Staff attention and resources are increasingly focused on addressing the growing number of reports of human-wildlife interactions and mitigating negative impacts from these interactions. A training program is being developed to help staff better seek out and understand citizen and stakeholder attitudes, opinions, and behaviors towards wildlife and our management of them. A consultant was hired to pilot a risk assessment program for the agency that identified and recommended solutions to address the uncertainties and potential risks to the business operations of the agency including funding, staffing, facilities, and technology. The future of conservation in Florida has become a focal area of interest for the FWC commissioners, and staff are providing opportunities for the commissioners and stakeholders to learn more about a wide variety of issues that could impact fish and wildlife conservation in Florida.

Concluding Thoughts

Historically, most wildlife managers have been educated, trained, and acculturated into a paradigm dominated by natural science and focused on wildlife species or the habitats they depend on. As these managers advance in their careers, they typically find that wildlife management actually requires a broader lens that focuses on management of wildlife *and* people. They find that additional skill sets and types of information are needed—especially those related to people. Recognizing that conservation is about people as much as it is about species and ecosystems—an acknowledgement long commented on but seldom acted upon in conservation circles until very recently—suggests a significant shift in the nature and use of science in conservation. To preserve the earth's natural heritage, the social sciences must become central to conservation science and practice (Mascia et al. 2003).

How do we make managing fish and wildlife essential activities that are recognized and supported by citizens? How do we ensure that SFWAs are relevant and valuable? We suggest a new fish and wildlife management paradigm is needed—one that is more focused on people and providing the benefits they desire from fish and wildlife. In this paradigm, the value of a SFWA is measured by the benefits it generates that have purpose, meaning, and satisfy human needs and desires—whether tangible or intangible (i.e., including desire to avoid extinctions and biodiversity degradation, to conserve intact ecosystems, etc.). Thus, SFWAs need to understand what is important to all segments of society. They can then identify the intersections of fish and wildlife to issues such as health, safety, security, and happiness that are important to society. SFWAs will need to scan for and anticipate the impacts of changing social and ecological conditions and adapt their products and services over time to continue to provide valued benefits. SFWAs can work to increase their programmatic, operational, and adaptive capacities to become more adaptable. Adopting principles and practices enumerated in this paper, SFWAs can then tailor state- and context-specific practices characteristic of an adaptive agency. For example, by employing stakeholder engagement and social science inquiry to better understand the growing diversity of citizens impacted by wildlife, agencies can produce products and provide benefits that are recognized and valued by a broader audience. To a large extent, those benefits will have to be directly linked to

important social issues of the day to gain public attention. Experience to date indicates that SFWAs should not assume people will make these connections unaided; SFWAs will need to identify and communicate to citizens the intersection of fish and wildlife with the important issues affecting their lives. By accomplishing this, SFWAs can demonstrate their relevance and value to contemporary society.

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Outdoor Recreation in Shifting Societal and Natural Landscapes

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Introduction

Outdoor recreation contributes to public health, supports hundreds of thousands of jobs, and provides billions of dollars annually to rural economies. Visitors to federal lands alone spent \$51 billion in 2012 in nearby communities during their trips to recreate on public lands and waters (Forest Service National Center for Natural Resources Economic Research 2014). Outdoor recreation also promotes environmental stewardship and strengthens connections to public lands. However, access to and preferences for outdoor recreation are changing along with climate, natural resource conditions, demographics, and socioeconomic trends. Outdoor recreation trends and futures are an important consideration in this session aimed at developing a conservation agenda for the 21st century.

Here, we explore current and projected levels of participation in nature-based outdoor recreation. Specifically, we examine how population growth, along with changing socioeconomic conditions, demographics, land uses, climate, and changes in technology, may influence outdoor recreation. We present an assessment of recent trends and long-term projections for a number of outdoor recreation activities, with an emphasis on fishing, hunting, and wildlife viewing. Wildlife-based recreation is economically important, not only in the funds it contributes to local economies but also because many state agencies that manage wildlife and fish are funded primarily through revenues associated with hunting and fishing (Williams 2010). We conclude by discussing other factors, such as technology, which may influence outdoor recreation participation, and by providing an overview of the demographic factors that will be important to managers, including recreation planners, land managers, urban planners, and environmental educators, as they anticipate and prepare for changing patterns of outdoor recreation.

Methods and Data Sources

Our presentation of outdoor recreation trends and projections draws largely on information compiled for the Renewable Resources Planning Act (RPA) Assessment (USDA FS 2012). Every 10 years the United States Forest Service conducts an assessment of all U.S. forest and rangeland conditions, including outdoor recreation; identifies drivers of change for natural resource conditions; and projects the effects of those drivers on resource conditions 50 years into the future. We use multiple datasets for these assessments, including information on population and demographic trends from the U.S. Census Bureau

and recreation information from the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (FHWAR) and the National Survey of Recreation and the Environment (NSRE).

From 1955 onward, wildlife-focused recreation activities have been monitored by FHWAR, funded by the U.S. Fish & Wildlife Service, and administered by the Census Bureau (USDI FWS and U.S. Census Bureau 2011). This is the longest running and most detailed record of the American public's participation in hunting and wildlife watching (watching was added in 1980). We use this dataset as well as peer-reviewed literature to overview current trends in recreation participation. We then model future participation by extending participation rates from the FHWAR dataset with information from the NSRE, which takes a broader inventory of participation in recreation by the American public (Bowker et al. 2012).

A Changing and Dynamic American Population

The changing nature of recreation participation reflects our dynamic American population and cultural preferences. In recent decades, the U.S. population has become much more racially and ethnically diverse. Hispanic population growth in particular has been high: from 1980, the Hispanic population more than tripled, due to immigration, high fertility, and low mortality (Saenz 2010). By 2010, the U.S. population was 63.7 percent white, non-Hispanic, with substantial Hispanic (16.3 percent), African-American or black (12.2 percent), and Asian (4.7 percent) populations (Mather et al. 2011). From 2000 to 2010, racial and ethnic minorities accounted for almost all (92 percent) of the U.S. population growth (Mather et al. 2011). This diversification is expected to continue even more rapidly in the future. More than 500 U.S. counties had “majority-minority” populations of children by 2008, meaning minorities outnumbered the white, non-Hispanic populations (Johnson and Lichter 2010). These changing U.S. populations are important for natural resource managers because ethnic group members have historically demonstrated differing patterns of recreation participation and preferences, although racial and ethnic groups are of course not homogenous (Struglia and Winter 2002).

The American population is also aging, with important implications for outdoor recreation, as participation rates decline by age class after age 55 for nearly all outdoor recreation activities (Cordell et al. 2012). The nation's 65-and-older population is projected to nearly double from 2012 to 2050, growing from 43.1 million to 83.7 million. This increase in older Americans is expected as the baby boomers (individuals born in the United States between mid-1946 and mid-1964), transition into the over-65 age class (Ortmann et al. 2014).

The American population has also changed in distribution: by 2010, 80 percent of the U.S. population was living in urban areas, as defined by the U.S. Census Bureau (U.S. Census Bureau 2014). Much of this urban development has been with the expansion of low- or medium-density development (i.e., sprawl), not expansion of the highest-density urban cores (Johnson et al. 2005). The distribution of the U.S. population leads to different preferences and opportunities for recreation in several ways. Where people live has important implications for where and how people recreate—e.g., as the population becomes more urban we can expect to see more recreation in urban areas, more day trips from urban areas, and greater use on public lands near urban areas.

We also see concerns about the impacts of expanding development on public lands from low-density or exurban housing. During the past 40 years, we have seen substantial housing growth in rural areas near public lands, often caused by amenity migration and the influx of population, spurred by desires for a rural lifestyle and natural amenities such as lakes, mountains, forests, and mild climates (Radeloff et al. 2010; Bell 2007; McGranahan 1999). Many of these migrants are retirees, a life stage when Americans often move. Between 1960 and 2000, the net migration of retirement-age persons (age 50 to 69 years) added 1.5 million people to the West and 3.1 million to the Southeast, and amenity migration is expected to continue with the aging of the American population (Johnson et al. 2005).

Sociodemographic Characteristics and Recreation Participation

For the majority of natural resource-based outdoor recreation participation, we see consistent patterns in participation with these sociodemographic characteristics. In general, participation rates are higher among individuals who are: male, non-Hispanic white, tend to live in rural areas, and have higher income (Cordell 2012). Minorities including African-Americans, Hispanics, and Asians are usually less likely than whites to participate in outdoor recreational activities (Cordell 2012). However, ethnicity is less of a factor on the intensity or annual days of participation, once the individual chooses to participate (Bowker et al. 2012). Men are more apt to participate in backcountry activities, such as hunting and fishing. Education beyond high school generally results in higher participation rates for most activities. However, the level of education varies. For example, the greater the education level, the more likely one participates in birding, nonmotorized winter activities, backcountry activities, and viewing activities. However, for fishing and hunting, motorized off-road use, and motorized snow activities, more than a high school education lowers the probability of participation. Income is positively associated with participation and use across all activities. However, for some activities such as birding, hiking, and hunting, the effect was small, while for others that require expensive equipment, such as developed skiing and motorized water use, the effect was large (Bowker et al. 2012).

Literature and surveys focused on wildlife-based recreation are consistent with general outdoor recreation patterns. For hunting, surveys of individuals show men are more likely to participate than women (Floyd and Lee 2002; Spence 2002; Walsh et al. 1992). Men are more likely to participate in wildlife viewing and photography, but women are more likely to view wildlife at home (Hay and McConnell 1979; Spence 2002; Walsh et al. 1992; Boxall and McFarlane 1995). Data from FHWAR on individuals who participate in hunting confirm that participants are mostly white and non-Hispanic (USDI FWS and U.S. Census Bureau 2011; more detail below). In 2011, fishing was most popular among whites and African-Americans. Anglers in 2011 were 86 percent white, 7 percent African-American, and 95 percent non-Hispanic. Of the adult American population, 16 percent of whites and 10 percent of African-Americans went fishing (USDI FWS and U.S. Census Bureau 2011). Adult participation rates were lower for hunting: 7 percent of the nation's white population, 2 percent of the African-American population, 2 percent of those identified as other races, and less than 0.5 percent of the Asian American population reported having hunted in 2011 (USDI FWS and U.S. Census Bureau 2011). In total, 94 percent of hunters were white and 98 percent non-Hispanic. Wildlife viewers were 94 percent non-Hispanic and predominantly white: 92 percent were white, 3 percent were African-American, 1 percent were Asian American, and 4 percent were other races (USDI FWS and U.S. Census Bureau 2011). Given changing demography in the United States, future participation in hunting and fishing could decline if participation across demographic segments does not improve.

Current Trends and Future Projections for Wildlife-Based Recreation

While existing recreation patterns and their relationships to sociodemographics are useful to understand current levels of recreation, there is no guarantee that these trends and patterns will continue. As a result, we use current patterns of wildlife recreation, combined with underlying structural relationships of recreation participation, to simulate future recreation patterns based on projected changes in factors like economic conditions, population size and composition, age structure, climate, and land use patterns (Bowker et al. 2012).

We use information from FHWAR to inform our summaries of current and projected wildlife-based recreation trends. As a survey, FHWAR creates estimates of number of participants, days, and expenditures by interviewing a portion of the American public. This survey focuses on wildlife recreation as a primary activity, meaning the participant's central aim must be the wildlife-associated recreation activity. Data for unplanned hunting or wildlife watching while on trips taken for another purpose are not included in FHWAR. We report on wildlife watching that occurs away from (>1 mile) the home because it is an indication of outdoor recreation by individuals whose primary purpose is to view, feed, or

photograph wildlife. Because of changes in how the FHWAR survey was carried out, we present information on hunting, angling, and wildlife viewing from 1991 onwards (earlier surveys are not directly comparable to these later ones).

In 2011, the most commonly pursued activity was angling (33 million participants), followed by wildlife watching (22 million), and hunting (14 million). During the past 30 years, the number of participants and the rate of participation in these activities have remained relatively stable, with some variation from survey to survey (Figures 1a and 1b). Total number of days reported for each activity has also been fairly consistent from survey to survey, with fishing days nearly twice as many as days spent hunting. There were more total days viewing wildlife than hunting, although the difference between the two was not as great as the separation between number of participants and participation rate in the two activities, as hunters spent more days participating in their activity on average per year than wildlife watchers (Figure 1c).

Projections of future participation in wildlife-based recreation require extrapolating into the future. One approach is to simply extrapolate current trends, which assumes that the current population, resources, and preferences will continue along current trajectories. Alternatively we can use structural simulation to examine the underlying structural relationships of recreation participation and simulate future recreation patterns based on projected changes in factors like economic conditions, population, climate, and land use patterns. Here, we use such a structural approach, taking initial participation rates from the most recent FHWAR survey (2011), and combining them with information derived from statistical models of individual behavior based on the NSRE (Bowker et al. 2012).

We use a two-step approach to develop projections for participation and consumption of fishing, hunting, and wildlife viewing. The first step—model estimation—yields national-level statistical models of adult per capita participation and days of participation for each of these activities. The second step, or simulation step, combines these models with externally sourced projections of relevant explanatory variables (e.g., economic conditions, land use change, climate) to generate per capita participation and per participant days of participation for each activity at 10-year intervals to 2060. Per capita estimates for participation and days are then combined with population projections to derive estimates of adult participants (16-plus) and days of participation by activity. Below, we present projections for fishing, hunting, and wildlife viewing participation under the RPA scenario (A1B), which represents high GDP growth (domestic and foreign) and medium population growth (domestic and foreign).¹ It should be noted that the model results and projections herein do not account for factors outside the range of available data such as new technology, changes in relative costs, new infrastructure, and fundamental changes in tastes and preferences.

The future adult participation rates in the U.S. for fishing and wildlife viewing are expected to be essentially static during the next five decades, while the participation rate for hunting will decline somewhat (Figure 2a). By 2060, we predict that 4.3 percent of the American public will participate in hunting, 12.7 percent in fishing, and 10.2 percent in viewing. Combining projected changes in participation rates with expected population growth, we expect to see fishing and viewing participant numbers each increase by about 14 million (Figure 2a). Hunting, despite a decrease in participation rate, will increase by more than 2 million participants by 2060. The number of total days devoted to each activity is expected to rise in proportion with participants, showing consistent projected increases for angling and viewing, and a marginal increase for hunting (Figure 2c). In comparison with other outdoor recreation projections, traditional wildlife-based activities like fishing and hunting are among the slowest growing activities (Bowker et al. 2012).

¹ While alternative scenarios for socioeconomic changes and climate changes are presented in Bowker et al. 2012, we chose the scenario most likely to represent the midpoint of all those examined.

Discussion and Conclusions

Choices in outdoor recreation activities have changed over time in response to changing tastes and preferences, demographics, technological changes, economic conditions, and recreation opportunities. While we think outdoor recreation will continue to be an integral part of America's social and economic fabric for the foreseeable future, we anticipate changing patterns of participation. Growth in overall recreation numbers is likely to be driven by an increase in population numbers, as participation rates remain static or decline due to the growing age and diversity of the population (coupled with relatively low participation rates of most groups other than non-Hispanic whites). Activities dominated by rural residents are likely to decline as population becomes increasingly urban. However, a number of caveats and limitations to our modeling approach should be acknowledged. Despite having up to 10 years of data for model development, this was insufficient to establish any meaningful or statistically significant time-varying parametric relationships. Thus, the participation and days models are static, which is a substantial limitation when projecting demand over such longtime intervals. Our models are also national and so do not incorporate any regional or sub-regional variation that may occur.

Compared to other outdoor recreation activities, we predict hunting and fishing will have relatively low participant growth rates (Bowker et al. 2012). As the population ages and becomes more racially and ethnically diverse it is unclear how future recreation demand and supply will adjust. Regardless of projections for lower rates of participation, assuming the public land base for outdoor recreation remains stable into the future, a growing population will result in decreasing per person opportunities for recreation. Wildlife-based recreation relies heavily on public lands, so that increased congestion and possible declines in the quality of the outdoor recreation experience are likely to present important challenges to management (USDI FWS and U.S. Census Bureau 2011; Bowker et al. 2012). Therefore, a major challenge for natural resource managers and planners will be to ensure that recreation opportunities remain as population grows. This will probably have to be accomplished through creative and efficient management of site attribute inputs and plans, rather than through any major expansions or additions to the natural resource base for recreation. Trends toward more flexible work scheduling and telecommuting may well allow recreationists to allocate their leisure time more evenly across the seasons and through the week, thus facilitating less concentrated peak demands. On the other hand, technological innovations like GPS units and new forms of transportation such as OHVs or plastic kayaks will allow more people to more thoroughly use public lands.

Climate can affect individual willingness to participate in recreation activities and/or affect recreation resource availability and quality. We limited our projections herein to one externally generated climate scenario. However, Bowker et al. (2012) examined participation changes across a range of externally generated climate and socioeconomic conditions, finding that fishing, hunting, and wildlife viewing participation were less sensitive to climate change than selected winter and water-related activities. We note that the climate variables used in these recreation models were presumed to affect willingness to participate and frequency of participation directly. However, despite the lack of existing data, it is reasonable to expect that climate change will affect resource availability directly and indirectly. For example, in the case of hunting and fishing, increasing temperatures will likely affect the distribution of plant and animal species, which are fundamental to maintaining fish and game populations. In the case of wildlife viewing, climate changes could alter migration patterns as well as species' population densities. Understanding how recreation participation numbers and rates change over time will require tracking both increasing changes in these natural resources and the shifting nature of wildlife-based recreation itself. This continued analysis and research is necessary not only to inform the continued funding for wildlife management but also to maintain a strong connection between Americans and their wildlife resources.

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Figure 1. The participation rate (a), number of participants (b), and total days of participation (c) for wildlife viewing, fishing, and hunting from 1991 to 2011, from FHWAR data.

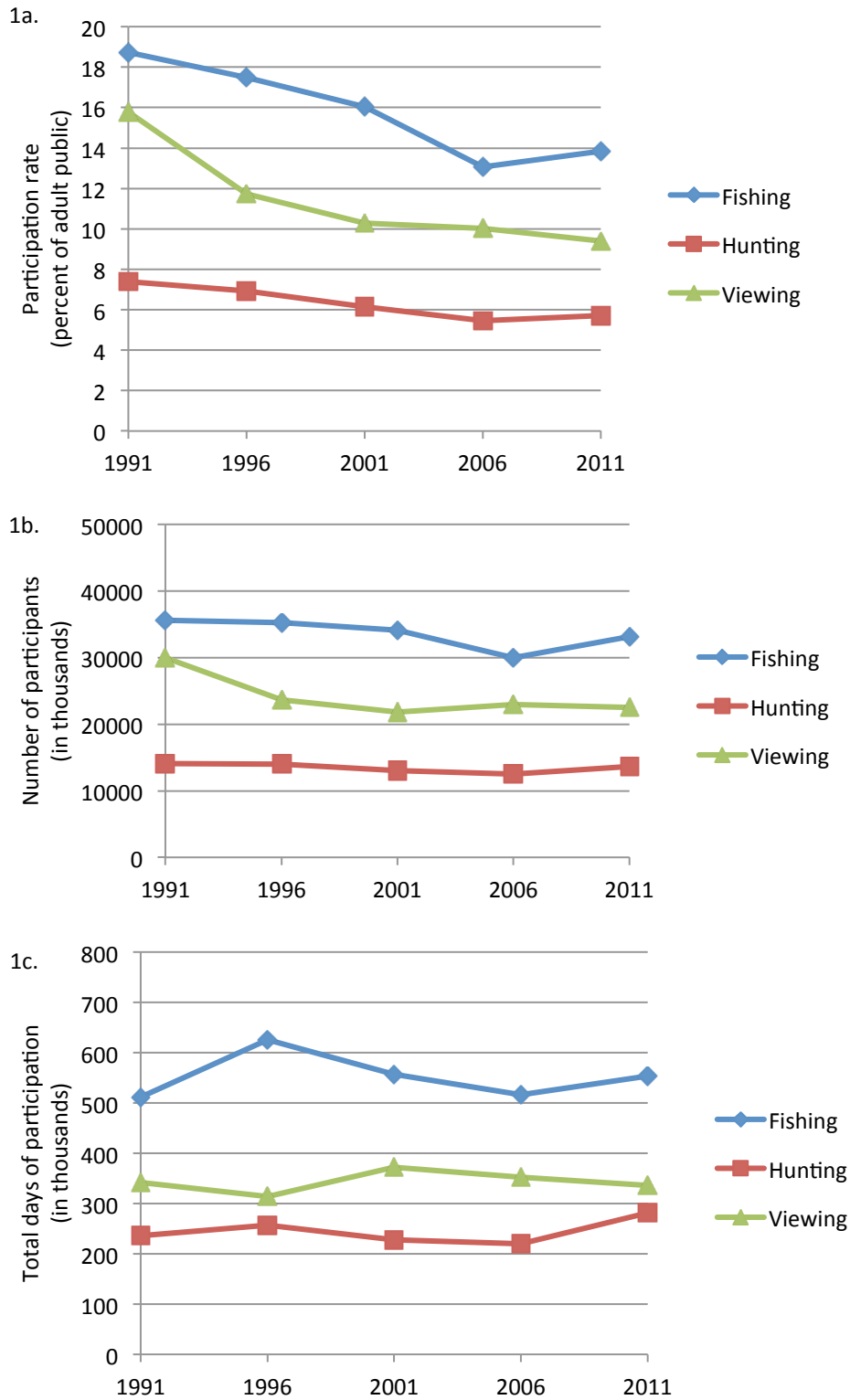
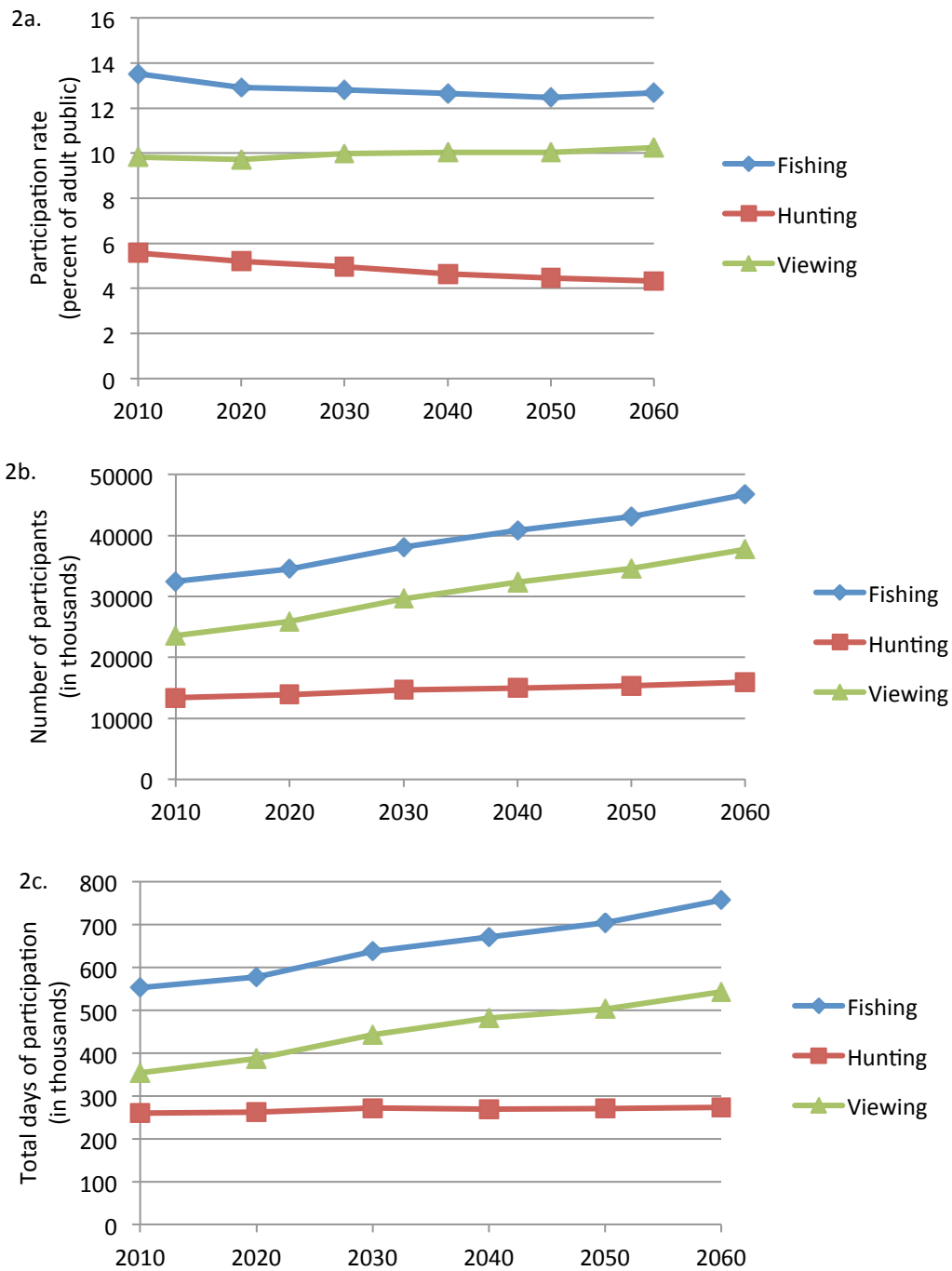


Figure 2. Projected participation rate (a), number of participants (b), and days per participant (c) for wildlife viewing, fishing, and hunting, from 2010 to 2060.



Being Relevant: Necessary But Not Sufficient

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Introduction

Fish and wildlife have been part of American identity since the founding of our country. From the beginning, the natural world has been part of our culture and at the heart of our national progress and pride. Though we did not always treat our natural bounty with the awareness that the abundance was limited, we codified our unique commitment to fish and wildlife in the public trust doctrine of the North American model of fish and wildlife conservation. We as a society have delegated responsibility for the conservation of fish and wildlife to both federal and state natural resource agencies. These agencies act as our trustees, ensuring that fish and wildlife resources endure and flourish, with society as the beneficiary.

Americans today care deeply about these public trust resources. A mountain of data supports this claim—enough to overwhelm even the most callous skeptic. For example, according to the most recent National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, 99 million people aged 16 years and older, about 38 percent of the United States population, participate in some type of wildlife-related recreation (U.S. Department of the Interior 2011). Beyond mere participation, public research polling reveals that nearly one in five American adults characterized “nature, wildlife, and the outdoors” as their “most enjoyable” interests, and an additional 37 percent described nature, wildlife, and the outdoors as among their “more enjoyable interests” (Case et al. 2012). Thirty-one percent of American adults reported they take time “daily” to get outdoors to see and experience nature, and an additional 29 percent indicated they take time to get outdoors on a weekly basis. Further, according to public opinion research by Gallup (2013), 69 percent of Americans worry “a fair amount” or “a lot” about the future quality of the environment. Remarkably, nearly seven in 10 Americans “worry” about the future of our natural resources. Given these majorities of Americans who care about natural resources, who want to engage with those resources, and who are worried about the future of those resources, it is clear, perhaps now more than ever, that the agencies responsible for maintaining these public trust resources continue to be relevant.

Yet the United States and the world are significantly and rapidly changing. Factors that made nature so important and accessible to the citizenry in the past may be changing. Unless agencies adapt to societal changes, they may drift toward irrelevance in the future. Three powerful categories of change are 1) demographic changes, 2) land use changes, and 3) increasing disconnection from the natural world. Demographically, the U.S. is becoming more diverse. While a positive factor for the nation’s cultural vibrancy, demographic changes have the potential for changing how we value, use, and interact with natural resources and wildlife. New constituencies may not embrace the traditional goods and services agencies have provided.

Population growth and housing demands exert inexorable pressure on fish and wildlife through the conversion of habitat to farmland and farmland to strip malls, urban/suburban development, and increased demand for energy production. All these factors reduce wild places and increase the potential for human-wildlife conflicts.

With an ever-increasing proportion of the U.S. population living in urban and suburban areas, there is an intensifying yet understandable disconnect between people and wildlife. People, and children in particular, spend little time outside exploring or merely playing, growing up without the connection to

wild things and wild places crucial for development of a conservation ethic—a personal stake in fish and wildlife conservation.

In the face of significant societal change, it is clear that if natural resource agencies are to remain relevant, they too must change. What does meaningful change look like? An insightful body of work on the full spectrum of pertinent issues has been assembled through agency transformation workshops conducted at several North American Wildlife and Natural Resources conferences (Decker, Jacobson, and Organ 2011). All state agency policymakers and management teams should familiarize themselves with this work and apply the insights. Rather than focusing on organizational change, for this paper we focus our attention on how to use communications to catalyze this needed change.

Recommendations for Communications

For agencies to reach their resource management goals and remain relevant in a changing world, we propose they focus on three key actions: 1) actively advocate for conservation action, 2) understand the constituency called the “general public” for what it is, and 3) be a catalyst for the public’s connection to nature.

Actively Advocate

One of the largest communication challenges agencies face is the false perception that if we simply inform or educate people then they will behave in a manner that promotes conservation. Indeed, we have myriad nature-oriented programs designed to deliver information for the purpose of changing behaviors and instilling a conservation ethic in our constituents. Unfortunately, little evidence exists to support the premise that simply delivering information to the public is sufficient to catalyze the necessary behavioral changes to meet conservation goals.

Actively advocating for conservation behavior is a better and more direct approach to impacting the public’s thinking and behavior. For many natural resource agencies staff, the thought of advocating for conservation may be disconcerting, but advocacy is not foreign to the public sphere. For example, governmental agencies take an active advocacy role in health care initiatives such as smoking cessation, in safety initiatives such as seat belt and cycling helmet campaigns, and even in product campaign promotions such as beef, pork, and dairy. Therefore, the precedent exists for agencies to actively advocate for responsible actions that benefit society, and conservation certainly benefits society. It may require a step or two out of an agency’s comfort zone, but it will be a critical step, with continued relevance hanging in the balance.

Understand the Constituency Called the “General Public” for What It Is

In the conservation community, we often hear the claim: “We could really make a difference if we could catch the ear of the general public!” However, the key is to think strategically about communications and to discount the nebulous “general public,” commonly defined as “everybody,” but just as accurately defined as “nobody in particular.” Granted, it is true that as a public agency, “everybody” is the constituency and that concept has intuitive, rhetorical, and democratic appeal. But agencies simply cannot manage resources for “nobody in particular.” Not all citizens have the same needs or at the same times, and we cannot communicate with all of the citizenry, at least not effectively. Therefore, to catalyze behavioral change, agencies must identify target audiences with specific communications objectives.

For example, one specific constituency that is an identifiable subset of the “general public”—but one that holds enormous potential for enhanced conservation funding—is the “voting public” (Case et al. 2012). Earlier, we cited statistics confirming that the U.S. general public cares about natural resources and wants to see them protected. The challenge is to leverage the voting public’s often-passive interest in conservation into active behaviors such as personal participation, financial contribution, or support at the ballot box.

Further, consider the example of waterfowl hunters. Waterfowl hunters make up about 9 percent of all hunters and only about 0.4 percent of the U.S. public. By contrast, 30 percent of the U.S. population 16 years old and older watched wildlife around their homes in 2011 (observing, feeding, and photographing wildlife), 9 percent took trips away from their homes to watch wildlife, 6 percent took trips away from home to view waterfowl (e.g., ducks and geese), and 4 percent took trips away from home to view other water birds (e.g., shorebirds, herons, cranes) (U.S. Department of the Interior 2011). The population of waterfowl viewers is roughly 15 times greater than the population of waterfowl hunters. And yet, hunters and the hunting community have a disproportionate impact on conservation of wetlands. To illustrate, in 2013, the North American Wetlands Conservation Act contributed more than \$30 million to wetlands conservation and was/is largely driven by the waterfowl hunting/management community. For comparison, the Teaming with Wildlife effort and its associated State Wildlife Grants program, which funds conservation of all nonhunted species, was funded at approximately \$45 million. The numbers are not proportional, nor should be the communications efforts.

The question remains, who to target? Does an agency target hunters because of their current conservation and financial impact, or ignore hunters and target the broader wildlife viewing audience because their numbers are greater and growing? Consider the demographics of current hunters. They tend to be white, male, baby boomers who have increasing disposable income and time. The importance of their past conservation legacy cannot be overstated, nor can their central importance to current conservation funding and programs, as they continue to buy licenses, mentor younger hunters, support conservation initiatives and organizations, and vote.

On the other hand, if we are successful with our recruitment and retention efforts, the demographics of future hunters are going to be very different from today's hunters. Future hunters are going to be more representative of the changing U.S. population. They will be even more urbanized than today, include a larger proportion of females, and be more ethnically diverse. To communicate with these audiences we must understand how these groups consume information differently than the current hunting cohort.

So what balance do we strike between appealing to the present constituent, while anticipating the changing appearance of the future clientele? Of course, it should never be an all-or-nothing decision, and there is not a clear answer to how the communications pie should be split. But the main point is that the pie *is going to be split*. Every decision to communicate or not is taking a slice of scarce communication resources. Decisions are being made right now, every day, on how the pie is split. The tactical decisions on allocating pieces of the communications budget should be based on an agency's strategic thinking, with follow-up to measure the results and adjust future communications allocations accordingly.

Help Make the Connection

Finally, agencies must connect people with nature both inside and outside. Most worrisome are various indicators suggesting Americans are becoming increasingly disconnected from nature and the outdoors (Kellert 2012; Louv 2005). Americans now spend on average 90 percent of their time indoors, and we are increasingly an urban nation, where more than 80 percent of U.S. citizens live in and around cities. This growing disconnection from nature is especially evident among American children. Just a generation ago, children spent more than four hours outside in a typical week. Now children on average engage in electronic media 52 hours each week and spend less than 40 minutes outside.

We must push for children to increase their time outdoors. There simply is no substitute for being outdoors, for experiencing nature, and building a personal connection with it that will impact lifestyle choices. Many agencies are working hard on this issue. Secondly, we also need to reach people, especially children, indoors. The movement away from unstructured, outdoor play toward electronics and air conditioning is societal in scale. Agencies will never have enough resources to change societal-level trends. Therefore, we must again venture into uncharted waters to discover ways to reach our constituents wherever they are—and in so doing also try to lure them back into the great outdoors.

Stephen Kellert of Yale University and E.O. Wilson of Harvard University articulated the concept of *biophilia*, which describes humans' inherent link to and affinity with nature (Kellert 2012). The

premise of biophilia is that contact with nature is critically important for human health and well-being, and far beyond mere recreational activity. We are just beginning to learn details of the profound and complex relationship between humans and nature, and more research is desperately needed. However, it is evident that agencies' public trust responsibilities go well beyond "just" fish and wildlife conservation, environmental protection, and recreation. Considering biophilia, agency responsibilities can justifiably be extended into health care, education, economic development, and human well-being and happiness.

Conclusion

Throughout our country's history, fish and wildlife and other natural resources have been at or near the core of American culture. We bore witness to our love for these resources by putting them in public ownership, by inventing national parks, and by birthing and growing the fields of modern fish and wildlife management, among many other conservation accomplishments. Social science research has proven that Americans value fish and wildlife resources today as much as ever. However, our society is changing, and with it, some of our needs and expectations about fish and wildlife conservation. For some, this love of natural things is more like a long-distance relationship than something up close and personal. This is a new paradigm—a changing environment.

Like the fish and wildlife they manage, public agencies must also adapt to this new environment in order to remain relevant and vital. Communications will play a critical role in this adaptation, and agencies should use all the tools at their disposal to actively advocate for behavior change, target specific audiences with specific messages, and strive to reconnect people to nature—both inside *and* in the great outdoors.

American society needs fish and wildlife agencies to remain relevant. More than that, society needs agencies to adapt and to flourish to help more Americans retain that essential connection with natural resources that is basic to our health and well-being. Fish and wildlife agencies, and all who support them, must fill this growing need. Agencies must understand and believe their work to be not merely relevant to the cultural fabric of our future, but utterly essential.

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An Admirable Identity: Helping the Hunter Legacy Resonate in an Era of Unprecedented Change

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Visualize a map of the North American continent. Mentally focus on a special, natural place that comes to mind. Maybe it's a favorite stretch of trout water where the mayfly hatches are like clockwork. Maybe it's a rugged ridge where a bull elk bugled so close you could feel it in your chest and the hair on the back of your neck stood on end. Maybe it's a family camping spot you visited during your summer vacations as a kid, or perhaps it's a favorite birding spot.

Can you point to a special spot on the map where you were personally inspired by the beauty of nature—be it as a hunter, an angler, a wildlife viewer, or otherwise? If so, take a moment and recall some details. Think about how you interacted with that particular piece of ground. Recall the details of the landscape, its vegetation, its wildlife, your favorite season there, the look of the sky, and how your place made you feel. Perhaps you shared the experience of that place with someone else—your parents, your child, or a memorable friend. Consider for a moment how that spot has impacted your views on conservation, your views on what is important, what really matters to you personally.

It might be easy to fool yourself into believing that your ability to pick a special natural place is normal. Hopefully, you're like me and you have more than one wild spot competing in your mind as the most cherished and impactful. That doesn't make you or me normal. It makes us outliers when we are considered in the context of our broader humanity today. Even within the boundaries of your state or the confines of your hometown there are many who would struggle to identify their own special, natural place on the map, let alone multiple places. I view the lack of such a place in one's life as the most basic indicator of environmental illiteracy.

Consider the response we might get if we polled a random sample of people in Shanghai or Mumbai. I met a surprising number of people while studying wildlife in China who hadn't left the bounds of the massive cities where they were born. The world is crowded and getting more so by the minute. So bear in mind that legions of our species are now living their entire lives without knowing the kind of beauty or connection you just visualized. How would your life be different without it?

We are among the luckiest people on this planet. You are one of the luckiest people on Earth, due in part to that spot of yours. But the simple fact that we currently have this ecological wealth and wildness is no guarantee that our grandchildren or theirs will enjoy the same. The only guarantee is change, and continued relevance in the face of change rests in the ability to adapt. A persisting fortune of natural beauty hinges on a persisting critical mass of people, like you, who care deeply and make the conscious decision to continue stewarding our wild resources in the future. Simply stated, we need more of us.

The solution to conserving these resources is not to keep people off the land, but rather to help people experience the land and learn to love it. The land needs more of us. Wildness needs more of us. I mean hunters or otherwise. We need more people who care.

How we broaden our ranks and our own thinking to welcome and embrace an increasingly diverse, increasingly urban—or as it might be called, “less traditional”—segment of American culture into our conservation community is of critical importance. It's a topic that should matter to every single person who has a natural spot to love. We all have skin in this game. It matters, because America is in a constant state of flux, and if the changing face of this nation is ultimately apathetic or dismissive of our natural inheritance, those treasures will be squandered. Special places like yours, if it still exists today, will not be spared tomorrow in a country of voters, thinkers, and landowners who have not had the chance to experience and cherish their own spots on the map.

The successes of the North American Model of Wildlife Conservation in stemming the desecration of wildness and beauty are inspiring and numerous. And yet, in spite of the countless success

stories and tangible evidence you and I have personally witnessed, I and others perceive that we, as hunters, are missing the mark in terms of telling our own story to the masses. Few beyond our ranks have any familiarity with the words “North American Model” or the 170-plus years of devoted and concerted action those words should evoke. What is equally damaging is the warped image of hunting and hunters that has been established and perpetuated in the public eye. I’m not blaming Walt Disney entirely, but since about the time of Bambi and Elmer Fudd things could have been better.

Many nonhunters today fail to see the connection between hunting and conservation. Many in the “nonconsumptive” conservation community view their hook-and-bullet counterparts with varying degrees of apprehension and disdain. We, the hunters, deserve a share of the blame for this. It seems to me that our public image has been hijacked as we’ve stood by and watched. As a result we suffer from a vocal minority that doesn’t always do a great job for the rest of us. When was the election that gave us our current outspoken spokespeople? I don’t remember casting my ballot in that vote.

Imagine for a moment that you knew nothing more about hunters and hunting than what you are exposed to through the popular media and casual observation. What conclusions would you draw from the magazine racks, the bumper stickers, the T-shirts, or the TV shows? Would it have much to do with our legacy as conservationists? Is it an image of respect and reverence for the wildlife we pursue or the land we all claim to cherish? Does it adequately reflect your attitudes about this activity?

My answer is “generally, no.” It is not a reflection of who most of us are. I know that. Hopefully you know that. But it is all too often the image that is communicated to the nonhunting public. The perceived emphasis on hunting for trophies, apparent disregard or disrespect for land and wildlife, and the in-your-face, “whack-’em-and-stack-’em” garbage has served only to alienate and stereotype our community of dedicated conservationists as something far less than admirable. When I see and hear this sort of messaging it comes off to me as short-sighted, ignorant, inconsiderate, and, above all, self-defeating. On the hunting forums and in our hunting media I read and hear fearmongering about hardcore antihunters conspiring to put an end to hunting as we know it. A poor or irrelevant public image seems to me a bigger threat than any antihunting movement.

This sort of messaging is particularly damaging when it comes to engaging one of the most exciting cultural inroads we have with the changing face of America today. That group includes the ecologically minded adults who have an interest in hunting for food and who come to the activity with no prior experience. I like to call these folks “green hunters.” Green because of their pre-existing interest in environmental stewardship, and green because many of them are novices in the truest sense of the word.

I have been a part of several programs designed to give green hunters their first taste of hunting. My interactions with program participants played a key role in shaping my thinking about our image problem as dyed-in-the-wool veteran hunters. It was striking to me that the newbies in our classes viewed themselves as being distinctly different from their experienced counterparts. They were, after all, environmentalists turned hunters—not bloodthirsty rednecks.

During the classes I taught, we spent time talking openly about these stereotypes. We would ask participants to sit in a circle and create a list of terms that captured their image of the average hunter and we would contrast those words against a list of their own characteristics and motivations for being there. Words like rural, monster truck, and rackoholic were contrasted against urban, ethnic, and organic meat.

By design the structure of our training program included mentorship experiences between the experienced and the green hunters. Stereotypes raised in our circle were challenged and increasing overlap among old and new hunters was inevitably discovered. As it turns out many of the old school lifelong hunters are as green as they come. Who would have guessed that they also love to eat what they hunt and revere the land and wildlife as a matter of course?

As a community of hunting conservationists we tend to splinter by specialty. We seem to strive for divisions. We have clubs focused on whether members hunt with a crossbow, a rifle, a shotgun, or a bow. If you bow hunt, there are groups focused on whether you hunt with a stick bow or a wheel bow—the list goes on. We err at times by focusing on differences in minutia rather than huge collective overlaps. Yet we know that our collective voices, resources, and energy can be more potent and effective than what we might otherwise accomplish individually.

Just as there is a tendency for the new green hunters to view their experienced counterparts as the “other” group, so too is there the potential for longtime hunters to view any new segment of the hunting community as a distinct and separate subgroup. They might even feel that their traditions are being threatened. I argue that highlighting such a division is a mistake. It is a mistake because our overlaps far outweigh our differences. It is a mistake because embracing any new ethical and ecologically aware hunter, regardless of their background, is a step in the right direction. And, perhaps most importantly, it is a mistake because green hunters shine much needed public attention on positive aspects of our community *that I believe are nearly universal to all hunters*. Aspects like our commitment to environmental stewardship, our desire to hunt for our food, and our dedication to the land and animals we hunt.

These are not new traits that were invented by green hunters during the past five years, but you might start to get that impression when you read about this growing trend. What does that say about how we have been portraying ourselves? It tells me that these highly admirable traits, traits that resonate with our broader nonhunting culture today, have been largely overshadowed by a warped public image for decades.

As we welcome a new generation of green hunters we can nod at their motivations and enthusiasm and say, “Hey buddy, me, too.”

“You like to know where your food comes from? Me, too.”

“You like beautiful, wild places? Me, too.”

“You care about healthy land and enjoying time outdoors with your family and friends? Me, too.”

“You are more interested in a wild and personal outdoor experience than you are in having a set of skull bones to show off to the world? Me, too.”

“You have mixed and complex emotions when you kill a beautiful, sentient animal? So do we.”

As more participants join our ranks from different backgrounds their stories and experiences will flow through their peer networks to their parents, their children, and to the broader community of nonhunters. This is happening already in the form of vegetarian-turned-hunter books, tree-hugging hunter articles, and urbanite-turned-hunter blogs. This is the kind of image evolution hunting needs in the 21st century.

We could ask for no better cohort of ambassadors than the growing band of ecocentric green hunters with whom we all can find so much common ground and through whom we can tell our own stories. The evolution of our hunting image will also improve our chances of bridge building with our nonconsumptive conservation allies. If we’re respectful of our differences and focused on our shared stewardship goals we stand to do so much good together.

This evolution of our hunting image is already underway, and every hunter, new or old, has a role to play in setting its course for the better. It means more than paying lip service to our leadership roles in conservation. It means being personally active as conservationists. It means weighing tough management decisions and lobbying based on what is best for the land and wildlife, game and nongame species alike. It means speaking up.

Peer pressure is a powerful thing and we can collectively challenge imaging, writing, or other media that reflects on us poorly. We can be the voice of the thoughtful majority, even if it’s through one-on-one conversations with our peers. We can all be mindful of how we are portraying our whole community of hunters. Choose your bumper stickers with some thought, empathy, and care. Embrace those who are hungry for the chance to experience what you have. Work to conserve and steward the resources passed down to us.

Think back to that special place of yours. Do you have one or more inspiring wild place on public land? Think about the growing value of our public lands as our population grows. Think about the access challenges faced by would-be conservationists from urban and suburban backgrounds. Safeguarding our remaining green spaces and ensuring access for all of our citizenry should be a priority that we can all buy into—Safari Club and Sierra Club alike. Most urbanites will not own their own rural hunting property in the years ahead. The lack of access and opportunity in this changing landscape is a far bigger threat to our future than any antihunters ever were.

My special places include a tiny trout stream in Michigan's northwest Lower Peninsula. It was there, in part, where my brother and I learned as kids to love the land and were both inspired to pursue careers in the field of environmental conservation. But one need not be a child to fall in love with a natural place or a set of wild experiences. I've seen it happen to adults. The mandatory ingredient is personal immersion. A lack of experience will result in apathy and disconnection.

That's why it's so important for us to encourage people who may differ in some ways from us to join our ranks as vested conservationists—hunters or otherwise. Recognize that one crucial step in enhancing our relevance as a community of hunters is to take full ownership of our authentic identity and show the broader public why it is an identity to be proud of.

This new chapter is a refinement of the continuing story of the North American model. It's a story of getting back to our roots as conservationists first, and hunters second. And it's a story of measuring the accomplishments of a hunter not by the size of what is taken from the land, but by the magnitude and legacy of what is given back.

Special Session Four. ***Beyond the Land and Water Conservation Fund: New Ideas for Future Challenges***

Welcome & Introduction

Jodi Stemler

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Denver, Colorado

Thank you all for joining us today and thank you to the Wildlife Management Institute for including the important topic of the Land and Water Conservation Fund (LWCF) as one of their special sessions. Holding this session at this year's North American Wildlife and Natural Resources Conference is very relevant—2014 is the 50th anniversary of this bedrock piece of conservation legislation.

On the conservation history timeline, the Land and Water Conservation Fund falls well after some of the foundational wildlife conservation laws like the Lacey Act and the Migratory Bird Conservation Act, as well as the Pittman-Robertson and Dingell-Johnson acts. But it predates what many think of as the modern environmental movement of the Endangered Species Act and Clean Water and Clean Air acts of the 1970s.

The vision of the Land and Water Conservation Fund was a simple one—to reinvest the revenues from the use of a nonrenewable resource, offshore oil and gas; to conserve important historical sites, public parks, and recreation areas; and to protect important habitat, hunting, and fishing access. It has been used in virtually every county in every state in the country and provides what I refer to as a “continuum of conservation” from neighborhood playgrounds to the greenbelts or bike paths along urban waterways to state parks and wildlife refuges that are found on the outskirts of our cities to our wild backcountry.

From our home southwest of here, I can walk to an LWCF-funded playground where I spent many hours pushing our daughter on the swings. We bike on an LWCF-funded bike path. We swim each summer at LWCF-funded pools. We spend hours hunting, fishing, hiking, and cutting our Christmas trees on the national forests and Bureau of Land Management lands west of here, and we watch elk bugle every fall in Rocky Mountain National Park—yup, they are all funded in part by LWCF. But if I were to ask any of my friends—many whose kids have played in the same parks—or walk out on the street here in Denver and ask anyone I meet if they know about the Land and Water Conservation Fund, I'd be hard-pressed to find one who does.

This lack of knowledge is perhaps one of the biggest challenges of the program—without the obvious public reckoning, Congress has easily been able to redirect the money in the fund for other purposes. In the half-century it has been in place, Congress has only fully funded LWCF at its authorized level of \$900 million twice. And it is a battle every year in the appropriations process—last year, the House of Representatives zeroed out the LWCF in their budget, along with other conservation programs. In fact, estimates show there is now an \$18 billion backlog in projects that should have been funded over the years.

In its 50th year, LWCF is perhaps at its most important crossroad. It enjoys support by the administration and a growing bipartisan group in Congress and by the public—that is, when people are given a detailed description of the program. Yet, the fund is staunchly opposed by some members of Congress who fundamentally disagree with federal land ownership and by others with spending concerns, in spite of the fact that it has an identified, nontaxpayer source of revenue.

The program has adapted to the changing face of conservation and recreation over the years—it is now being used for easements and sportsmen's access, and it helps private forestland owners and working ranches, as well as endangered species habitat conservation efforts. And yet, unless it is reauthorized, LWCF will sunset next year. So this is why it is so timely that this community, in this venue, talks about

where we go from here and how we take the knowledge and success from the past 50 years to move beyond the Land and Water Conservation Fund and talk about new ideas for addressing future challenges.

It was just 15 years ago that the majority of groups and individuals within this community worked together on the Conservation and Reinvestment Act. That conservation funding legislation was also based on sharing revenues from energy development for wildlife and land conservation, recreation, historic preservation, payments to local communities to offset energy development and public land holdings, and more. We came very close but were tripped up in the red zone and we have not effectively reorganized since. And ironically, I talk to many in the community these days who do not even know about or remember that effort. Is now the time?

With the conversation about LWCF and other efforts in Congress that are looking at revenue sharing from onshore, offshore, and renewable energy development, can we fit together the parts that make the most sense and once again move forward a rational conservation funding proposal that can garner the broad support necessary to be enacted? I'd like to think we can. I'd like to think the strength of all of our groups will be the power necessary to break the logjam we've seen on conservation funding for many years.

This panel was intended to provide a variety of perspectives, to bring in some outside thinkers who might be able to get us outside our respective silos and working together on solutions that will help us all. I hope their thoughts and insights, and the dialogue we have planned for the last 30 minutes of this session, will be a foundation for some workable solutions and will motivate us to work together after this meeting.

Let's not lose this opportunity.

The Critical Link Between LWCF and America's Recreational and Natural Resource Heritage

John Land Le Coq

Fishpond, Inc.

Denver, Colorado

I feel humbled by the experience of my associates on this panel and impressed with what they have collectively achieved on the conservation front for all Americans and the world.

My name is Johnny Le Coq and I'm the founder and CEO of two uniquely American outdoor brands. Founded in 1999 in the high country of Colorado on my ranch under the base of the majestic Eagles Nest Wilderness area, both Fishpond and Lilypond have become a worldwide brand of products designed and manufactured for the fishing and outdoors enthusiast. We created our company with the philosophy that innovation, design, and a responsibility towards the environment from which we draw our inspiration is critical to our success. Our fabrics are made of either 100-percent recycled water bottles, or in an industry and worldwide first, Fishpond's line of vests, chest packs, luggage, and gear bags are made using recycled commercial fishing net gathered from trawlers and large fishing operations that would otherwise discard this valuable nylon material.

Along with these companies, I have also been an active advertising and commercial photographer, and for the past 35 years, I have shot on assignment in 72 countries for some of the largest corporations in the world.

My life and work are centered around creativity and design, and through my lifelong career of exploring the world, I have become keenly aware that there is no place on Earth as beautiful as the United States of America. Not only are we free as a people, but our treasured city parks and open spaces, our national parks and forests, are the foundation of our liberty, and thus offer the opportunity for us to prosper as a nation.

Our company depends on the health and sustainability of our watersheds and open lands, and we promote the shared connection we all have to our fragile ecosystem. It is vitally important for us, as an outdoor recreation company, to have critical public lands and protected species preserved as much as possible in perpetuity through acts of legislation such as the Land and Water Conservation Fund (LWCF), wilderness designation, and the Endangered Species Act. The vitality of our country, the very heartbeat of our core values, in my opinion, rests on the vast and diverse natural resources we all currently live with in all of our backyards.

As a company that offers outdoor products, it's important to us that we use our business to spread the word on issues that revolve around the environment and places people recreate. We didn't start the company this way, but it became who we are because of the big impact that protecting our outdoor resources has on the success of our business. Responsible stewardship simply means good business, not only for us, but also for communities across our nation.

Our nation's recreational and natural resource heritage is a part of the American persona. It is the core or heartbeat of how we are perceived by the outside world. Our ecosystems, so vast and differentiated, are valuable assets in helping grow our economy. Through the recreational outdoors industry, which generates \$646 billion in annual revenue or \$70 million through federal and state government taxes, we must preserve and protect this important landscape for many future generations.

At Fishpond, we believe in the power of purpose. We encourage our consumer to engage in a cause that directly affects their heart and passions. We call this the "ripple effect"—the collective impact of individuals performing in an environmentally conscious manner that leads to lasting change—in thinking, in deeds, and in results. Conservation of our natural world is not something we leave to government in Washington to change on its own. It is in all of our hands to participate in the process, and most importantly, for all caring citizens to rally a cry for the continued and appropriate full funding of the LWCF. Only twice since 1965 has Congress appropriated the full \$900 million for our critically needed habitat, and when put in context of how the recreational economy depends on this for the six million jobs it creates, it becomes clear that conservation means economics in our national communities.

The shared vision we need to foster for the next 50 years of the LWCF, which is teetering on a tight rope at the moment, is one of collaboration. No longer can Washington or our state governments pave the necessary path for a sustainable future. We need to create private/public partnerships that leverage the strengths of each. From businesses like Fishpond to private landowners who are willing to place their farmland or ranchland into conservation easements, we need to find the valuable synergies to help educate and tell the story of how our land, rivers, and public places are the link to a vital economic future and a quality of life. The outdoors recreation industry, a vast group of thousands of companies, must equally participate in raising the additional and critically important funds to augment the current conservation funding by the federal and state governments. The outdoors recreation industry must help lead the push for the full funding of LWCF, but they can't stop there. It is the responsibility of these American businesses to use the power of their consumer reach to raise additional funds to augment the shortfall of the hundreds of millions of dollars in conservation needs. Government funding and taxes alone will not be enough to get us through our environmental challenges, and it will be important for companies like Fishpond to creatively join forces with government and nonprofit groups to collaboratively reach our goals.

I was born and raised in Boulder, Colorado, just up the road from here. We are a state that embraces the ideals of the outdoor lifestyle, and because of this, it has attracted some of the most creative outdoor brands in the country. With these companies here, they have attracted some of the brightest talent, which in turn has spawned some of the most vibrant and economically healthy communities in the nation. Colorado is the beneficiary of this economic muscle. People are moving here because of a healthy lifestyle. We are one of the least obese states in the country, which in turn alleviates the burden on our health system. Being fit is good for the economy, and by having a population of outdoor intellectuals with spirited creativity we are better prepared through our businesses to send a clear message to the world and consumer about how important the link is between our fragile habitat and economic health.

By contrast, those cities, communities, or states that have not put their arms around a vibrant recreational economy are suffering. Statistics show this very clearly. Colorado has a majestic backyard, but every state in the union has an equally diverse playground to promote, protect, and enhance.

The economics behind LWCF demand that we get the full funding appropriated for our natural resources. It is critical to my own business that depends on our watersheds and just as important to every individual who values our open space and public access for recreation and enjoyment. The public access component of LWCF is crucial for the future of our hunting and fishing industry.

When people ask me what we do at Fishpond, I tell them we are in the business of conservation. Although we make what we feel are the most innovative fishing products in the world, what we really make are products to promote the values of the places people go fishing. It is not about the fish; it's about the environment in which fishing takes the angler. In our branding material in the last 16 years, we have never shown someone holding a fish or, for that matter, shown people fishing at all. It has always been about the beauty of our land and water. The light. The seasons. Simply, it is about the environment.

As the LWCF is up for reauthorization, it is up to everyone in this room who is somehow connected to our open space and lands to project how, or should I say demand that, as a nation we continue to fund our natural world. This is not an issue that is left or right. Both sides of the aisle should be able to equally recognize that current and future generations of not only people, but all species, need healthy water and land to have a quality of life. It makes economic sense to protect the environment through full funding of LWCF. In our world of fishermen and women, there is an equal balance of conservatives and liberals, and although today's politics are very divisive, I would hope while on the water or in the fields or forests we can find our common bond and do the right thing to forge a future together for a sustainable planet.

I think there is a misperception about what some people call tree huggers. I am one of them. Several years ago while on assignment in Tequila, Mexico, shooting an editorial on the makings of this centuries-old liquor, I was introduced to a 300-year-old tree that loomed in the courtyard of Tequila Herradurra, a 400-year-old distillery. Natalie Farrah, a beautiful and eloquent representative of the company who was my liaison on this project, introduced me to this tree while on one of our scouts and

asked if I would like to put my arms around this beast of nature that had powered over the rock walls of the hacienda well before Columbus arrived in America. She said there was an energy and spirit you could feel if you just gave it a hug. I did, and I will never forget the insight this gave me in how we need to feel about every living thing within our ecosystem. Honestly, when no one is looking, I hug the aspens on my backcountry ski jaunts. It makes me feel connected, literally, to our natural world. Just as my photography has connected me to the spirit of light, the natural world, if given the proper time and perspective, can link us to a common ground of unity within this fractured world of politics. The recent Olympics showed how sports, most all of which are borrowed from the recreational economy, bring culture and differences closer to our core.

Under the cloud of government shutdowns, economic instability, and worldwide political turmoil, we seem to have lost the fundamental framework our great country was founded upon. Americans need to remember that the word “freedom” is not bundled into the context of values that serve only humans, who now number more than 300 million in our country alone. Freedom in America is also about the open space of our wild lands, the complexity of our ecosystems, and the liberty of our animals, plants, birds, and fish to live as they have for millennia.

It is our responsibility as a country to look deep into the beauty of our public and wildlands and to protect the values we derive from them on a recreational basis. A wild America is a free America, and although many will never see or experience the places we need to protect, just knowing they are there brings us all a perspective of majesty and connection.

The \$646 billion Americans spend each year on outdoor recreation is more than is generated annually by the oil and gas industry—more than construction, transportation, real estate insurance, and the finance industries. More than 60 million Americans spend time fishing at least once a year, and the habitat that supports the ecosystem in which they recreate is vital to hundreds of species well beyond the fish in which they pursue. Again, most often it is not really the fish that pulls them to go fishing, but the purity of the open space and wild environment with clean water that allows their spirit to connect to something less tangible.

The diverse landscape of America personifies our nation, and it is our responsibility to protect it with everything in our power through acts like LWCF, which is now 50 years old. And while our country is sometimes divided on many issues, I hope that for the most part there exists a common thread of equality in our outlook towards the necessity of a balanced ecosystem that thrives by the very nature of its protection. I hope we are unified in our quest to live in a land filled with our native species—wild and free.

At Fishpond, we believe every individual should embrace the ideals of sustainability. Our brand was born from the shared goals of our customers who are passionate about our wild lands and water, and as friends of ecological balance, we encourage every person to engage in a cause that makes a difference. None of us can do everything, but each of us can do something. Hug a tree. Volunteer with a local group that embodies the values of LWCF and what it intends to protect. Notice the value of light upon the landscape, the freedom of moving water. Together, collectively, if we send a unified message of the importance of our natural world to Washington and Congress, we all may be able to continue to enjoy a healthy economic future filled with the joy of nature.

I recently read a quote from Barbara Dillingham that said, “Life is not a path of coincidence, happenstance, and luck, but rather an unexplainable, meticulously charted course for one to touch the lives of others and make a difference in the world.”

Political Myths, Practical Realities: LWCF in a Time of Change

Alan Front

Conservation Pathways

San Anselmo, California

For the five decades since it was signed into law in 1964 by President Johnson, the Land and Water Conservation Fund (LWCF) has consistently proven an effective, essential tool in the effort to conserve the recreation lands, fisheries and wildlife habitat, natural treasures, historic sites, and other special places on which we all depend. LWCF ensures the integrity of our national parks, wildlife refuges, forests, battlefields, trails, and other federal lands; provides close-to-home recreation in our cities and towns through stateside grants; secures targeted state and local solutions to species-related land-use conflicts through Cooperative Endangered Species grants; and conserves state and community forest resources with Forest Legacy funding. And if the obvious place-based conservation benefits of LWCF were not compelling enough in themselves, when taken together these investments also support an outdoor recreation infrastructure that sustains millions of American jobs, contributes many billions to the nation's economy, and, perhaps most importantly, safeguards the national birthright of our unique American landscapes for the generations to come. What, then, is not to love about LWCF?

Indeed, as the clock on LWCF's current legislative authorization runs down, with key provisions of the program expiring at the end of September 2015, it is hard to find anyone who would argue that this wildly successful 50-year-old program should sunset. At the same time, however, critics of some aspects of LWCF have made no secret of their desire to see changes in a legislative reauthorization of this crucial conservation mainstay. Meanwhile, some stalwart supporters of LWCF also have suggested altering some of its fundamentals—including its authorized uses and its distribution—for one of two basic reasons. Some seek substantive changes they believe will make the program work better; others, making political calculations, recommend that LWCF be amended specifically as a means to accommodate and mollify critics so LWCF reauthorization can get across the congressional finish line.

Both of these perspectives clearly merit careful consideration, since all of us who care about LWCF—and there are a lot of us, as discussed below—and the places it protects fervently want LWCF reauthorized and want to see it used to maximum benefit. That said, the seminal importance and phenomenal success of LWCF also require that we consider whether any proposed changes to the program are intrinsically worthy, are strategically necessary and useful, and protect the program and the lands it conserves from unintended consequences.

As a longtime and unabashed LWCF booster with more than 30 years in the conservation movement, I look forward to joining with attendees of the North American Wildlife and Natural Resources Conference and with others committed to LWCF's future to consider these questions. Before kicking the tires on any such changes, though, we should clearly understand the existing strengths, programmatic and political, of LWCF as it is. Just as important, we need a common understanding of the facts surrounding the existing structure and uses of LWCF, many of which directly refute criticisms leveled against the program.

What follows is a brief overview of the broad federal context in which LWCF sits; a quick review of the extensive support LWCF enjoys and the surpassing national importance of the program; and some essential myth-busting truths to bear fully in mind as we build the political consensus the reauthorization effort requires. Certainly that effort will need to be responsive to political realities, including any concerns key political players may have regarding LWCF. And just as certainly, that response begins with real information about the true structure of this multifaceted program and a practical perspective on how it is actually used. Whether and however any changes to LWCF might be warranted, for substance or for tactical reasons, we first and foremost must fight the fear with facts.

LWCF—The Context for Reauthorization

Much has changed in America in the half-century since the Land and Water Conservation Fund became law. The U.S. Census Bureau tells us that our population has soared from about 190 million Americans in 1964 to about 320 million of us today. Moreover, each one of those Americans is more likely to rely more heavily on outdoor recreation lands and to invest in our economy through outdoor pursuits than did their parents and grandparents. For example, our national parks welcomed just over 100 million visitors in 1964; by 2012, that number ballooned to nearly 300 million (U.S. Department of the Interior). State parks have seen similarly skyrocketing visitor numbers, from fewer than 300 million in 1964 to about 740 million by 2010 (U.S. Bureau of Outdoor Recreation, National Association of State Park Directors). Another interesting statistic: the amount of acreage owned and managed by the federal government has *decreased* by 17 percent since 1964, from a total of 770 million acres then to less than 640 million acres today (General Services Administration, Congressional Research Service).

The steep upward spiral in our use and enjoyment of the outdoors has major implications for the nation's economic growth and vitality. For instance, hunting and fishing accounted for about \$3.9 billion in annual consumer spending at the birth of LWCF; by 2006, that figure had increased fifteen-fold to more than \$65 billion (U.S. Fish & Wildlife Service 1960, 2007). That enormous sportsmen's economy is itself just a subset of the even larger economic driver of outdoor recreation writ large. Together, direct annual consumer spending on hunting, fishing, wildlife viewing, camping, hiking, and myriad other outdoor activities amounts to \$646 billion and directly supports some 6.1 million jobs across the country—nearly one in every 20 jobs in the entire American workforce (Outdoor Industry Association). And the lands that LWCF conserves, in federal areas and through the program's various state and local grant funding, are the necessary infrastructure on which that economic output depends.

Impressive as they are, though, it is not statistics that explain the overwhelming public support that LWCF receives. Americans recognize that our conservation treasures are an irreplaceable, collective national birthright and that we owe it to ourselves and to the generations to come to protect these places from incompatible development. We recognize the benefits of land conservation to maintain water quality and supplies; to enhance recreation access and to secure it where the public lacks needed entryways to existing public lands; to sustain traditional land uses including forestry and agriculture—along with the jobs that go along with working forests, ranches, and farms—through conservation easements; and to secure for the future the local parklands, historic sites, wildlife habitats, and scenic vistas that define our communities. For these reasons, public opinion polling consistently demonstrates overwhelming support for LWCF, with 80 and 90 percent majorities across all demographic and ideological lines insisting that LWCF be sustained into the future, with dedicated funding and an end to the siphoning off of LWCF revenues for unrelated, nonconservation spending. For these reasons, communities across America consistently choose to tax themselves to support conservation, with four out of five conservation finance measures put on the ballot at the state and local level each year routinely gaining voter approval, typically by substantial margins.

That wellspring of public support is mirrored by enthusiastic commitment among many on Capitol Hill, in both chambers and both parties. The Land and Water Conservation Reauthorization and Funding Act (S. 338), sponsored by senators Ron Wyden (D-OR) and Richard Burr (R-NC), would make LWCF permanent and would fully dedicate its \$900 million annual income to LWCF's conservation purposes. A bipartisan group of 40 of the U.S. Senate's 100 members has cosponsored this bill; in the House, a similarly large, bipartisan coalition of members have called for enduring, dedicated funding in LWCF reauthorization. Still, not all members of Congress have embraced that vision, and the contrast in viewpoints can be stark. Earlier this year, for example, reflecting on the need for a long-term robust fix for LWCF, Representative Dave Reichert (R-WA) noted that "...LWCF deserves consistent support because of the critical work it does in caring for our nation's natural treasures and resources..." Meanwhile, Representative Doc Hastings (R-WA), whose district abuts Congressman Reichert's and who chairs the House Committee on Natural Resources, offered this different assessment: "Instead of the

federal government buying even more land it can't afford, let's properly maintain and manage the land we already own."

LWCF—Myths and Realities

As discussed below, that latter perspective, like some other concerns raised by some about LWCF, runs counter to some on-the-ground realities. Fortunately, there are compelling, real world answers to the questions that are sometimes raised in the context of LWCF and its reauthorization process.

Can we really afford LWCF? A look at the overall federal budget picture, at LWCF's particular financing, and at the massive return on LWCF investments make the affordability *and* the necessity of LWCF spending abundantly clear.

The federal treasury spends roughly \$3.7 trillion each year on the full array of government programs and services. Of this amount, annual conservation spending (even under the most generous interpretation of what "conservation spending" entails) amounts to somewhere between \$5 and \$7 billion—about two-tenths of 1 percent of the federal budget. LWCF is of course far less than that: recent-year appropriations have run about one one-hundredth of 1 percent of overall federal spending, and even full funding of LWCF would total less than three one-hundredths of a percent.

Moreover, LWCF is already paid for under an asset-for-asset agreement that goes back decades. As the federal government began to increase Outer Continental Shelf (OCS) oil and gas development in the 1960s and '70s, LWCF's legislation was specifically amended to capture a modest share of the increasing associated revenues from energy producers, rising to \$900 million in 1978. The idea was simple: as we sell a nonrenewable resource that belongs to all Americans, we should reinvest at least a small portion of the proceeds into something of lasting value to us all. Diverting LWCF's identified, dedicated revenue to cover other unrelated spending, as is done to varying degrees each year, dishonors that agreement, depriving us all of the conservation offset for offshore drilling. And with rising OCS revenues—which now average about \$10 billion per year, about three times the 1978 level—LWCF's dedicated share of that pie is even more affordable.

Consider the intrinsic benefits of LWCF spending described above. It is an undeniable pillar of the national economy and of recreation- and tourism-reliant local economies. It serves an outdoor recreation population that has grown by 70 percent since 1964 and has increased public land use at an even greater rate. And since the program is not inflation-adjusted, the already-paid-for annual \$900 million it was promised starting back in 1978 would now, even if fully funded, have the conservation buying power of just \$246 million in 1978-dollars to achieve those much-needed economic and community returns. At the risk of cliché, LWCF is a modest, affordable investment that we indeed cannot afford *not* to make.

Is LWCF spending all about adding to the federal estate? LWCF meets a variety of very specific needs that do indeed include willing-seller, community-supported, win-win federal purchases of vital natural, scenic, recreation, and historic lands. But a closer look reveals that the majority of LWCF funds do not in fact go to outright purchase of lands.

In 1964, LWCF was set up with a simple division between two distinct but aligned programs: the federal side, designed to secure critical inholdings and other property interests in our national parks, forests, trails, battlefields, and other federally owned and managed resource areas; and the LWCF State Assistance Program, which provides grants for state and local conservation and recreation facilities development. Just as it has since 1964, the State Assistance Program of LWCF, by definition and in practice, addresses vital nonfederal needs and does not add to the national inventory of federal lands. In other aspects, though, LWCF has adapted to a whole slew of previously unmet demands that now direct federal LWCF funds into a variety of projects and programs that do not add to the federal land base.

For the past 15 years, annual LWCF allocations have included not only the traditional federal- and state-side of the program, but also two additional state grants programs of more recent vintage: USDA's Forest Legacy Program (FLP), administered by the U.S. Forest Service, and a major share of the

U.S. Department of the Interior's Cooperative Endangered Species Conservation Fund (CESCF), overseen by the U.S. Fish & Wildlife Service. FLP provides grants to states for nonfederal easement and fee-simple conservation of forestland threatened by conversion, while two distinct grant programs under CESCF—Section 6 Recovery Land Acquisition grants and Habitat Conservation Plan Land Acquisition grants—help states and communities with habitat conservation, often helping resolve Endangered Species Act land-use conflicts and clearing the way for economic development.

Additionally, much of the funding that falls on the federal side of the ledger also covers partnerships that do not involve federal land purchases. Among these are the American Battlefield Protection Program, which is funded out of the National Park Service's discrete LWCF allocation but goes to grants to nonfederal battlefield protection projects; Highlands Conservation Act funding, which comes from the Fish & Wildlife Service's allocation but goes to state acquisition of watershed and forestlands in four mid-Atlantic states; and the operating budget of the Department of the Interior's Office of Valuation Services, which assists federal agencies and state grantees in completing projects based on federal appraisal guidelines. Finally, federal acquisition priorities have evolved as well, with far more federal conservation in national wildlife refuge, forests, and other federal areas being achieved through conservation easements and working lands preservation.

So yes, there still are essential, targeted, win-win federal land purchases through LWCF, but they have been outpaced by other conservation mechanisms fueled by LWCF.

Does LWCF worsen the maintenance backlog on federal lands? Recognizing the backlog in maintenance on existing federal lands, some have suggested that purchase of additional federal land might simply add to the deferred maintenance burden, since now there will be even more land to manage and keep up. This argument fails to consider two key facts. First, the vast majority of federal LWCF projects involve inholdings in the midst of existing federal holdings—the “white” spaces on an otherwise “green” map. These lands typically require no additional staffing, no additional construction, and no additional management or maintenance expense. Second, inholding acquisition is in fact a major tool—and is sometimes the only real cost-effective tool—to properly maintain and manage the land we already own. Significant management expenses and maintenance problems arise from inholdings where current or proposed inconsistent uses on those lands and/or an agency's ability to locate access roads or other facilities on those lands result in vastly higher management costs on existing public lands. Far from increasing those costs, strategic inholding conservation relieves agencies of the need to “manage around the hole,” producing more effective management and substantial cost savings.

Some also suggest, irrespective of those management savings, that LWCF dollars would be best prioritized and spent on maintenance rather than conservation projects. This suggestion challenges the underlying asset-for-asset commitment of LWCF and runs counter to the most basic financial management principles. Selling a nonrenewable asset to cover operating expenses is simply unwise and unsustainable. Using the dedicated LWCF revenue—our conservation investment capital—to maintain public lands would be tantamount to a homeowner's selling his back porch to patch the roof or a farmer's selling acreage to pay the electric bill for the milking machine. Instead, those revenues should be used to sustain the economic, recreation, and community needs that conservation reinvestment addresses.

Does LWCF conflict with the property rights of landowners? It also has been suggested that LWCF funding may somehow be disadvantageous to landowner interests. In fact, the availability of purchase funding simply offers a fair alternative to property owners whose land lies in high-priority public resource areas. These landowners, many of whom have stewarded these resources with great care for many years, often are faced with difficult choices when they want or need to sell their properties. Where public funding is available, they can honor their own conservation ethic, do the right thing for their community, and reinvest the proceeds from a conservation sale into economic production on less sensitive lands. Where those funds are lacking, they instead may be forced into incompatible development that impairs those resources and forecloses them to the public. Many property owners have an abiding commitment to conservation, but they cannot be expected to manage private property for public purposes. Landowners have a constitutional right to fair and just compensation for their property, which is what LWCF provides.

Whether they are spent in national parks and forests or state wildlife areas or community parks and greenways, virtually all LWCF funds go to willing-seller projects, in fee-simple or through conservation easements, where landowners choose public conservation over private sale and development. In resource areas where compelling public interests make conservation a public priority, the best way to honor property rights is to provide landowners with that option.

Conclusion

As LWCF's current authorization nears its expiration, we face an imminent need to join together in a reauthorization effort that will maintain or enhance LWCF's strengths while surviving the congressional paddle wheel. That said, the ticking clock on LWCF is not a reason to make changes to the program that unnecessarily constrain its long-term effectiveness. Staying mindful of the facts above may keep us from overreacting to political pushback and from tilting at windmills. Working together, we can reauthorize LWCF in the best possible ways for the decades to come.

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The Next Generation of the Land and Water Conservation Fund

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Introduction

The Land and Water Conservation Fund is one of the most important federal funding programs for the conservation of large and iconic landscapes, recreation areas, and key natural systems in the United States. However, the LWCF program's funding stream—revenues derived from oil and gas development on the Outer Continental Shelf—will expire in September 2015 unless reauthorized. In fact, we are facing the perfect storm where any type of consistent LWCF funding for large-scale, on-the-ground conservation may be threatened in just the next couple of years. As good as the LWCF program is, it does not address all conservation needs of the 21st century. When the program was first designed in the 1960s, it focused on recreation through state and federal opportunities with a focus on public lands.

Today, the LWCF program now encompasses collaborative efforts to conserve working farms, forests, and ranches through conservation easements and programs such as Forest Legacy; projects to implement habitat conservation and recovery plans for threatened and endangered species through the Cooperative Endangered Species Conservation Fund (section 6 of the Endangered Species Act); and efforts to conserve cultural, historic, and urban priorities across the nation. Moving forward, the LWCF program will need to address a new set of issues recognizing our growing knowledge of conservation on-the-ground—landscape corridors, climate impacts, natural infrastructure, and the protection of drinking water supplies, among others.

State of Play: Partisan Politics and Support for Conservation

Efforts to conserve and protect critical lands and waters in the United States continue to yield uncertainty. Several factors influence this context.

Fiscal condition. Focus on the federal deficit overshadows most action in Congress. Key conservation programs such as LWCF face funding uncertainty. Other conservation funding is insufficient including: 1) investments in nature to protect coasts from storm surge, purify water, and provide other benefits to communities, and 2) funding linked to mitigating impacts of energy production and other development.

Increasing partisanship. The traditional moderate base for supporting conservation in state legislatures and Congress has diminished. Conservative officials have moved increasingly to the right, while liberal representatives have moved increasingly to the left (Figure 1). This more polarized environment diminishes the conservation community's traditional supporters in the moderate middle of the political spectrum and limits the opportunity for productive, solution-oriented conversations. Furthermore, individual elected officials are, singlehandedly, stopping conservation investments. Moving forward, we must rebuild a conservation base by empowering new conservation champions and engaging in a constructive dialogue with members of both parties who can influence policy outcomes, even on both extreme ends of the political spectrum.

Elected official—electorate gap. Conservation is generally not a high-profile issue and can be a partisan issue among many congressional legislators. However, the nation's electorate is far less divided on environmental issues than elected officials. Recent polls by The Nature Conservancy and results from state referenda on funding for conservation show strong, bipartisan support for conservation across the country. Yet, this nonpartisan electoral support for conservation at the state level has not translated to the national level. The conservancy, with its nonpartisan culture, extensive on-the-ground partnerships, and state and federal campaign experience, has the ability to lead this mobilization in support of new federal conservation funding and policies.

Budget process changes. The elimination of congressional earmarks in the appropriations process has significantly changed the process of securing funding for land and water projects by placing greater importance on working with federal agencies (including the Office of Management and Budget), on internal budget preparation guidance, and on specific project priorities, rather than working with members of Congress to secure a project. Recognizing this shift, the conservancy has increased its focus on executive branch policy relationships and tools that can generate substantial benefits without congressional action. However, there is an increasing opportunity to educate and influence agencies at the regional level, which would directly impact the conservation benefits on the ground.

Large landscape conservation. Federal agencies are increasingly focused on landscape approaches to conservation, reflecting the scale often required for effective natural resource management and conservation. The Nature Conservancy's science, planning, and conservation practices focused on the development-by-design benefit from smart development policies that advance large-landscape planning to help avoid, minimize, and mitigate impacts of land, water, and other natural resource use. However, a landscape focus has not been matched by commensurate landscape-scale funding.

Political decision timelines. Because of recent natural disasters, many communities better understand that nature and natural systems produce important and quantifiable values for those communities and for the society as a whole. But results from investing in natural solutions are often long-term, and the political process is generally short-term and sometimes shortsighted. Policies that encourage these investments can improve incentives to invest in natural solutions. However, fiscal pressures, the current political climate, and other socioeconomic trends are limiting conservation funding of these efforts.

As a result of these conditions, Congress has been unable to achieve many of the conservation community's most sought-after legislative priorities, most notably funding for fairly straightforward conservation solutions. Actions that were once relatively simple to accomplish now lack needed champions; actions that are complex or that run against prevailing orthodoxies are nearly impossible to achieve. And conservation as a discretionary part of the federal budget is often shortchanged by investments in other parts of the economy.

The challenge is especially acute for traditional programs such as the Land and Water Conservation Fund. This and other similar conservation programs that were created decades ago are now perceived to be an unaffordable luxury or as unrelated to critical economic and social issues. Also, others (especially conservative Republicans) are concerned about expansion of the federal public lands portfolio through continued simple land acquisitions and the perceived inability of the federal government to care for and maintain its current land holdings.

A New Vision for the Land and Water Conservation Fund

The Nature Conservancy will continue our efforts in the coming year as a member of the LWCF Coalition to pursue measures to fully fund LWCF at the authorized level of \$900 million per year with the aim of ensuring such funding is mandatory (that is, not dependent on annual appropriations) as opposed to the current discretionary status of the program. But today, even annual funding for LWCF through discretionary funding is challenged. In fiscal year 2014, we only saw around \$300 million appropriated by Congress for the program. Setting aside our efforts to shift the program to the mandatory category, the significant pressures in Congress to fund LWCF as a discretionary program will only continue to become more aggravated by issues such as "fire borrowing," persistent low subcommittee budget allocations, and competition with other programs such as Payment In Lieu of Taxes, which provides payments to counties where high volumes of federal land exist. This is further compounded by the significant opposition by some senior members of the House of Representatives to the LWCF program and other programs financing federal land acquisition. Traditionally, bipartisan programs such as the North American Wetlands Conservation Act are now under threat from the partisan politics we face in Congress today.

The conservancy and many of our partners believe current opposition in Congress to the LWCF program and federal land acquisition is based on a concept of how LWCF funding has traditionally been

used—for fee-title acquisitions only—rather than based on how federal agencies utilize LWCF funding today. In recent years, LWCF funding increasingly shifted toward large landscape, community-supported projects, often based on collaborative and conservation easement-only models. Examples of these project areas include the Upper Snake River Conservation Area (ID), Rocky Mountain Front Conservation Area (MT), Everglades Headwaters National Wildlife Refuge and Conservation Area (FL), and the Bear River Valley Conservation Area (UT, ID, WY). These new project areas have revolutionized the concept of conservation on the ground and have generated broad support from members of Congress on both sides of the aisle. An additional recent shift in how LWCF funding has been utilized on the ground could provide another opportunity to generate additional support for the program and is again a divergence from the traditional “fee-title” use of the LWCF funding stream. This shift pertains to federal agencies and their increasing engagement in projects that open up access to large federal landholdings for wildlife-dependent and other forms of recreation. Often these projects entail small parcel acquisitions or easements adjacent to access points for national forests, wildlife refuges and other federal lands.

To address opposition to the LWCF program, as well as many other federal programs with federal land acquisition components, the conservancy believes we need to identify new ways and new voices to educate LWCF opponents on the shifts that have occurred in how LWCF funding has been utilized on the ground and how communities within a member’s state or district have benefited from the program. Private landowners, recreation users, and local business owners, among others, will be the most compelling voices for leading the charge with members in the opposition camp—conveying the message that the LWCF program has shifted in recent years as the nature of on-the-ground conservation has also shifted.

Given the urgency of LWCF’s imminent funding expiration and the momentum of the arguments in opposition to the program (particularly by House Republican members), the conservancy is ready to undertake a strategic reassessment of the members of Congress needed to win an LWCF reauthorization campaign. With our partners, we plan to use a variety of advocacy tools at our disposal to identify key U.S. representatives and senators on both sides of the aisle. We plan to target members who we will need to educate, shift, neutralize, or move into a champion category to ensure we have the votes for reauthorization of the LWCF program in both the House and the Senate.

We will focus on increasing our capacity to target key congressional committees and legislative vehicles for an LWCF fix by 2015, including significant outreach to House and Senate leadership, the House and Senate appropriations committees, and key House and Senate authorization committees. This will take additional resources, new partnerships, and a sophisticated Washington, DC, and grassroots strategic framework to move LWCF reauthorization into the “win” category.

Additionally, in light of the strong and ongoing opposition to the LWCF program within the House of Representatives, there are several approaches that the conservancy has deemed worthy of further exploration and discussion in order to try to break the logjam on the reauthorization of LWCF funding. These concepts build upon the existing language as included in LWCF reauthorization legislation introduced by Senators Baucus and Burr (S. 338) to reauthorize the LWCF funding stream permanently.

Some of the key concepts we believe may be worth further consideration for inclusion in an LWCF reauthorization package include: pairing of an LWCF reauthorization with similar funding reauthorization efforts for the Payment in Lieu of Taxes and Secure Rural Schools programs; language that would allow third-parties to be eligible to hold easements for projects funded by LWCF funding and within approved federal land acquisition boundaries; and a dedicated set-aside (percentage of funding) within an LWCF reauthorization bill that would provide targeted funding for hunting, fishing, and recreational access projects. With regard to the latter, the Baucus/Burr LWCF Bill (S. 338) currently includes a 1.5 percent set-aside for access projects and legislation introduced by Senator Heinrich (the Hunting Access Bill) would increase this amount to \$10 million annually. Additionally, the conservancy and its partners are giving consideration to other provisions such as a defined allocation of some portion of funding for the stateside LWCF program and a revamp of the stateside LWCF program to include mandated and transparent State Comprehensive Outdoor Recreation Plans (updated every five to 10

years) with a competitive program built in to encourage counties and states to develop innovative stateside projects.

The addition of some or all of the above concepts into an LWCF reauthorization effort would possibly bring on new support for an LWCF reauthorization bill and generate the votes needed to move it toward successful congressional enactment.

Conclusion

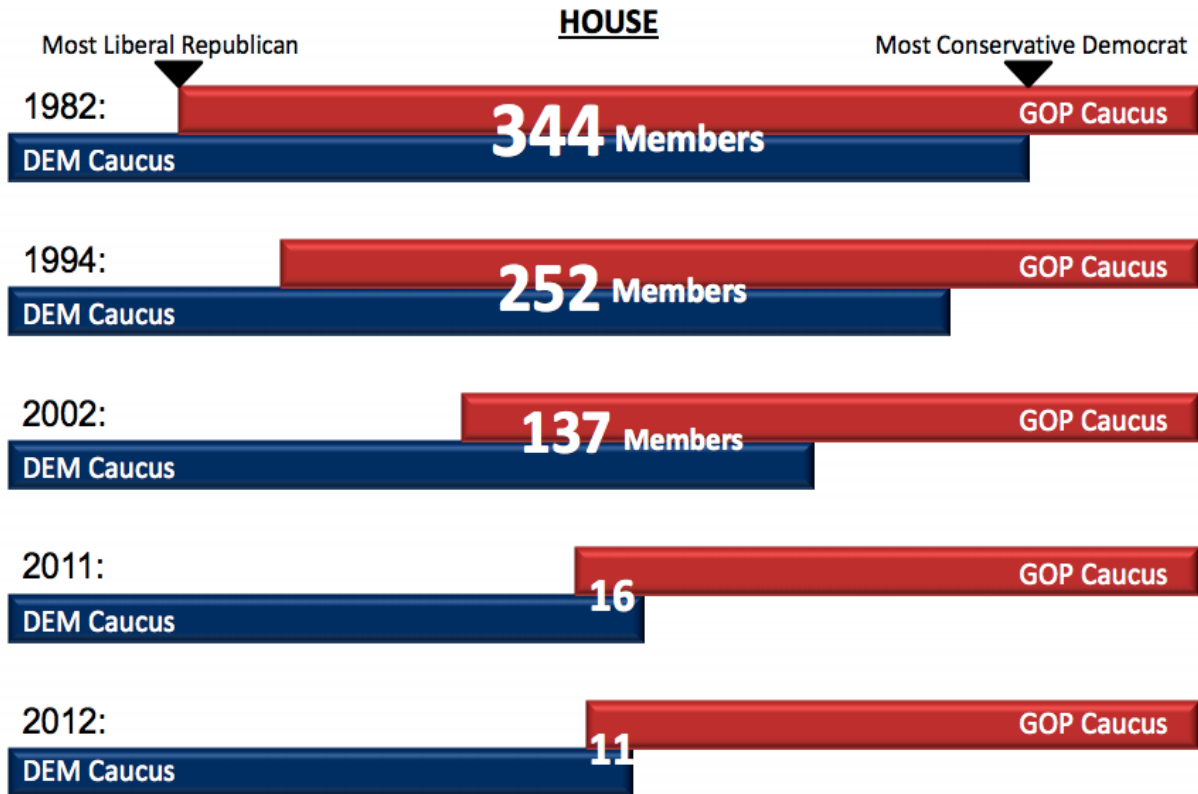
While conservation in America has changed over the years, it has been supported in good times and bad with a remarkable level of bipartisan support. The United States has set global standards for conserving natural areas; for assisting farmers, ranchers, fishermen, hunters, and foresters as stewards of our natural resources; and for restoring and protecting the quality of our air, lands, and water. Millions of acres have been protected as local, state, and federal parks, forests, and refuges. Our air and water are cleaner. And prime agricultural soils are no longer swept into the air by hot summer winds, even in times of severe drought, due to stronger national farm policies influenced by conservation ethics.

But conservation challenges continue—and grow in complexity. By 2050, world population will reach nine billion, putting more pressure on the world's natural resources. Agriculture, renewable energy, and natural resource extraction sustain communities and their economic growth, but they also threaten the landscapes and waters on which we rely. We can maintain healthy lands and waters, thriving communities, *and* dynamic economies if we are smart about where and how we meet our needs for food, energy, and minerals and if we invest in our natural resources by creating and funding innovative policy solutions.

Protecting our lands, waters, and air is essential to our social, economic, and environmental well-being. Yet in the United States, fiscal and political hurdles have stalled conservation progress. We can have another century of investment in people and nature. But success will result from a 21st century narrative that values nature as essential—for public health, economic opportunity, and the environment. We believe a new vision for the Land and Water Conservation Fund is only the start of our work on this new narrative.

Figure 1. The Political Middle Has Disappeared. This figure, from *National Journal Vote Rankings from a Presentation by Mehlman Vogel Castagnetti*, represents the sharply decreasing number of Republicans and Democrats from 1982 to 2012 who voted by crossing party lines.

The political middle has disappeared.



Source: *National Journal Vote Rankings from a presentation by Mehlman Vogel Castagnetti*

Meeting the Needs of State Fish and Wildlife Agencies Through the LWCF: A Minnesota Perspective

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Introduction

The Land and Water Conservation Fund helps states meet outdoor recreation planning priorities. The Land and Water Conservation Fund went into effect on January 1, 1965. The purpose of the program is to assist in preserving, developing, and assuring accessibility to outdoor recreation resources for the health and vitality of citizens. The program authorizes up to \$900 million annually in matching funds to states for planning, acquisition, and development of land and water areas and facilities and for the acquisition and development of federal lands administered by the U.S. National Park Service, Bureau of Land Management, U.S. Fish & Wildlife Service, and the U.S. Forest Service. The primary source of income to the fund is fees deposited in the U.S. Department of the Treasury by companies drilling offshore for oil and gas. Additional sources of income are derived from the sale of surplus federal real estate and taxes on motorboat fuel.

Congress has rarely appropriated the fully authorized amount for LWCF during the history of the program, and the proportion has shifted significantly over time from stateside to federal programs and projects (Figure 1).

Stateside LWCF Programs and Fish and Wildlife Conservation—A Minnesota Example

In the early years of the program, some state fish and wildlife agencies, including the Minnesota Department of Natural Resources, used a portion of LWCF funding for specific fish and wildlife activities, such as to acquire wildlife management areas, enabling them to help meet habitat conservation and management priorities and provide enhanced opportunities for state-managed public access. While some state fish and wildlife agencies have used LWCF to address important wildlife lands and waters, others have not—and reductions in stateside funding have further limited opportunities even for those who have used this option.

To illustrate, since the program's inception, Minnesota has funded 442 LWCF projects at 170 state facilities totaling \$37.8 million in federal dollars. These projects have involved 68 state parks and waysides, 35 state forests, 20 state scientific and natural areas, 16 public water access sites, 12 wildlife management areas, seven wild and scenic rivers, five state trails, four Minnesota Historical Society sites, and three University of Minnesota sites. Stateside LWCF dollars are split, with 50 percent going to local projects. In Minnesota, 843 local park projects totaling \$35.7 million have been funded with LWCF dollars.

As stateside LWCF dollars have declined since the 1980s, the focus in Minnesota has shifted entirely to state and local parks and recreation, with no dollars available specifically to state fish and wildlife conservation programs or projects (Figure 2). LWCF was also recently used to fund the first comprehensive statewide outdoor recreation surveys in Minnesota in 20 years.

Federal projects and programs in Minnesota have been funded for Voyageurs National Park, Superior National Forest and Boundary Waters Canoe Area Wilderness, Chippewa National Forest, Minnesota Valley National Wildlife Refuge, Upper Mississippi River National Wildlife and Fish Refuge, Crane Meadows National Wildlife Refuge, Northern Tallgrass Prairie in Big Stone National Wildlife Refuge, Saint Croix National Scenic Riverway, Pipestone National Monument, Grand Portage National Monument, and U.S. Department of Agriculture Forest Legacy easements. Many of these projects and programs have had a significant beneficial fish and wildlife component.

In fiscal years 2003 through 2006, the LWCF program funded the State and Tribal Wildlife Grants program and Minnesota received some of those funds for conservation of species of greatest conservation need within the state. More recently, relatively little LWCF funding has been made available to state agencies for outdoor recreation and fish and wildlife habitat conservation and a much bigger proportion of the funding has gone to federal programs and projects.

State fish and wildlife agencies are a major service provider to the 90 million Americans who contribute more than \$260 billion annually to the nation's economy through hunting, fishing, and wildlife viewing. In Minnesota alone, hunting, fishing, and wildlife viewing generates nearly \$4 billion in annual expenditures (U.S. Department of the Interior et al. 2011). With states having principal management authority over most fish and wildlife (even on federal lands), they and their partners have invested in comprehensive planning through State Wildlife Action Plans and other wildlife management plans. These plans promote efficiency and effectiveness on state and regional scales and leverage resources and capacity to meet current and emerging threats. States also take the lead in outdoor recreation planning through their development and use of State Comprehensive Outdoor Recreation Plans.

Minnesota's first priority for LWCF is reauthorization and restoration of full funding, including proportional stateside funding. LWCF can benefit many state interests beyond parks and recreation, including fish and wildlife habitat, access for fishing, hunting, and other outdoor recreation, and improved conservation of species of greatest conservation need.

A Proactive Approach to Conservation, Local Economies, and Communities

A reauthorized and more flexible LWCF would have great potential to enable state agencies to meet state and local outdoor recreation priorities, provide habitat for fish and wildlife, conserve forests through Forest Legacy easements, provide public access to lands and waters, and recover listed species and proactively work to prevent the need to list additional species.

Such flexibility could improve states' abilities to prioritize the many uses of LWCF funds and to strategically collaborate with local communities to enhance management of priority recreational, fish, wildlife, and habitat needs.

For example, State and Tribal Wildlife Grants provide states with resources to implement voluntary conservation actions identified in State Wildlife Action Plans on public and private lands. This program supports efforts to conserve species at landscape scales and leverages state and private funds. It enables states to preclude the need to list some species under the federal Endangered Species Act, thus saving taxpayer dollars.

Summary and Implications

Historically, LWCF has had a large impact on diverse parks and recreation and to a lesser extent fish and wildlife programs in Minnesota. However, in recent years the stateside assistance has significantly decreased and focus has shifted entirely to parks, recreation, and federal lands and programs. There is still a strong demand for LWCF dollars for traditional parks and recreation activities, and 50 percent of stateside money goes to grants for local recreation providers who have few other funding options.

Reauthorizing the LWCF program, achieving full funding, and adding flexibility to state and federal program options are key to restoring and enhancing the capacity of the LWCF to provide support for the multibillion-dollar outdoor recreation industry. By providing abundant and sustainable outdoor recreation and fish and wildlife, economic benefits will be provided to local businesses and communities and costly programs related to recovering listed endangered or threatened species will be avoided.

We need to reauthorize and grow the pie of LWCF dollars, rather than redirect long-standing stateside parks and recreation dollars. Providing states with the flexibility to use LWCF on both recreation lands and important fish and wildlife recreation and management needs that address the health of local economies and communities is critical.

Reduced state and federal budgets continue to jeopardize high-priority outdoor recreation and fish and wildlife conservation programs. Allowing state and federal agencies flexibility to utilize partnerships with nongovernmental organizations and other public/private entities in conjunction with the LWCF could help ease some of the challenges associated with current state match, resources, and capacity limitations.

The reauthorization of the LWCF has great potential to enable state agencies to meet state and local outdoor recreation priorities, including fish and wildlife related recreation. At the same time, state agencies would have the resources and flexibility to work with partners to conserve fish and wildlife habitats, provide additional public access to lands and waters, and proactively work to prevent the need to list additional species. Ultimately, the benefits provided through the investments made from the LWCF will accrue for the tens of millions of members of the public who use and cherish these resources and whose expenditures fuel a multibillion-dollar outdoor recreation economy that is the lifeblood of many local businesses and communities in Minnesota and throughout the United States.

References

U.S. Department of the Interior, U.S. Fish & Wildlife Service, U.S. Department of Commerce, and U.S. Census Bureau. *2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation—Minnesota*. 2011.

Figure 1. The relative proportion of Land and Water Conservation Fund appropriations to state/local vs. federal programs has shifted significantly since inception. Bars on the left show the proportions of appropriations by decade and bars on the right show the annual proportions since 2000.

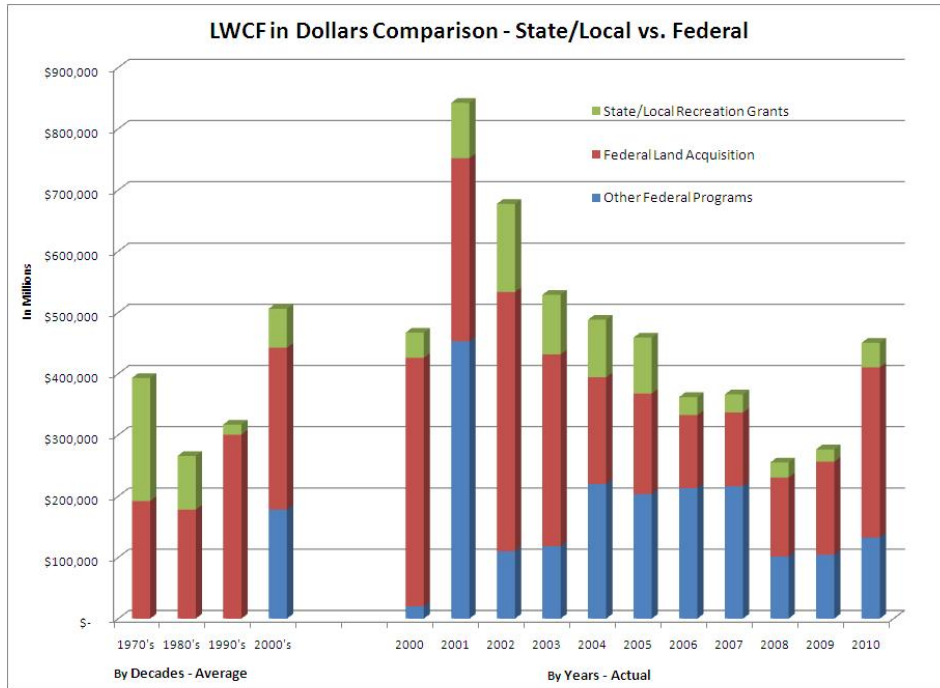
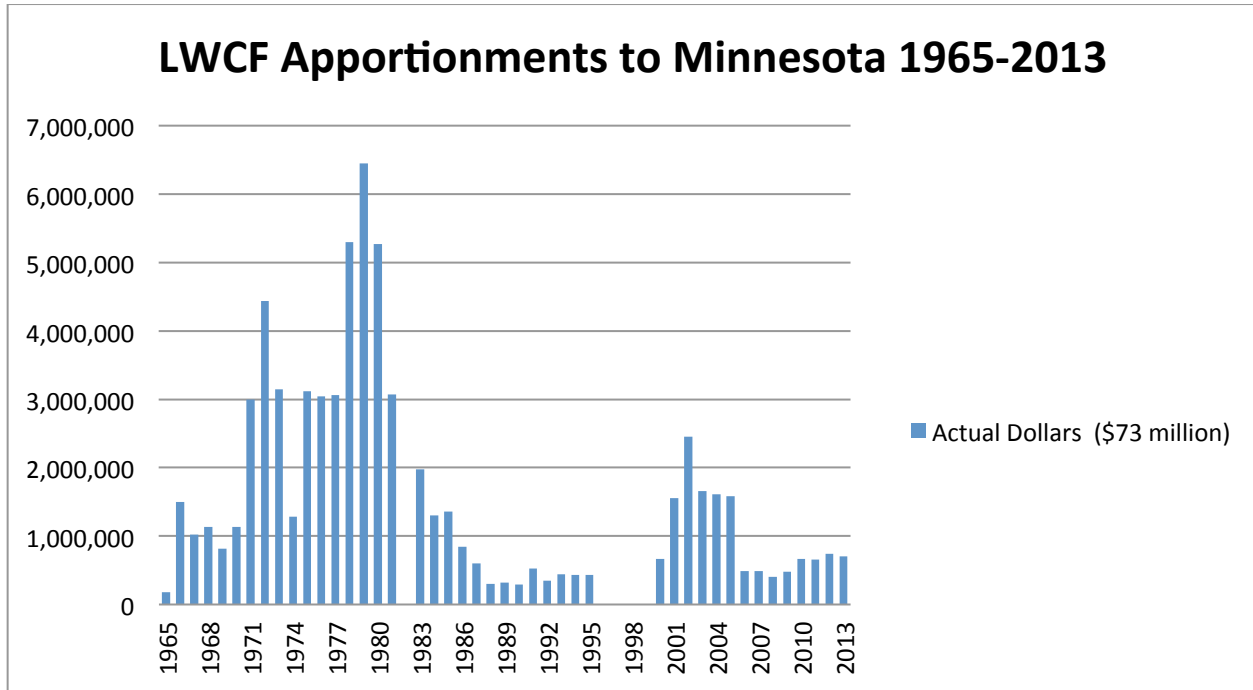


Figure 2. The stateside share of LWCF for Minnesota has diminished dramatically since inception of the program, as has the diversity of uses for those dollars. During the past 30 years, the stateside funds in Minnesota have been used exclusively for state and local parks and recreation, whereas in the early years of the program, funds were also directed to fish and wildlife conservation.



Confusion and Understanding: Building the Next Generation for Conservation

Connie Parker

csparkergroup

Arlington, Virginia

Today, we have heard from the most respected people in our industry on the issues around LWCF. We have heard from our colleagues who must defend our value and reputation on a daily basis with some of our biggest funders, the American taxpayer and government representatives.

Alan Front spoke to us about how much of the LWCF funding, in fact \$18 million, has been diverted to nonconservation issues. We learned from Christy Plumer what The Nature Conservancy is doing to try to mitigate what she calls a “highly uncertain” path to even a limited reauthorization of the LWCF. And Ed Boggess has brought forth a big challenge for us with the conflicting issues among states where LWCF funding decisions do not include some states’ differing needs in the areas of fish and wildlife.

We are, in short, shortchanged and even fractured in our community by funding that was originally intended to represent a simple deal with the American people, as Christy has said, and that was funded largely from a small fraction of the proceeds collected from the sale of federal offshore energy resources. Now we find ourselves in conflict with ideology, spending shortfalls at the state and federal levels, and even in competition with education and infrastructure needs, not to mention this disconnect that is brewing between what the taxpayers want and the elected officials are willing to recognize and do.

These presenters are the masters of the tried-and-true methods of successfully engaging a very large funding source. These presenters represent the best of our communities’ intellectual capital. They are the frontline thinkers and the best at traditional methods of successful engagement with the intersection of public policy, constituency building, and successful outcomes for our conservation community.

As I listened to what they had to say and I looked out at many of you as they spoke, I could see you agreed with the mountain of complexity with which we must sort through on this issue. In fact, we are all dependent on their efforts to sort through the complexity for survival of our organization, our beliefs, and our causes. I also find myself, as I am sure many of you do, engaging in a community pessimism, which plays out in a national pessimism, that substantial progress will probably not be made in this case on the funding of LWCF.

We all have varying coping mechanisms when we reach these moments of trying to reason and sort through the challenges faced by programs like LWCF. Karen Horney, a very brilliant psychologist, says some of us move toward information when we hear it, some of us move away, and some of us move against. None of these methods are wrong or right, they are all necessary coping mechanisms that help people get to an outcome.

The people who move toward what they hear usually say, “Tell me more.” The people who move away just do not want to hear it and think the problem belongs to some other group because they are more secure in their cause. And the people who move against what they hear are the agitators who fail to believe anything can be done. These are the times when, as an organizational change and business professional, I am reminded of the words of Mark Twain: “Whenever you find yourself on the side of the majority, it is time to pause and reflect.”

As I reflect on what I have learned today, I am reminded of what John had to say as the first presenter. I didn’t forget about what he said but instead I have been thinking about his message and how to use it as leverage for some parallel but nontraditional thinking on the issue of funding in our community.

He talked passionately and eloquently about the success of his business and how it is coupled with the responsibility he feels to enhance the environment. He actually spoke of an emerging trend where companies, both outdoor recreational companies and companies in general, are finding their way with corporate social responsibility (CSR) themes incorporated into their strategies.

A recent review of CSR initiatives, at last count, had more than 3,500 companies worldwide who were part of a Global Reporting Initiative on CSR that released 8,000 social sustainability reports. The number was less than 1,400 reports in 2010. In 2008, *The Economist's* online survey said that of the 1,192 executives who responded, 55 percent reported their companies gave high priority to corporate responsibility. That number is now well over 70 percent. The trend now is an integral part of businesses worldwide.

Now we can say these companies have ulterior motives of profit and revenue (that one is for all you folks out there who are now moving against what you have just heard!). Or we can also dare to be different and move toward a question of how do we merge business and not-for-profit to augment each other? And that one is for all you people who are moving towards what you just heard.

John also talked about economic studies that show our community in the aggregate as an economic national powerhouse. What he has done in his presentation is highlight an inflection point for our community to seize upon and a point that is the targeted recognition of the narrowing gap between the way we have thought about ourselves as not-for-profit/cause-oriented organizations, dealing with issues that are hard to measure, to becoming entrepreneurial sustainability business partners with intellectual capital to be brokered.

We are no longer just an important social problem; we are not mutually exclusive from for-profit companies/businesses. Indeed, we have become coupled with business in a most interesting twist.

The divide between business and not-for-profit is starting to dissolve. We impact GDP, we provide jobs, we create revenue, and we have a very unique product to sell—and that is our intellectual capital, our science, our data, that can be brokered to create revenue for others. We can directly affect the bottom line and the philanthropic line of what corporations and businesses are trying to do to make money for their stakeholders. If we can do this, we will become the opposite of going out to do good and hoping to do well. We will be able to help others to do well and end up doing good by partnering and creating new products and processes that have at their core natural infrastructure and sustainability attached to profit.

I am reminded of another quote by Douglas Adams, British writer and bestselling author: “I may not have gone where I intended to go, but I think I have ended up where I needed to be.”

Let me tell you about how a couple of seemingly nontraditional, multi-actor collaborators looked externally and capitalized on how best to partner to impact stakeholders' revenue.

Simply Health, an insurance provider in the UK, is funding a study by doctors in England along with academics and a team from McLaren Technology to explore how technology developed to monitor Formula One cars can help monitor activity levels for people struggling with obesity.

Another example is AON Insurance Company, the leading global provider of risk management, insurance, and reinsurance. They are the world's largest global insurance broker with \$11.5 billion in revenue. They have most recently formed a discussion group with our conservation community (i.e., AFWA, DU, and TRCP) around the areas of risk mitigation. Studies on the impact of flood, water, and risk mitigation have united around the overlapping issues of a shared business model on risk mitigation—ours for conservation, theirs for profitability. We have come together under the impact of reducing taxpayer subsidies, public reinsurance stresses, and direct aid for natural disasters. What this group has discovered is that they do not have contradictory issues that drive them away from profitability and sustainability. They started by talking about crop insurance and found what they have is an opportunity to shape how they respond to shared pressures for success—new products developed with natural infrastructure at its core that will be ready when governments realize that privatization may be a more sustainable model than being in the insurance business. They have also discovered a nexus for shared data, which may result in an AON Benfield U.S. Center that duplicates the AON Benfield Center in Europe and unites business, academic, conservationists, and government for the benefit of creating tools that capitalize on anticipation and mitigation of risk associated with natural hazards.

There are coalitions being built by the conservation community with the U.S. Chamber of Commerce. The U.S. Chamber is the largest, most powerful lobbying firm in the country. One group made up of outdoor industry business CEOs will be meeting with the chamber to discuss our economic

impact on jobs, revenue, and the GDP. This group will be reaching out from our community as a coalition of businesses that deserve to be heard and taken seriously when we speak. We are attaching ourselves to a business voice that is heard on Capitol Hill and around our country.

There are others of our community who are being asked to work on the coalition the chamber is building on the issues of water. They have assigned one of their top executives to the single issue of water, business, people, infrastructure, and the economy. The issue that unites all of us, if not most of us, in the conservation community is being recognized as the social responsibility/business issue of our time and parlayed into the mainstream of the messaging of the most powerful business-lobbying firm in the United States.

All of this leads us to an opportunity for the case of collaboration with multiple actors. While we continue to follow the public policy programs and fight for our fair share, we must begin to see ourselves in a new light. We must begin to claim our right as revenue generators and a major contributor to GDP. We must begin to focus and merge our stories on business issues with business owners and business editors who will spread our economic impact story.

We must focus on a community strategy that determines who we are in relationship to the many broader issues we face, and we must develop the business case for collaboration externally and within our community. We must outline our distinct competencies when going forward—they may have to be macro issues, like land and water, that will move coalitions and constituencies to get the micro issues of our individual initiatives.

We must also move towards conversations with each other. If we are indeed going through a blurring of the distinction between business and social causes then we must be brave enough to talk with each other about how we merge our efforts and move across organizational boundaries to drive our conservation and environmental issues on more than just issues of public policy. We must pool our own risks of survival and discuss how we merge and joint venture on more than just small projects.

Because I believe someone else can say it best and I believe in concluding with something to get you thinking, I call upon J. K. Rowling: “It takes a great deal of bravery to stand up to our enemies, but just as much [if not more] to stand up to our friends.”

I urge you all to move toward, away, and even against our issues, but most of all I urge you to be brave and bold because in the diversity of ideas and thoughts is the creativity to address our issues of conservation. We are not “something nice to have.” We are something our economy, our businesses, and our nation needs to have—and now we can measure and prove it!

Workshop.

Food for Thought: Increasing Return on Investment by Recruiting New Adult Hunters

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Introduction

During the past three decades, hunting participation in the United States has declined for a number of reasons (USFWS 2013; Winkler and Klaas 2011). The decline is expected to continue, due in part to what Winkler and Warnke (2012) called demographic drift: a cohort effect in which the boomer generation continues to age out of hunting, accelerating the decline. Cohort effects occur because changes in the social world affect people of different ages in different ways (Ryder 1965). For example, younger people tend to adapt more readily to technological advances and integrate them into their lives more than older generations. This coupled with the demographic fact that Anglo-Americans are having fewer children means that no matter how effective hunters are at recruiting their children, the number of hunters will decline (National Center for Health Statistics 2014). One estimate for Wisconsin is that the number of resident white-tailed deer (*Odocoileus virginianus*) hunters will decline by 12 percent by 2020 and drop by about 25 percent in 20 years (Winkler and Warnke 2012).

As hunting participation has declined, Hunter Recruitment and Retention (HRR) has become a priority for state wildlife agencies across the country (Larson et al. 2014; Seng et al. 2007). Energizing stakeholders and partners to recruit youth into hunting has been the reigning HRR paradigm. This emphasis on youth recruitment has likely been influenced by the belief that bringing children along is the path of least resistance. State agencies and nongovernmental organizations (NGOs) universally have programs aimed at “recruiting” youth. These are commendable programs that provide generally enjoyable, high quality experiences, primarily for hunters’ children.

Youth recruitment programs were examined by Holsman and Kool (2011), who found that 70 percent of participants in introductory hunting events in Wisconsin had hunted before participating, nearly 80 percent had accompanied others on hunts prior to the introductory event, and 90 percent had previously fired a shotgun. Responsive Management (2011) evaluated 37 state and national hunting, fishing, and shooting recruitment and retention programs and found that 72 percent of the program participants had been hunting in the previous year, 92 percent had been shooting, and 72 percent had fished in the prior year. Additionally, 96 percent of program participants had a family member who hunted. According to the study’s research team it is “unsurprising that those who typically enroll in hunting programs have already been initiated into the sport” (Responsive Management 2011). Agencies and hunters are making a substantial effort to ensure that hunters’ children are brought up into hunting. Given the absence of a critical review of these programs, it appears that this also is a cohort effect; current hunters’ children will establish the next generation of hunters, but it will be a smaller and shrinking cohort.

Larson et al. (2014) advise that, to be effective at securing hunting’s future, state wildlife agencies and NGOs must move beyond recruiting the children of active hunters. Ryan and Shaw (2011) conclude that recruitment and retention hinges on understanding nonhunters’ motivations for wanting to hunt. In this article, we recommend and describe how a navigational shift in HRR could slow impending (and continuing) hunter declines by taking advantage of a growing interest in hunting for food. Recruitment and development of new adult hunters will also require encouraging hunting participation by people of diverse genders, cultures, and backgrounds. Our objective is to lay out the recipe for recruiting, training, and retaining young adult hunters and to encourage agencies and NGOs to conduct trials, evaluate, and adapt the recipe to suit individual situations (Adult-Onset Hunters (AOH), Cerulli 2011).

Attempting to create independent hunters by recruiting, equipping, mentoring, and maintaining a child from a nonhunting family can be a difficult endeavor. A child may have heard about hunting or have an interest in hunting. Despite the latent interest, children whose parent(s) do not hunt have many obstacles to overcome: lacking clothes, boots, gun/bow, independent transportation, money, authority, and foundation from which a hunting identity might grow and thrive. Nurturing such interest requires a dedicated mentor who is willing to drive the recruit to all hunts and events (including hunter-safety education), acquire gear and licenses, and pay for a good portion of the costs of hunting trips. Additionally, a young hunter from a nonhunting family may not have support at home and hunting could be low on the family’s priority list.

In short, youth from nonhunting families lack the social habitat in which hunting is likely to thrive (Lincoln 2014). Social habitat is an analogy from the field of ecology. In the same way that animals need physical habitat to survive and thrive, hunters need suitable social habitat. Stedman (2011) describes the social support structure that is required for a hunter to thrive. It includes direct familial support and partners to hunt with but also a broad social context (habitat) such as friends and family who consume wild game and encourage participation in hunting.

Recruiting new AOHs can yield a much higher and more immediate return on investment than recruiting children from nonhunting families. Adults have the decision-making authority necessary to hunt, have money they are willing to spend on hunting, have their own transportation, and often have—or can seek out and cultivate—an active community to support their initial and continued involvement (social habitat). Additionally, active adult hunters are the best-equipped mentors for teaching their own children to hunt.

By definition, AOHs were not introduced to hunting as children but are attracted later, often due to interests in acquiring local, healthy, sustainable, free-range food; (re)connecting with nature and the land; taking ethical responsibility for meat they consume; and enjoying the intensely engaging and immersive experience of hunting. In one survey of first-time license buyers in Wisconsin, between 75 and 80 percent of adult first-time purchasers cited food or meat as a primary motivator for hunting (Holsman 2012). Responsive Management (2013) also found that food is an increasingly important motivation among American hunters. AOHs' interests often include a concern for the environment, a belief that sustainable food sourcing is important, and a desire to procure one's own protein. Heberlein (2012) concluded that "educating self-selected, highly motivated people works."

Recent popular articles and books by AOHs (e.g., Cerulli 2012; McCaulou 2012; Pellegrini 2011) are testament to this new demand. Responsive Management (2013) identified adult recruitment and retention programs and an interest in local, natural food as contributing factors in a recent increase in resident hunting participation. Recognizing this interest, several agencies have developed food-centric hunting recruitment and development programs in recent years.

Workshop

"Food for Thought: Increasing Return on Investment by Reaching Out to Recruit New Adult Hunters" was held at the 79th North American Wildlife and Natural Resources Conference. Approximately 80 individuals from state and federal agencies, industry, and NGOs attended the workshop, which explored tactics and strategies for effectively recruiting and training adult hunters. The workshop also addressed the importance of this paradigm shift toward focusing on AOHs, for agencies, NGOs, industry, and the broader conservation community. Presenters outlined evaluation of HRR programs, provided detailed examples of success, and identified necessary elements for successful adult recruitment.

Hunter Recruitment and Retention Evaluation Techniques

There are three challenges to altering traditional hunter recruitment programs and strategies. First, true recruitment, retention, and reactivation efforts need to be defined and distinguished from much of what is currently done: exposure and introduction (which remain necessary steps in hunter adoption). Second, the pervasive culture of agencies and NGOs emphasizes outputs (simple data) over outcomes (changes in behavior and action). A focus on outputs tends to result in numeric reports (e.g., 200 participants attending a given introductory hunting event) while a focus on outcomes is more likely to result in a new hunter added to the ranks. Third, existing infrastructure (such as databases, personnel, and equipment) is geared toward children and must be modified in order to evaluate program effectiveness and pursue strategies that result in recruiting new adult hunters. If the goal is creating *new* hunters, acknowledging that the return on investment of holding events for children is likely to be much lower than that for recruiting adults is a vital step in re-tooling programs to address new demand.

The objective of HRR programs or systems is to create a new active participant: an individual who supports hunting and hunters and who, ideally, is also a regular license buyer. However, HRR programs must recognize the continuum of hunter adoption (Figure 1) and clearly identify the starting point of individual programs and the endpoint to which program managers intend to move participants. Results chains like this provide an adaptable framework for evaluation that can be applied to any HRR effort. These models allow program managers to measure the success of programs and improve them over time by capturing next steps needed to move participants through recruitment and retention phases of hunting and by defining objectives at key points of measure. Sponsors and agencies should ensure that individual participants can be followed longitudinally (using customer identification numbers, for example) to enable long-term tracking and evaluation of programs. A national customer identification database would enhance tracking and allow participation to be evaluated nationally and over the lifetime of the license buyer.

Interest in hunting for food can be described as an on-ramp to the Hunter Adoption Model in Figure 1. We believe most AOHs have an awareness of and interest in hunting (recruitment stage) and mentoring experiences can provide the initial trial. The challenge is to maintain contact and establish a mentor relationship so new hunters can continue with support (retention stage) and eventually move to continuation without support. Results chains and evaluations should be developed to measure progress along the way toward stated desired outcomes of an HRR program. Since the decline in hunting participation was identified, most programs or systems have started and stopped at the initial trial. Successful programs for Adult-Onset Hunters move participants much further along the hunter adoption model.

Program Details and Evaluation

Several state wildlife agencies have developed pilot programs that lay the groundwork for successful, adaptable adult HRR programs. Pilot programs are currently being implemented in Colorado, Indiana, Minnesota, South Dakota, Wisconsin, and Wyoming. These pilot programs include 10 to 15 hours of classroom work, focus on growing interest in food and connection to nature, and provide (or develop) social habitat, support, and mentoring. Syllabi include biology, regulations and safety, archery, shotgun and rifle (live-fire at range), pre-hunt fieldwork (scouting, game sign, equipment, site setup), post-shot fieldwork (tracking, tagging, and field care of game), and processing, cooking, and eating game. An important component of all programs is an emphasis on experiential learning.

There are two major challenges to marketing an adult novice hunter-training program to staff, sponsors, and constituents. First, agency action in pursuit of the Adult-Onset Hunter cohort depends on bold, courageous administrators and evidence of successful, prior efforts. Events designed for AOHs may serve fewer people than one-day kids' events typically do. This illustrates the need to re-focus on outcomes (new recruited hunters) versus outputs (total number who are served or participate in an event). Second, industry and retail sponsors may be reluctant to contribute resources without supporting research, especially in light of the substantial and longstanding investments made in the current paradigm. Both of these challenges can be addressed by identifying successful pilot programs, tracking results over time, communicating successes, and adapting what is working elsewhere to fit specific local needs.

Connecting with and recruiting potential novice hunters is new territory for most NGO and agency personnel. Radio, newspaper, and digital outreach have met with limited success. Novice adult hunters can be recruited by using focus groups at farmers markets, by expanding use of social media, advertising in venues not normally considered (real estate offices, food co-ops, etc.), and by giving community presentations for chambers of commerce, civic organizations, and schools. We have found that word of mouth communication is most effective at generating and maintaining interest. Some pilot programs have reached out to colleges, universities, and local food networks to identify students and gain credibility and trust. Trust must be earned and built through personal networks. Therefore, one of the most effective techniques for recruiting new participants is to provide satisfying experiences and to stay in contact with current and former participants. Being able to relate to people, and to their motivations and desires, is critical.

AOHs often do not respond positively to trophy hunting, to the types of big game hunting often portrayed in the outdoor media, or to what they perceive as unfair hunter advantage. An inability or unwillingness on the part of mentors to embrace their mentees' motivations for hunting will result in a widened chasm rather than new hunters. AOHs motivated by interests in sustainable food and (re)connection to the land want to connect with other hunters who share or empathize with their views and are willing to share skills and knowledge. A sense of connection with like-minded hunters is important. Fortunately, the differences between lifelong hunters and AOHs do not appear to be substantial. The two groups may emphasize different values and different motivations for hunting. But as AOHs become more seasoned, they often develop, or at least better understand, many of the motivations and values emphasized by lifelong hunters. Differences in emphases and ways of communicating (such as speaking of "sport" and "challenge" versus "food" and "connection to nature") can result in both groups

having exaggerated perceptions of their differences (Cerulli 2011). There is, of course, diversity among hunters' attitudes, values, and motivations. In the long run, however, this may vary more from individual to individual than from AOH to lifelong hunter. How program managers and mentors demonstrate and discuss hunter motivations—and whether they are willing and able to meet AOHs halfway—will significantly affect their success (or lack thereof) with this promising new group.

Syllabus and Description for Training Adults

Courses or programs for AOHs must provide participants with an introduction to conservation in North America and opportunities to experience hunting from the conservationist's point of view. AOHs typically express a desire to learn from experienced hunters and should receive ongoing mentoring and have opportunities to experience a variety of hunts. Successful programs should provide hunter-safety education and certification for participants. Through experiential trials and contact with experienced mentors, participants should experience ethical, sustainable hunting, empowering them to move further along the hunter-adoption continuum.

Courses can be held at technical schools, colleges, hunt clubs, DNR offices, and town halls. Locations should be accessible, close to populations, and able to support classroom instruction, gun handling practice, and butchering and cooking demonstrations. Course instructors (like mentors) must support the AOH motivation and be able to effectively communicate and share their hunting identity. Wild game should be served as often as possible at sessions. All course participants should be required to obtain a customer or sportsperson's identification number (free) for future hunting participation evaluation and follow-up. Pre- and post-course surveys of all participants and mentors are crucial to evaluate success and to improve course content and delivery.

AOHs often have little previous knowledge of, exposure to, or experience with firearms, land access, hunting tactics, wildlife management, or habitat management and may have only a cursory understanding of biology. Successful instructors introduce topics and information and encourage participants to pose questions and explore issues. AOHs genuinely want to hunt and typically have questions about every aspect of the pursuit. Instructor capacities for patience, listening, building relationships, and sharing the nuances of the experience are key to successful introduction and retention. Instructors should also emphasize the need for repeated contacts between program managers/mentors and students. The course outlined below introduces white-tailed deer hunting but can be adapted for nearly any game species, large or small. Follow-up hunts for other species enhance the effectiveness of this recruitment technique and are important next steps.

Mentors should be experienced, but it is just as important for them to be adept at relating to new adult hunters. Mentoring an adult is different from mentoring a child from a hunting family. Ideal mentors will have experience in mentoring hunters or have completed a comprehensive mentor-training course. Each mentor bears the responsibility for representing hunters as a whole. Ideally, mentors should commit to serve one Adult-Onset Hunter or family until the individual or family reaches the intended stage on the hunter-adoption continuum. Two critical factors in recruiting hunters are repeated contact and continuing education. Very few people take up hunting as the result of a single experience. Contact can be made via phone call, text, email, or list service. Contact and support can also be cultivated in a number of other ways, such as:

- Invite participants to additional free trial hunting events with mentors.
- Offer to assist if people buy licenses, guns, equipment.
- Ask former students to recommend the course to friends.
- Alert students to new opportunities to hunt other species.
- Remind new hunters of application deadlines.
- Connect students to local conservation or hunting organizations.
- Scout hunting spots together.

- Process game together.
- Invite students for a wild game meal.
- Practice at the range together.
- Invite students to participate in habitat improvement workdays.

Mentors and instructors may answer questions and make repeated, encouraging contacts over months (or even years) and can, in large part, accomplish this remotely (e.g., by email).

The Hunt

Key to success in scheduling a hunt and recruiting quality mentors is having the authority to waive hunting season dates and, when license quotas are limited, supply a designated pool of tags for novice training events. This allows the training hunt to be held outside of normal season dates so it does not impact mentors' hunting time. The hunting experience should be at least a two-day event. Mentors should have scouted areas prior to the hunt experience and should have blinds or stands prepared. The pre-hunt meeting should include target shooting, plus a potluck meal and bonfire for mentors and novices to get to know each other. If possible, an overnight stay in a traditional hunting camp is a great recruitment experience. After the hunt, the entire group should meet to share experiences and butcher their game.

Models of Success

Successful programs harness the power of family, identity, and community to develop new hunters. For years, state agencies have conducted HRR programs but haven't documented whether such efforts actually reached *new* hunters, or if they did, how successfully they equipped hunters to continue with or without support. The state-agency pilot programs that informed the "Food for Thought" workshop are different: they conducted evaluations by establishing baselines and measuring long-term changes in behaviors and attitudes.

Rather than focusing solely on youth—who are typically already in the hunting pipeline due to coming from a hunting family—the goal of adult-focused programs is to link common adult motivations (food ethics and ecology, connection to nature, and the engaging experience of the hunt) with the tools, skills, knowledge, mentorship, and social support they need to continue hunting. Having a built-in support system—within families and communities—is critical to a new hunter's decision to continue hunting.

Wyoming

Wyoming used the Wildlife Management Institute's Evaluation Toolkit to re-evaluate the entirety of its education and HRR programs. As a result, all of the agency's recruitment, retention, and reactivation efforts were focused on the Forever Wild Families program; other programs were abandoned.

Forever Wild Families offers customized mentored outings to inexperienced families interested in fishing, hunting, and the outdoors. Because each Wyoming community is made up of residents from various backgrounds and with diverse motivations for hunting and angling, program managers tailor participant selection based on the community by focusing on micro-communities within population centers that were likely to be motivated by locally sourced food (such as homeschoolers and church groups). Program managers also adopted the most effective marketing techniques for each community, with the intent of identifying those who do not already hunt and fish.

The success of the Forever Wild Families program has been measured based on two possible outcomes: (1) creating license buyers (hunters or anglers who buy at least one, and preferably multiple, Wyoming hunting or fishing licenses every year), or (2) creating active stakeholders (people who regularly participate in hunting- or fishing-related activities—as teachers or mentors, for instance—with the Wyoming Game and Fish Department or who publicly express support for the agency).

The Forever Wild Families pilot program resulted in 92 percent of first-year participants buying fishing and/or hunting licenses the following year. In their second year, families are paired with carefully matched mentors (based on interests and personality type) to pursue more advanced fishing, hunting, and outdoor skills. Mentors are screened and encouraged to be active during the program's first year to begin to build relationships and trust with the participants. Forever Wild Families uses a results chain (Appendix 2) to document success and improve program outcomes over time. Sportsperson Tracker Database allows all participants to be tracked for future evaluation of program success.

Finally, by building and maintaining a robust roster of program partners and sponsors, Wyoming offers participants the opportunity to acquire start-up gear and equipment through discounts, coupons, donations, and pro-deals. (This is essential in Wyoming, where long distances and rugged terrain means that being unprepared for changing conditions can be fatal.) The more the agency involves the hunting community, whether through individual mentors or corporate sponsors, the more trust and credibility develop.

Wisconsin

In response to increasing interest in local foods and sustainable living, the Wisconsin Department of Natural Resources developed and implemented a course to teach adults to hunt. Wisconsin's Learning to Hunt for Food program educates novice adults in everything from regulations to finding a place to hunt and strives to remove the aura of complexity and intimidation that confronts many novice, not-from-the-hunting-fraternity adults. Mentors serve as hunting ambassadors to novices.

The five-week Learning to Hunt for Food program focuses on a fall white-tailed deer hunt, providing the skills, knowledge, and experience necessary for an adult to feel confident killing, butchering, and preparing venison. Participants and mentors are invited to return for additional white-tailed deer and small game hunts and, finally, a turkey hunt the following spring. During the program's first two years, more than 90 percent of novice participants purchased a license the first fall following the course. All of the first-year (2012) participants who purchased a license in 2012 also purchased white-tailed deer hunting licenses in 2013. Moving forward, whether the state's hunters will welcome new hunters from diverse backgrounds with slightly different motivations presents an interesting question.

Conclusions

Managers would benefit from a better understanding of the factors that influence social change (Lincoln et al. 2014). Demand for training new adult hunters appears to be growing. Particular interest in hunting as a source of food has been highlighted in recent research by Holsman (2012) and Responsive Management (2013), and the rapidly evolving social habitat has resulted in several states developing programs to specifically recruit and train AOHs. Response to pilot programs in several states has demonstrated that hunting for food is a bridge motivation, connecting current hunters with untapped segments of the population who extol "sustainability" as a virtue and who are interested in becoming hunters. The shared food motivation is critical because it serves as an introduction to a complex activity that attracts people for diverse and multiple reasons and provides them with various types of satisfaction. The focus on food is a gateway motivation to avid support of, and participation in, hunting. Recruiting and mentoring adults (who have the means and motivation to pursue a burgeoning interest in hunting) is much more effective than attempting to recruit children (who may have limited social support or who may have become hunters regardless of agency efforts). A return on investment in new adult hunters can be maximized in an environment where the social habitat supports hunting as a means to a sustainable lifestyle.

Certain communities' interests in connection to food and land lead to (potential) acceptance of, and support for, hunting. Responding to and nurturing these interests by introducing safe, ethical hunting is more practical than attempting to build an entire community to support youth hunters from nonhunting families. A diverse hunting community can encompass a variety of motivations and interests, including ethically and ecologically responsible relationships with food and land, habitat conservation, and the

intensely engaging experience of hunting. By building communities of mentors and participants such as those outlined in the state agency pilot programs referenced at the “Food for Thought” workshop, both hunters and their supporters eventually develop multiple motivations and derive many types of satisfaction from hunting. Such social support improves the perception of hunters and nonhunters and builds and maintains the social habitat necessary to sustain hunting.

One pervasive challenge to developing and training new hunters is identifying mentors. In most states or programs, “mentors” have come to be defined as guides who participate in one-day (or, at most, two-day) events by sharing skills, knowledge, and equipment with a novice hunter. In the case of one-day events, the mentor is removed from the equation after the event. Agencies and personnel involved in HRR across the country need support to design, test, and implement effective mentor training systems. Mentors must understand (or be trained in) how to share skills and knowledge and must commit to sharing their skills, knowledge, and equipment with an individual novice adult or family for a specified period of time. The mentor’s skills must be sufficient for training adults; these are different from the skills required to mentor children.

Hunting support and participation exists on a continuum from support for hunting and hunters to interest in hunting to avid participation (Figure 1). One key understanding of the Food for Thought approach is that not all hunters (or hunting supporters), regardless of their motivations, are at the same point on the continuum at any given time. The objective of a successful program must be to identify interested groups and individuals, provide appropriate opportunities directly related to their point on the hunting continuum, and provide the resources and support to move them further along on the continuum to a point where they are most comfortable. The Food for Thought pilots and programs have not created a surrogate program for the “natural pathway” into hunting; rather, they provide solid programming and easy access to information, removing obstacles that can prevent participants from entering the social world of hunting (Duda 2009). Consider that some AOHs describe themselves as former vegetarians who chose vegetarianism in protest against factory farming and the confined animal feeding operations that supply much of the first world with meat. Their reasons for choosing vegetarianism included disapproval of common methods of raising, slaughtering, and distributing meat. They see hunting as a holistic alternative, encompassing conservation, resource stewardship, a small ecological footprint, moral responsibility in terms of animal welfare, and a strong connection to food and cycles of life and death.

There is concern that the prevailing public image of hunters in the United States is a barrier to increasing the diversity of backgrounds from which new hunters come (Malcolm 2014). A focus on trophies—by retailers, agencies, and associated media, each of which are gatekeepers to hunting participation—can be disconcerting and discouraging for nonhunting adults who may be interested in becoming hunters. Holsman (2000) pointed out several case studies showing that some hunters hold attitudes and engage in behaviors that do not demonstrate ecological values important to many AOHs. Nationwide, state natural resource agencies and NGOs have an opportunity to portray a more accurate image of hunters and their motivations to nonhunting Americans. Responsive Management (2013) notes that only about 1 percent of American hunters indicate that obtaining a trophy is their primary motivation. The hunting “brand” would do well to represent hunters’ diverse motivations and the diverse satisfactions they find in hunting. It may be time for agencies to take action to cultivate a broader, more inclusive, more accurate image and perception of hunters and hunting.

Adults seeking to live sustainably are emerging as a driving force behind an increased interest in hunting. Hunting provides them with the opportunity to procure local, wild food. But most people from nonhunting families lack the skills and knowledge necessary to hunt and struggle to identify knowledgeable mentors. Adults who value sustainability represent an untapped source of future engaged conservationists and license buyers, connected to each other through food co-ops, farmers’ markets, and other social institutions. Successful approaches for AOHs capitalize on their interest in hunting as a food source, give them a chance to learn and ask questions about hunting, lead them into a true “hunter education” program (beyond typical hunter safety education), and, ideally, connect them with mentors and a support system. Substantial benefits for state agencies that promote adult-onset hunting include: (1) engaging people in conservation issues and concerns by connecting them to land and food; (2) creating

ambassadors (who may be the only hunters in their families, workplaces, and circles of friends) who can help dissolve stereotypes and preconceptions of hunting in their social networks; (3) expanding, diversifying, and strengthening conservation coalitions and alliances; (4) increasing agencies' capacity for communication and dialogue about hunting *with nonhunters*; and (5) creating a customer base that is more inclusive of the changing demographics in society. A paradigm shift away from youth-focused recruitment and retention programs is important for agencies, NGOs, industry, and the broader conservation community.

Whether that momentum will grow remains to be seen. Will agencies and current hunters be willing to change their approach and begin to focus on welcoming new hunters, or will we continue to invest in programs that have already proven ineffective at broadening the social and cultural landscape of hunting? We believe we are at the tipping point in HRR: "That magic moment when an idea, trend, or social behavior crosses a threshold, tips, and spreads like wildfire" (Gladwell 2000).

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Appendix 1. Sample Syllabus.

Two textbooks have been used and are helpful:

1. *The Beginner's Guide to Hunting Deer for Food*. Jackson Landers.
2. *Gut it. Cut it. Cook it*. Eric Fromm and Al Cambronne.

Reading to distribute:

1. "Goodwill Hunting? Exploring the Role of Hunters as Ecosystem Stewards." Robert Holsman. *Wildlife Society Bulletin* 28.4 (2000): 808-816.
2. Regulations pamphlets.
3. *Today's Hunter*—hunter safety book.
4. *Leopold Outlook* magazine, volume 13, issue 1.

Week 1: Outline and syllabus—distribution of materials—5 minutes

Introductions—45 minutes (20 people)

Why hunt? Students share their motivations for attending.

What is their biggest obstacle, fear, or concern?

History of conservation and hunting—15 minutes

Hunter demographics and future in Wisconsin—10 minutes

Hunting for sustainability—"green" eating—15 minutes

How far did your meal travel?

Hunting and the food cooperative

Knowing where your food comes from

Proper firearm handling demonstration and practice—30 minutes

Students will learn how to safely handle firearms and to operate the six common actions.

Week 2: Wildlife management—30 minutes

The basics: food, cover, water—how to use it to your advantage.

Public Land—45 minutes

How to find it, how to use it

Department of Natural Resources mapping pages

Types—federal, state, county, and tax programs, etc.

Access to information

Scouting with the computer and books

PowerPoint with map of topography, cover, and white-tailed deer trails

Laws and regulations primer—15 minutes

With accompanying literature—regulation pamphlets

Question and answer session on regulations

Proper firearm handling demonstration and practice—30 minutes

Students continue to learn how to safely handle firearms and operate the six common actions.

Field Trip 1: Range visit and live fire field trip. Rifles and crossbows.

Week 3: Hunting for health and wellness—45 minutes

Hunting skills and equipment—45 minutes

White-tailed deer hunting

Tactics, what to look for, saddles and points
Understanding and reading habitat
Understanding biology to increase success
Firearms, bows, stands, safety
Proper firearm handling demonstration and practice—30 minutes
Students continue to learn how to safely handle firearms and operate the six common actions.

Field Trip 2: How to butcher a white-tailed deer (field dressing)
Processing, cooking, and storing

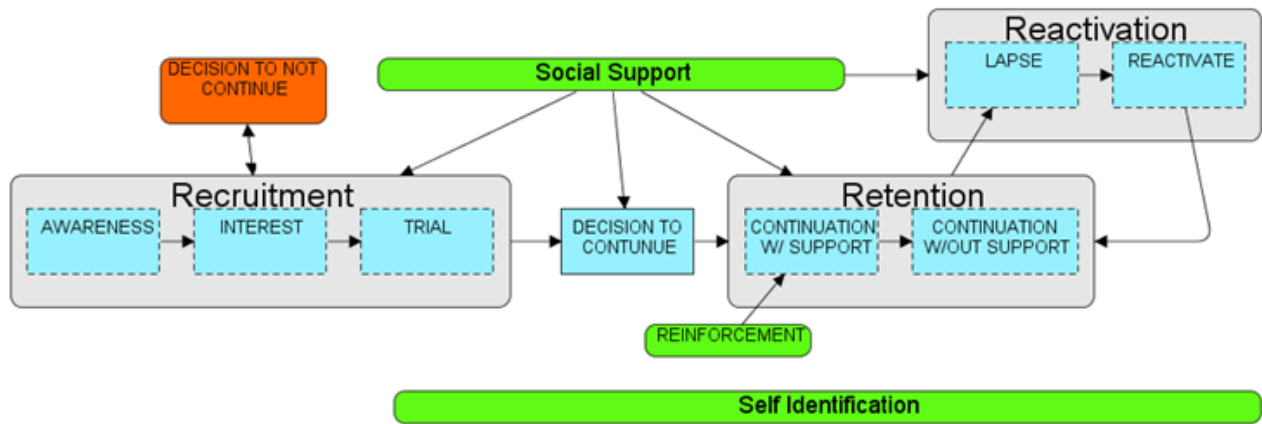
Week 4: Agricultural damage program—15 minutes
Scouting for next week's hunt and preparing for the hunt—15 minutes
Lingering questions discussion
 Building and maintaining the support community for hunting
 Learn to Hunt training and planning
Hunter education and firearm safety test—90 minutes
 Discussion ongoing while students take turns completing the practical
Wrap up

Field Trip 3: White-tailed deer hunt. A two-day Learn to Hunt event with an experienced mentor.

Appendix 2. Wyoming Game and Fish Department's Forever Wild Families Program Results Chain.



Figure 1. Hunter Adoption Model. Decker, et. al.; Seng, et. al.; adapted by Byrne and Dunfee, 2013.



Registered Attendance

Alabama

Jud Easterwood

Alaska

Cora Campbell, Christopher Estes, John Haddix, Geoffrey Haskett, Kelly Hepler, Nancy Hillstrand, Brent Koenen, Gary Larsen, Brad Meyen, Matthew Moran, Elizabeth Neipert, Wayne Owen, Peter Probasco, Dan Rosenberg, Mark Sledge, Kim Titus, Douglas Vincent-Lang

Alberta

Deanna Dixon, Dave Duncan, David Ingstrup

Arizona

Chris Cantrell, Ron Christofferson, Jason Corbett, Doug Cummings, Jim de Vos, Al Eiden, Carolyn Enquist, Joyce Francis, Terry B. Johnson, Scott Lavin, Janet Lynn, Jim Odenkirk, Mike Rabe, Douglas Ripley, Esther Rubin, San Stiver, Neil Thagard, Kellie Tharp, Bill Van Pelt, Larry Voyles, Brian Wakeling

Arkansas

Brad Carner, Ricky Chastain, Don McKenzie, Stan Moberly, Luke Naylor, Susan Rupp

Armed Forces Pacific

Scott Vogt

British Columbia

Wini Kessler, Barry Smith

California

Mark Biddlecomb, Nancy Couperus, Michelle Cox, Eric Davis, Rod Dossey, Nancy Ferguson, Alan Front, Geoffrey Geupel, Mark Hennelly, Chrissy Howell, Lori Large, Dawn Lawson, Ren Lohofener, Robert Lovich, Nicole Olmsted, Albert Owen, Matt Reiter, Kelly Sands, Bob Schallmann, James Sheppard, Rodney Siegel, Kent Smith, Mark Smith, Eric Strauss, Steve Thompson, Stephen Volk, Diane Walsh, Allyson Walsh, Todd Wills, Walter Wilson, Christy Wolf, Dan Yparraguirre

Colorado

Ed Arnett, Lee Barber, Michelle Bates, Delwin Benson, Gary Berlin, Christine Bern, Chad Bishop, Michelle Blake, Bob Broscheid, Elizabeth Brown, Robert Brozka, Jacque Buchanan, Lew Carpenter, Mike Carter, Jennifer Churchill, Larry Clark, Coralie Cobb, Sarah Conlin, John Cornely, Lynn Creekmore, Kendra Cross, Russell David, Thomas Deliberto, Jay Diffendorfer, Deborah Donner, Patt Dorsey, James Dubovsky, Heather Dugan, Matt Dunfee, Paul Everett, Brian Ferebee, Julia Firl, John Gale, Seth Gallagher, Greg Gerlich, Scott Gilmore, Pete Gober, Liz Gordon, Jeffrey Gordon, Joseph Grennan, Tony Gurzick, Daniel Gwartney, Matthew Hogan, Marty Holmes, Jon Holst, Tina Jackson, Dave Jones, Rick Kahn, Katie Kalinowski, Rebecca Kao, Gary Littauer, Angela Lortie, Russell MacLennan, Mark Mahoney, Patrick Malone, Michael Manfredo, Doug McCrady, Jim McDermott, Peter McDonald, Craig McLaughlin, Brian Meinhart, Brian Mihibachler, Steve Oberholtzer, Arvind Panjabi, Krystal Phillips, Glenn Plumb, Dan Prenzlow, Jonathan Proctor, Frank Quamen, Lindsay Quillen, Becky Ralston, Bob Randall, Matt Reddy, Tom Remington, Terry Riley, Susanne Roller, Thomas Ryon, Jennifer Schultz, Natalie

Sexton, Skip Shelton, Michael Simon, Karen Stackpole, Casey Stemler, Jodi Stemler, Gene Stout, Mark Sturm, Tara Teel, Bob Thompson, Gary Thorson, Stephen Torbit, Andy Treharne, Jeff Trousil, Mark Vandever, Jeffrey M. Ver Steeg, Tammy VerCauteren, Noreen Walsh, Thomas Warren, Greg Watson, Leen Weijers, Tammy Whittington, Zach Widner, Jennifer Williams, Ken Wilson, Lisa Wolfe, Melanie Woolever, Mike Wrigley, Mike Yearly, Chris Zimmerman

Connecticut

William Hyatt, Rick Jacobson, Steve Sanetti

Delaware

Larry Horan, Eugene Moore

District of Columbia

Taber Allison, Bryan Arroyo, Carol Bambery, Michael Begier, Hannibal Bolton, Robert Bonnie, Wilhelmina Bratton, Caroline Brouwer, Douglas Burdin, Greg Butcher, Linda Cardenas, Arpita Choudhury, Jeremy Clare, William Clay, Bridget Collins, Tamara Conkle, Naomi Edelson, Daniel Evans, Thomas Fish, Jerome Ford, John Frampton, Thomas Franklin, Gary Frazer, Nelson Freeman, Bert Frost, David Gagner, Parks Gilbert, Nancy Gloman, Estelle Green, Tomer Hasson, Joe Hautzenroder, Mark Humpert, Michael Hutchins, Mike Ielmini, Bentley Johnson, Richard Kearney, Spencer Kimball, Steve Kline, Jim Kurth, Elizabeth Larry, Sara Leonard, James Lyons, Laura MacLean, Noah Matson, Tom Mayes, Matt Menashes, Martin Mendoza, Kellis Moss, Laura Muhs, Priya Nanjappa, Jody Olson, Peggy Olwell, Joy Page, Davia Palmeri, Paige Pearson, Jim Pena, Mary Pfaffko, John Pierson, Craig Potter, Ron Regan, Angela Rivas Nelson, Ryan Roberts, Ashley Salo, Jen Mock Schaeffer, Anna Seidman, Melissa Simpson, Grant Sizemore, Liz Skipper, Steve Small, Heather Stegner, Michelle Tacconelli, Whitney Tawney, Monica Tomosy, Nicole Vasilaros, Allison Vogt, Mary Wagner, Phil Walker, Blake Waller, Geoff Walsh, Cynthia West, Bryant White, Lori Williams, Jennifer Wyse

Florida

Tom Champeau, Richard Corbett, Thomas Eason, Diane Eggeman, Jered Jackson, TJ Marshall, Doug Nemeth, Dennis Peters, Scott Sanders, Rob Southwick, Bill Tate

Georgia

Greg Balkcom, John Biagi, Steven Castleberry, Cynthia Dohner, John Fischer, Dan Forster, Mike Harris, Mike Oetker, David Schmid, Reggie Thackston

Guam

Daniel Vice, Paul Wenninger

Hawaii

Cory Campora, Lisa Hadway, Frazer McGilvray, John Nelson, Vanessa Pepi

Idaho

Charles Baun, Toby Boudreau, Terry Bowyer, Jeff Gould, Virgil Moore, Sal Palazzolo, Michael Schlegel, Katherine Strickler, Kathleen Trever

Illinois

Homer Benavides, John Buhnerkempe, Patricia Harrell, Bernice McArdle, Gary Potts, Andrew Rutter, Scott Stuewe

Indiana

Zachary Lowe, Mitchell Marcus, Mark Reiter, Ed Rudberg, Phil Seng, David Windsor, Amanda Wuestefeld

Iowa

Todd Bishop, Kim Bogenschutz, Todd Bogenschutz, Dale Garner, Orrin Jones

Kansas

Valerie Arkell, Brandon Houck, Robin Jennison, Joe Kramer, Rob Manes, Mike Mitchener, Doug Nygren, Keith Sexson, Brad Simpson, Matt Smith, Shawn Stratton, Christopher Tymeson

Kentucky

Jonathan Gassett, Gregory Johnson, Piper Roby

Louisiana

Jimmy Anthony, Buddy Baker, Robert Barham, Cody Cedotal, John Jackson, Phil Precht

Maine

Brad Agius, James Connolly, Henning Stabins, Sarah Watts

Manitoba

Michael Anderson, Rick Baydack, Karla Guyn, Pat Kehoe

Maryland

Lowell Adams, Paul Baicich, Lowell Baier, Laura Bies, Tom Bigford, Josiane Bonneau, Oswaldo Cuevas, Katie Edwards, Bill Harvey, Patrice Klein, Donald MacLauchlan, Helene Merkel, Keith Norris, Paul Padding, Tim Richardson, Kenneth Richkus, Chris Segal, Greg Smith, Angela Somma, Lee Ann Thomas, Ken Williams, Travis Wray

Massachusetts

Jeremy Coleman, Tom Decker, Curt Griffin, Wayne MacCallum, Wendi Weber

Michigan

David Brakhage, Dale Burkett, Jordan Burroughs, Bill Demmer, John Dettmers, Marc Gaden, Robert Lambe, Dave Luukkonen, Russ Mason, Bill Moritz, Mark Sargent, Sharon Schafer, Morrison Stevens, Gildo Tori, Gary Whelan

Minnesota

Ed Boggess, Jay Brezinka, Ryan Bronson, Pat Conzemius, Nancy Dietz, Brian Dirks, David Fulton, Douglas Grann, Jim Hodgson, Matthew Holland, James Kelley, Thomas Melius, Dave Scott, Dan Svedarsky, Paul Telander, Howard Vincent, Charles Wooley

Mississippi

Jerry Holden, Ashlee Ellis, Bruce Leopold, Tom Moorman, Ed Penny

Missouri

Jennifer Battson Warren, White Bill, Jeff Briggler, Jeffrey Cockerham, Thomas Dailey, Jennifer Frazier, Mike Hubbard, Mike Huffman, Brad Jacobs, Lisa Potter, Andy Raedeke, John Schulz

Montana

Keith Aune, George Bain, Steve Belinda, Rebecca Dockter, Jon Haufler, Mara Johnson, Martha Kauffman, Paul Krausman, Ken McDonald, Kevin McKelvey, Jeff Nelson, Kathryn Norris, Chris Smith, Joel Webster, Catherine Wightman

Nebraska

Dan Bigbee, Karie Decker, James Douglas, Mike George, Keith W. Harmon, Tim McCoy, Steve Riley, Scott Taylor, Eric Zach

Nevada

Tom Allen, Karen Layne, Ken Mayer

New Brunswick

Mike Sullivan

New Hampshire

Brian Dresser, Glenn Normandeau, Ian Trefry, Judy Stokes Weber, Steve Weber

New Jersey

Dave Chanda, Larry Herrightly, Paulette Nelson

New Mexico

Cal Baca, Carol Beidleman, Junior Kerns, RJ Kirkpatrick, Steve Latimer, Stewart Liley, Karl Malcolm, Allison Marks, Janet Ruth, Rey Sanchez, Benjamin N. Tuggle, Jim Willems

New York

Gordon Batcheller, Beth Bunting, Nancy Falxa-Raymond, Jacqueline Frair, Jeff Paro, Raymond Rainbolt, Patricia Rixinger, Ken Rosenberg, Chris Soucier, Valorie Titus

North Carolina

Mujtaba Bashari, Charles Brown, Bob Curry, Alexa McKerrow, Gordon Myers, Sara Schweitzer

North Dakota

Steve Adair, John Devney, Michael Johnson, Kevin Kading, Karen Kreil, Eric Lindstrom, Greg Link, Carmen Miller, Aaron Pearse, Randy Renner, Matthew Sagsveen, Terry Steinwand, Keith Trego, Jeb Williams

Nova Scotia

Mike O'Brien

Ohio

Brian Boose, Jeff Burris, Carolyn Caldwell, Tony Celebrezze, Jim Inglis, Dave Kohler, Jennifer Norris, Pat Ruble, Robert Sexton, Susie Vance, Kendra Wecker, Adam Wright, Scott Zody

Oklahoma

Angie Burckhalter, Craig Endicott, Rich Fuller, Richard Hatcher, Allan Janus, J Roger Kelley, Keith Owens

Ontario

Tammy Richard

Oregon

John D. Alexander, Ron Anglin, Janine Belleque, Barb Bresson, Richard Hannan, Damon Hess, Jim Martin, Carol Schuler, Tim Smith, Robyn Thorson

Pennsylvania

John Arway, Robert Boyd, William Capouillez, Calvin DuBrock, John Dunn, John Eichinger, Ginny Kreidler, David McNaughton, Mike Pruss, Steve Williams

Saskatchewan

Yeen Ten Hwang, Dave Kustersky, Dean Smith

South Carolina

Layne Anderson, Robert Boyles, Breck Carmichael, Emily Cope, Caleb Gaston, Bryan Hall, Mandy Harling, Andrew Kreminski, Craig LeSchack, Susan Loeb, Joel Pedersen, Lynn Quattro

South Dakota

James Faulstich, Kurt Forman, Scott Hed, Tom Kirschenmann, Tony Leif, John Lott, Mark Norton, Jeff Vonk

Tennessee

Gray Anderson, Paul Ayers, Mike Butler, Ed Carter, Mark Gudlin, Dale Hall, Pam Landin, Bill Reeves, Paul Schmidt

Texas

Amber Andel, Mylea Bayless, Suzanne Bilbrey, Tim Birdsong, Kathy Boydston, Clay Brewer, Tammy Brooks, Linda Campbell, Ben Carter, Greg Cekander, Kate Crosthwaite, Myles Culhane, Steve Hall, Eldon Hix, Dawn Johnson, Chuck Kowaleski, Kevin Kraai, Ken Kurzawski, Mitch Lockwood, Cindy Loeffler, Ross Melinchuk, Nancy Mitton, Dave Morrison, Shaun Oldenburger, Robert Ready, Rich Riddle, Jay Roberson, Carter Smith, Matt Wagner, Michael Warriner, Julie Wicker, Clayton Wolf, Michael Young

Utah

Bill Bates, Martin Bushman, Danielle Chi, Mike Fowlks, Ashley Green, Chris Iverson, Dale Jones, Lori McCullough, Brandon McDonald, Miles Moretti, Greg Sheehan, Craig Walker

Vermont

Patrick Berry, Scot Williamson

Virginia

James Adams, Laurie Allen, Lianne Ball, Steve Barton, Jessica Bassi, Doug Beard, Lacey Biles, Brad Bortner, Tom Busiahn, Joseph Campo, Rick Coleman, Kristy Craig, Bill Creighton, Steve Czapka, Alison Dalsimer, Bruce Decker, Kari Duncan, Robert W. Duncan, Robert Ellis, Margaret Everson, Kate Freund, Melanie Frisch, David Gordon, Eric Hallerman, Elsa Haubold, Douglas Hobbs, David Hoskins, Mark Hudy, Mary Klein, Cindy Kolar, Ethan Lane, Bill Lellis, Mike Leonard, John Markham, Craig Martin, Lawrence McGrogan, Nikki Moore, Kevin O'Donovan, Robin O'Malley, David Pashley, Noemi Perez, Cyndi Perry, Christopher Petersen, Christy Plumer, Marcia Pradines, Marc Puckett, Amanda Reed, Jay Rubinoff, Jeff Rupert, James Sample, Jeff Underwood, Meegan Wallace, Mike Weimer, David Whitehurst, Joshua Winchell, Michael Wright, Libby Yranski

Washington

Harriet Allen, Chris Bellusci, Jim Chu, Bob Everitt, Eric Gardner, Cynthia Kunz, Don Larsen, Ruth Musgrave, Todd Sanders, Greg Schirato

West Virginia

Paul Johansen, Jay Slack, Curtis Taylor

Wisconsin

Tim Andryk, Dan Dessecker, Tom Hauge, Steve Hewett, Steve Miller, Jonathan Sleeman, Kurt Thiede, Kurt Thiede, Ollie Torgerson, Scott Walter, Keith Warnke

Wyoming

Jaimel Blajszczak, Leah Burgess, Scott Edberg, Mary Flanderka, Mark Fowden, Scott Gamo, Timothy Grosch, Robert Hanson, DeeDee Hawks, Kevin Hurley, John Kennedy, Scot Kofron, Mark Konishi, Larry Kruckenberg, Dirk Miller, Brian Nesvik, William Rudd, Steve Sharon, Scott Smith, Mike Smith, Tasha Sorensen, Mike Stone, Scott Talbott

Other

Chuck Anderson, Steven Andrews, Julie Arington, Fraser Auld, Melba Barham, Brenda Beatty, Eric Bergman, Laura Bishop, Melissa Booker, Karolyn Bowyer, Lance Carpenter, Casey Cooley, Patricia Cutler, James Davies, Breanna Dodge, Brian Dreher, Jonathan Dunn, Aaron Fero, Steve Forrest, Karen Fox, Delana Friedrich, Jim Gammonley, Janet George, Ed Gorman, Denise Gudlin, Matthew Gudlin, Karla Guyn, Deb Jones, Anne Kelson, Tom King, Kay Knudson, Carol Krausman, Stacy Lischka, Jenn Logan, Lori Martin, Noe Marymor, Lisa Mazzella, Michael Miller, Bob Model, Julie Moretti, Ken Moroan, Scott Murdoch, Brian Ocepek, Eric Odell, Windi Padia, Mike Porras, Callie Putenny, Dean Riggs, Nancy Riley, Doug Robinson, Michael Schirmacher, Shannon Schwab, Apple Snider, Justin Spring, Theo Stein, Brian Sullivan, Kirk Teklits, Andrew Treble, Dan Tripp, Richard Vail, Trent Verquer, Beth Williams, Leah Williams