SECTION FOUR

Wildlife, Rice, and Water: Building on Common Ground

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ABSTRACT

The future welfare of wildlife on agricultural lands will be greatly influenced by farm-level decisions resulting from a complex web of local, regional, and national policies. Geographically, ricefields as foraging and resting habitat contribute to sustaining migratory birds and other wildlife in three of four flyways in North America. Water allocation and quality issues affect rice production and waterfowl. The current policy landscape in locations where rice production and flyways coincide differs dramatically in environmental and natural resource decisions, water rights, commodity programs, and policy networks. In some locations and times, wildlife management, rice production, water quality and quantity management are agendas in conflict that can be reconciled through establishing collaborative policy networks and building on common ground. We discuss important theory and practical advice related to developing policy networks that affect the combination of wildlife, rice, and water issues. Directions for moving policy networks forward to voluntary cooperative conservation, research, and education partnerships are provided.

INTRODUCTION

Rice seed resists deterioration in submerged conditions, making it one of the best food resources for waterfowl

Rice grows in extreme biological conditions associated with flooding and decaying organic matter. Residual rice seeds remain in fields after harvest and are resistant to biological decay. Nassar et al. (1993) rated domestic rice seed as one of the best agriculturally based food resources for waterfowl because of its resistance to deterioration in submerged conditions. Rice seed may remain a viable food source for waterfowl during much of the wintering period, although recent research estimated a 72% decline of waste rice from time of harvest to early December in the southern United States (Stafford et al. 2006). Nonetheless, managed post-harvest ricefields are geographically important in providing waste grain and other foods, such as aquatic invertebrates and weed seeds, and critical loafing and roosting habitats for waterfowl and other wetland wildlife.

Farm-level decisions made on a small scale build to cumulatively affect rice production and wildlife habitat. In riceland management, multilevel policy decisions and the success or failure of policy networks influence decisions at the farm level. These decisions then directly and indirectly affect wildlife habitat. Examples of farm-level decisions include,

California's rice agriculture is especially important to wintering waterfowl and other wetland wildlife

but are not limited to, post-harvest straw management, tailwater recovery systems, reservoir development and maintenance, conservation buffers, crop rotation, recreation, and myriad production practices.

In North America, waterfowl migrate primarily within four flyways: Pacific, Central, Mississippi, and Atlantic (Hawkins et al. 1984). Other than in the Atlantic Flyway, rice agriculture is a dominant land use and forms an important base of waterfowl migration and winter habitat. Although many habitats are critical to sustain waterfowl populations, rice undoubtedly plays an important role in winter waterfowl foraging dynamics. Ricefields occupy much of the mid-South, including southeastern Missouri, eastern Arkansas, western Mississippi, and portions of Louisiana and Texas. Additional important ricelands occur in the Central Valley of California (Heitmeyer et al. 1989).

The Mississippi Flyway arguably has the largest concentration of migratory waterfowl in the world. The flyway coincides with rice production in Missouri, Mississippi, Arkansas, and Louisiana. Arkansas is the lead rice-producing state, with annual outputs averaging 607,000 ha (1.5 million acres). An estimated 1.5 million mallards winter in Arkansas (Reinecke et al. 1989) with more than 1 million ducks harvested annually in the state since 1995 (U.S. Fish and Wildlife Service 2004). Nearby, many waterfowl migrating through the Central Flyway depend on the coastal marshes and ricelands of Texas. On the west coast, more than 5 million waterfowl winter in the Sacramento Valley (Heitmeyer et al. 1989), and California led the nation in total ducks harvested at 1.4 million in 2004–05 (U.S. Fish and Wildlife Service 2005). Approximately 202,000 ha (500,000 acres) of rice are planted annually in the Sacramento Valley of California.

THE POLICY LANDSCAPE

Resource management issues differ markedly in the Mississippi, Central, and Pacific flyways, as do the political and legal frameworks within which they operate. Policy decisions regarding water rights, federal agriculture programs under both commodity and conservation titles, and environmental and trade policy influence commodity production choices made by producers, under close supervision of their local lenders and environmental regulators. These choices directly and indirectly affect wildlife habitat.

Waterfowl are an international resource because they occupy and migrate through the North American continent. The North American Waterfowl Management Plan is a historic international agreement signed in 1986 between the U.S. Fish and Wildlife Service (USFWS)

and the Canadian Wildlife Service (U.S. Fish and Wildlife Service 2004). This cooperative agreement set a course of action for waterfowl management attributed to increasing waterfowl populations. In the United States, waterfowl management policy is directed through federal guidance of the USFWS to state fish and wildlife agencies that conduct waterfowl management in their respective states. States within representative flyways are united via Flyway Councils. Biologists from each state within the flyway convene annually to discuss issues related to midwinter waterfowl distributions, harvests, preliminary breeding population indices, and other biological and political issues of interest. A number of data sources contribute to designing harvest regulations that are input into a complex modeling process called Adaptive Harvest Management (Williams and Johnson 1995). Collected data include prior seasons' harvest data, an aerial reconnaissance of nearly 2 million square miles of waterfowl breeding habitat in Canada and northern United States, and July brood indexes. Flyway Councils, state wildlife management agencies, and USFWS develop proposals for hunting regulations. After meetings among biologists, tentative frameworks are developed for extensive public review, after which the USFWS announces a regulatory framework for the flyways within the United States. State agencies establish hunting seasons at their discretion within parameters set forth by USFWS (U.S. Fish and Wildlife Service 2004).

Water availability is indeed a great challenge for rice production and waterfowl management in all rice-growing regions

Within agricultural arenas, influential policy-making agencies include those associated with agriculture production through the United States Department of Agriculture (USDA) and state agriculture agencies. Waterfowl and agriculture policy crossed paths with the advent of federal programs designed to reduce crop surpluses and remove marginal lands from production (Baldassarre and Bolen 1994). The Agricultural Act of 1956 (i.e., "Soil Bank" program) authorized establishment of plants and cover that benefitted wildlife. The 1990, 1996, and 2002 Food Security Acts (i.e., Farm Bill) included the Wetlands Reserve Program and other programs offering producers financial incentives for restoring and preserving wetlands. National environmental policies regarding water quality and wetland conversion also protected waterfowl habitat. Since 1977, Section 404 of the Clean Water Act requires the U.S. Army Corps of Engineers to issue permits for dredging, filling, or modifying wetlands. The 2002 Farm Bill added conservation provisions from which individual producers could elect to improve wildlife habitat. Wildlife management was enabled as a defined, competition-enhancing component of each major segment of the conservation provisions.

The 2002 Farm Bill reflected a significant departure from the previous legislation in other ways that affected rice production. The decoupling of agricultural program payments from production management left farm-level commodity decisions, such as whether to plant rice, soybeans, corn, or another commodity, for determination by the world market pendulum and local conditions. From 1996 to present, acres of rice production in Texas has declined by 30%. In contrast, rice production has increased by 30% during the same period in Missouri, Mississippi, and Arkansas, and has remained relatively stable in Louisiana and California.

Water quality and availability of surface and groundwater varies markedly between states, as do environmental regulations and water policies. The four states bordering the Mississippi River generally adhere to water rights based in English Common Law. The basic tenants grant riparian rights for surface water and correlative rights for groundwater. These water rights are generally found where water is abundant. Owners of the surface estate share "in-common" water access and use rights. Water rights are conveyed when riparian (i.e., streamside) land or a point of access (e.g., well) is sold. Access to the water resource is divided by the state only in circumstances where there is a conflict of use that cannot be resolved between competing users.

Water rights in Texas and California generally are based on prior appropriation of use. Individuals and entities that first develop and use the water have priority to that resource. This doctrine typically exists in states with water scarcities. Under these laws, the highest and best use of water is governed by the nature of the scarcity. Water becomes another privately traded commodity for sale to the highest bidder unless water is needed for a specific public good. As urban populations grow in western states, cities and municipal water systems secure water by outbidding agriculture in the marketplace. The right to water can be sold or transferred without selling land where the surface or groundwater is present.

Rice farming and production costs vary from state to state

Rice farming and production costs also vary from state to state. Texas A&M University Extension Specialists predict a continuing decline in the Texas Prairie acreage due to high production costs and increased competition for diminishing water resources. The same claims are made in California. Because of high production costs, competition for space, and limited water availability, increased rice production is unlikely. Texas is plagued by the increasing cost and competition for water. Municipal governments in Texas directly compete with agriculture for the purchase of water rights. Land managers in Texas and California are finding that selling water to a

growing urban population is more financially rewarding than growing rice. Even though rice acreage has remained fairly constant over the past decade, demand for a finite water resource has continued to escalate. Because of competing demands for water, policy makers are forced to explore management options that result in reduced water availability for rice production.

Although the Mississippi River basin is commonly considered water-rich, this perception is changing. This region receives over 50 inches of annual rainfall with abundant surface water. Multiple underground aquifers yield high-quality ground water with springs issuing thousands of gallons per minute. However, even in this region, water rights are a significant issue. In 2003 a regional symposium titled "Water Rights in the Twenty-First Century: The Challenges Move East" featured the best legal experts on water law from across the country. At this standing-room-only symposium, Dr. Joseph Dellapenna, Professor of Law at Villanova University School of Law, stated that every state legislature in the southeastern United States with the exception of Louisiana had intervened in state water law by modifying the historical riparian rights doctrine. Recent user conflicts concerning the overdraft of the Sparta Aquifer have brought legislative scrutiny to Louisiana's riparian/correlative rights system of water allocation. Louisiana has recently joined other states with water resource management issues by designating the Sparta Aquifer as a critical water use area.

Droughts and natural disasters throughout the 1980s and 1990s, in addition to low commodity prices, drove many producers to invest in irrigation. Arkansas rose from an obscure irrigation state in the 1980s to one of the top five in the nation in acres irrigated (Hutson et. al 2004, U.S. Department of Agriculture 2004). These data show a dramatic shift in irrigated agriculture from the arid West to the humid South, with the greatest concentration in the MAV. Dramatic reductions in irrigated lands were shown in the California Central Valley and Texas Gulf Coast. California leaders are exploring the potential economic impact of a 25% reduction in the allocation of surface water to agriculture. Lee et al. (1997) predict such a reduction will result in an income loss in excess of $18.5 million to the California rice industry.

Irrigating a ricefield in Arkansas

Further complicating the search for policy approaches that can successfully bridge agriculture and wildlife interests is each state's complicated mix of agencies, organizations, and programs that encourage, discourage, penalize, reward, and otherwise influence the decisions of agricultural producers and land managers. Few agencies in the mix maintain a primary focus on the commodity produced. Most are concerned with the amount of water, nutrients, and pesticides used,

and the tillage practice or ground cover remaining as a protection against erosion. This mix of agencies and organizations brings its own complexity to the policies and programs that encourage or impede the important relationship between the rice industry and conservation communities.

POLICY NETWORKS

A policy network is defined as an association of agency and organization representatives who are affected by, or wish to influence, a particular policy. Important issues, threats, impending actions, or a sense of urgency can serve as a catalyst for forming policy networks. Networks can be forced or voluntary partnerships. They can be formed for the mutual benefit of all involved, or in opposition, such as through the court system. Today, agencies and organizations are being pushed into policy networks, like it or not. The circumstances surrounding wildlife, rice, and water are aligned for developing voluntary policy networks that build common ground. The unique circumstances, timely opportunities, and most important, the voluntary nature of the collaboration, can make the wildlife, rice, and water policy networks reflect strong and true conservation partnerships.

Developing policy that addresses concerns of rice producers, waterfowl enthusiasts, environmentalists, political leaders, and agency personnel at all levels, along with other stakeholders, requires a tremendous commitment and focus to move to interdisciplinary and cooperative partnerships. Agencies and organizations governing policies associated with wildlife, rice, and water range in experience and oversight preference from strict regulation and economic sanctions to incentives and voluntary compliance. Their interactions with stakeholders range from regulation and inspection to education, demonstration, and incentives. Workforces range from a three-person staff (i.e., Executive Director, assistant, and secretary), to more than 500 employees statewide. Organizational structures range from hierarchical (i.e., top down command and control) to developmental (i.e., flat with much individual autonomy across the system). Their leadership ranges from apolitical (i.e., career track selected on technical merit) to political (i.e., serving at the discretion of the standing governor). Organizational philosophies range from a focus on agriculture to a focus on the environment and the conservation of natural resources. All are connected through their common association with wildlife, rice, and water.

IMPORTANT CONSIDERATIONS

While some policy networks are extremely successful, others are not. What structures, skills, resources or other tools lead us from policy networks to strong and true conservation partnerships? What conditions pose the greatest threat to building stronger networks and more powerful partnerships? For decades, policy analysts have studied these questions. Following are important considerations derived from their work:

Who is at the table - Carefully choosing who participates in policy networks and conservation partnerships is an important first step. Their selection defines the future of the association and the reputation of those making the appointment or opting to serve. Political and social structures will judge the product of the collaboration by "who plays" and "the rules by which they play."

Identifying motivations - Consider the motives of all those involved. What is their interest in the network and partnership, and how different are their motives from one to another, or from one venture to another? Are event-driven policy networks and partnerships more predictable or measurable than other situational networks? Why do organizations participate in policy networks or voluntary partnerships? What are management concerns for forming, strengthening, and maintaining voluntary partnership efforts?

Power issues - Participants in policy networks and partnerships hold different levels of power in relation to each other. As individuals, we differ in job titles, experience, and speaking abilities. Our agencies have different financial bases, levels of policy experience, organizational structures, political affiliations and bases, public profiles, and agendas. In issues of water quality and quantity, agency interests range from direct regulatory authority to economics and aesthetics, and interests in water consumption, agriculture, wildlife, and environmental issues. When assessing agency and organization power, one must ask whether power is shared evenly within the network or partnership? How is one agency voice valued against another? Can the agency withdraw or withhold resources without prejudice? How is information shared? These questions must first be addressed in advance if a policy network is to have interpersonal trust among members.

Interpersonal trust - Interpersonal trust cannot be overstated as a component of the partnership building process. Agencies don't work with agencies—rather, people work with people, who happen to be affiliated with a particular agency. Trust provides the basis from which difficult situations can be analyzed and addressed. A foundation of trust allows partnership members to either resolve the issue up front or agree to shelve the issue as irrelevant to the policy process under consideration. Without trust, difficult issues remain hidden or may resurface in a manner that stymies open dialogue and progress. If trust is breached for individual or organizational gain, it is lost and doubly difficult to regain. If actors change, a potential exists for new interpersonal dynamics, thus new interorganizational dynamics. Even with change in actors, however, a history where trust has been breached is difficult to overcome.

Overcoming "turf" - Turf, history, or past personal experiences are very difficult to overcome. They tend to be assumed or unspoken because they are part of agency culture. Such issues can be found in agencies and organizations of any size or structure. Even when raised, these sensitive issues are often discounted on the surface, because it is not easy to publicly admit to turf or closely held biases. But unless broadly understood and discussed, turf remains an underlying issue that can subvert the network and partnership process and products.

Understanding constituencies - The constituency of each agency is important in networks and partnerships. Constituency expectations, perceptions, political agendas, power, leadership dynamics, and other factors influence the level of commitment an agency can make. The relationship between the agency and its base constituency or constituencies can be termed a preexisting policy network with a basis in legislation, regulations, policy processes, finance, history, and personal experience. A new policy network with incompatible goals is not apt to fare well in the face of these previously negotiated relationships.

Having a shared language - Terminology-language barriers have become a serious concern for developing policy networks and partnerships. Although the same words are spoken, the meaning of these words is different depending on whether the person's primary interest is wildlife, rice, or water. Dr. Tom Kimmons raised this issue while studying public perception and reality regarding agriculture. Kimmons believed that the agriculture and conservation communities would never build on common ground as long as their language was so different. Producers are forced to consider economics first, as operations must profit to survive. Conservationists speak in terms of protecting natural resources first, with sincere attempts to tie conservation to the economics of agriculture. What both groups gain from the delivery of words and their order is a perceived priority of issues, and a lack of equal or balanced concern. Having a shared language and focusing on common ground helps alleviate this opposed perception.

Level of commitment - Building a policy network and moving it to a true conservation partnership is time consuming and cannot be taken lightly (Mizrahi and Rosenthal 2001). Networks and teams involving a few people are more efficient for policy processes requiring a quick response. Commitment can be a barrier if some partners are less vested and an imbalance occurs. Partners must be viewed as equally committed to the goals of the network. Anything less brings sharper focus to limitations and potential impediments to the policy process.

Developing policy that addresses concerns of rice producers, waterfowl enthusiasts, environmentalists, political leaders, and agency personnel will require commitment

Gaining administrative "buy-in" - Oftentimes agency administrators require certain assurances or preliminary investigations of the potential outcomes, products, and pitfalls prior to committing resources to networks and partnerships. Agency administrators support forming groups that have: (1) cost savings through efficiency; (2) economies of scale (i.e., expanded potential use for the product once investment is made); (3) improved agency resources or public perception of value; (4) gained knowledge or experience that expands agency capacity; and (5) access to new and synergistic effects from linking resources that enhance the future potential for the agency (Bardach 1998). Recognize that administrators are agreeing to become part of a network or partnership that ultimately will be outside their direct sphere of influence. A successful policy network could evolve into a conservation partnership that will take on a life and power of its own. Assuredly, that power and life is tied to the set of originating organizations, but it remains a separate venture from any of the participating organizational partners, collaborators, or team members. The team and its goals become part of, but separate from, each

of its individual parts. That independent life carries with it risks to the parent organizations, but more important, offers opportunity for great rewards.

Differences in policy tools - Agencies tend to use a particular set of tools repeatedly for addressing policy issues. Policy tools include education, incentives, voluntary compliance, regulation, disincentives, permits, and management sanctions. For example, the Cooperative Extension Service is predisposed to using education, incentives, voluntary compliance with environmental management plans, and other enabling policy tools. State departments of environmental quality are predisposed to use regulation, disincentives (fines and fees), permits, management sanctions, and other direct and forceful tools to achieve policy goals. When the two agencies are in a policy network, a tension may result from each agency's preferences in policy tools. In some cases, it may be uneasiness with an agency's lack of competency or familiarity in using different policy tools, or more deeply a fundamental philosophical disagreement (Peters 1986).

MAINTAINING POLICY NETWORKS AND PARTNERSHIPS

Once a policy network is established, management strategies are needed for its continued functioning (Klijn 1996). Policy networks are built, exist, and function whether we tend them or not. They may function as a field of conflict where each participant in the network pursues a closely held agenda independent of the needs or interests of any other participant. Generally, this function is a source of frustration to all who are a part of the network. With a minimum of voluntary cooperation, open communication, and trust, opportunity presents itself for enhancing perceptions of shared interests. Here we begin to move to a true conservation partnership, and partnerships—like people—need attention. Structure, communication, and shared goals within the partnership further enhance the environment of trust. Trust cannot be maintained without thoughtful attention to communication.

The goal of moving a policy network to a partnership is to develop a shared understanding of issues and possible solutions to the policy problem. The product must be commonly held perceptions and goals, or a convergence of opinion and understanding that these goals are possible. Following are some helpful hints for designing and maintaining a policy network, and for moving that network to something more of a voluntary conservation partnership.

Design a structure and develop ground rules - Coordination and trust relationships are dependent on a set of rules that are commonly understood. The structural framework for the network provides the basis for that trust.

Provide a menu of policy choices - Even if choices are difficult, or one choice is obviously best, choices must be provided. There must be an obvious attempt at fair representation of each choice, including benefits and shortcomings. The more involved team members become in identifying and refining choices, the better the network or partnership will support the final decision.

Resolve conflict - Conflicts will arise, given the nature of the policy process. An imbalance of power and differences in philosophy, politics, patronage, and prestige will result in conflict. Treat conflict as an inherent, accepted, and expected part of the process. Conflict is an opportunity to bring clarity and focus to the true nature of the policy issue in question. With-

Understanding constituents such as this Arkansas rice farmer is an important component of a functional policy network

out conflict, products from the policy network could be diminished later when someone outside the network raises the very issues that the network chose to avoid, which could ruin network efforts, products, and reputation. Resolving conflict is very important and can mean the difference between remaining a policy network or becoming a more desired voluntary conservation partnership.

Use listening skills - Listening is an often-touted but seldom-perfected part of policy networking. An active listener can overcome many pitfalls encountered in the policy process, especially when working in networks of agencies and organizations with conflicting views. Practice listening—it will serve one well.

Learn the language - Another important skill is learning the language of those participating in a policy network or partnership. It is important to deal openly with language and the meaning of words, especially when words have a symbolic meaning that is rooted in the cultures of those who both speak and hear them.

Focus on identifying resources, not deficiencies - Instead of spending too much time on deficiencies, focus on available resources and how they can be mobilized to build capacity (McKnight and Kretzmann 1996). Looking at the potholes undervalues the true developmental capacity of policy networks and partnerships.

Anticipate difficulties - Expect to encounter frustration, conflict, and pitfalls in developing and implementing any policy network. Networks require attention and do not always move cooperatively into conservation partnerships. However, with experience comes the capacity for analysis and anticipating potential difficulties, and finding preemptive solutions. This "emergency preparedness" includes preparing network participants for the potential impact of their policy products. Being prepared will do much to diffuse difficult circumstances if they occur.

Communication is key - The network manager, leader, or chair needs to stay in touch with members of the policy network or partnership and administrators who enable their participation. Although this may seem obvious, its importance cannot be overstated. The initial analysis of network value will come from within the participating agencies and organizations. The network will eventually develop external value that can also be assessed. If internal needs are not met, the policy network will never get the chance to develop external value and power to affect policy implementation and change. The most effective agent of change is an externally valued conservation partnership.

Ideally, participants in a policy network gain intellectual capital, advocacy support, acceptance from leadership, and a strong communications platform. As in the construction of a house, the foundation of the policy network determines the livability and future strength of the structure when stressed or coming under attack by the forces of nature (Bardach 1998). The policy network provides the basis for improved policy direction, operational structure, and enhanced learning opportunity. The ultimate goal is to move a policy network to something more, and that is an effective, successful, and growing voluntary partnership.

The rice Industry is training our agricultural and conservation leaders of tomorrow

CASE STUDIES: BUILDING ON COMMON GROUND

Case Study #1: The L'Anguille River Watershed in Northeast Arkansas

The L'Anguille River is located in Delta region of northeastern Arkansas, and consists of approximately 252,200 ha (623,219 acres). Approximately 74% of the watershed is considered prime farmland, and 91% of the water use is to supply irrigated agriculture. Crops include rice, soybeans, cotton, and wheat. Prior to 1945, the headwaters were converted to straight-line ditches to drain the land and establish crop fields. In 2005, the L'Anguille River did not meet water-quality standards for turbidity and fecal coliform bacteria.

In 2000, Ducks Unlimited, Inc., fostered a partnership with the Arkansas Natural Resources Commission, U.S. Environmental Protection Agency, and agriculture producers to decrease soil erosion and enhance water quality in the L'Anguille Watershed. Ducks Unlimited staff distributed 375 water-control structures on 39 farms totaling approximately 6,070 ha (15,000 acres).

Under a 15-year voluntary agreement, landowners are required to retain rainfall and runoff from fall through early spring each year. As a result of these management practices, it is calculated that 182,100 Mg (200,310 tons) of topsoil will be retained in fields over the 15-year term of the project. This effort also provides significant waterfowl habitat during winter in Arkansas.

The success of the L'Anguille Watershed Project was a direct outgrowth of a previously existing effort that developed a strong voluntary conservation partnership: Arkansas Partners Project. In 1993, the Arkansas Partners Project was formed between the Arkansas Game and Fish Commission, Ducks Unlimited, Inc., USDA Natural Resource Conservation Service, and the U.S. Fish and Wildlife Service. The purpose of this partnership is to enhance agricultural acres for wildlife, conserve soil and water resources, and protect wetland habitats downstream. Under this program, waterfowl biologists with the Arkansas Partners Project visited farms, provided free water-control structures, and gave technical assistance for installing the structures per site specifications. In return, producers agreed to pick up, transport, and install water-control structures in their fields and maintain them for at least 15 years. Maintenance requirements include placing risers or extending drop pipes in the winter to promote the collection of rainfall. These practices benefit not only waterfowl, but also reduce soil erosion in waterways.

The Arkansas Partners Project has been implemented on 55,000 ha (136,000 acres) of farmland, primarily in the Arkansas Delta. The project served as a venue for "bringing to the table" agencies and organizations with a common interest in wildlife, agriculture, and water. By the time the L'Anguille Watershed Project was proposed, these agencies and organizations had achieved an understanding of the roles and limitations of agencies and nongovernment organizations, and had built trust though its successes with landowners. The Arkansas Partners Project provided a successful template for implementing the L'Anguille Watershed Project.

Those involved with the L'Anguille Watershed Project indicated its greatest success was landowner interest and participation. Landowner and agency awareness of the L'Anguille Watershed Project was created through eight public meetings held in counties throughout the watershed as well as in Little Rock, the state capital, where many agency headquarters are based. This awareness quickly led to identification of many potential project participants. Those who signed on to the project were aware largely because of the existing Arkansas Partners Project and perhaps, in large part because of its on-the-ground success, had an intense desire to flood rice and other agricultural fields for waterfowl habitat and hunting.

The L'Anguille Watershed Project has rice producers and conservation organizations working together to improve water quality

Another project illustrating partnerships between agencies and producers in the L'Anguille River Watershed was a U.S. Environmental Protection Agency 319 project that purchased a no-till drill for the St. Francis County Soil and Water Conservation District. More than 150 farms were identified as being eligible under this project, and the district placed priority use for those closest to the river. All producers planted directly into stubble from the previous crop and did no tillage whatsoever. In exchange for free use of the drill, the producer agreed to plant no-till for at least two years. The district signed contracts with 11 producers who planted 1,598 acres of no-till crops, saving a calculated 72,000 tons of soil from entering streams and tributaries in the L'Anguille River Watershed. Yields were very good, ranging from 22 to 30 bushels/acre on soybeans and 145 bushels/rice. The project helped the district build relationships with producers who traditionally had not used their services and programs.

Case Study #2: Louisiana's Vermillion Soil and Water Conservation District

Louisiana's Gulf Coast is called America's Wetland due to its enormous size and importance in managing our nation's wildlife, fisheries, water quality, and coastal protection from tropical storms. Vermillion Parish lies in the heart of America's Wetland, covering nearly 405,000 ha (1,000,000 acres) in southwest Louisiana, with 24% of the area in coastal wetlands. The parish hosts a diversity of wetlands alongside agriculture, including pasture for grazing livestock and cropland for rice and other crops. Vermillion Parish's agriculture production is valued at more than $88.2 million annually. The greatest threats to this area include inland erosion and decreased water quality, coastal erosion and land loss, and accompanying saltwater intrusion.

Ben Bordeaux, Master Farmer and conservation leader in Vermillion Parish

The Vermillion Soil and Water Conservation District, working with the Natural Resources Conservation Service, took a proactive approach to integrate each and every possible conservation entity and program currently offered to combat threats to natural resources.

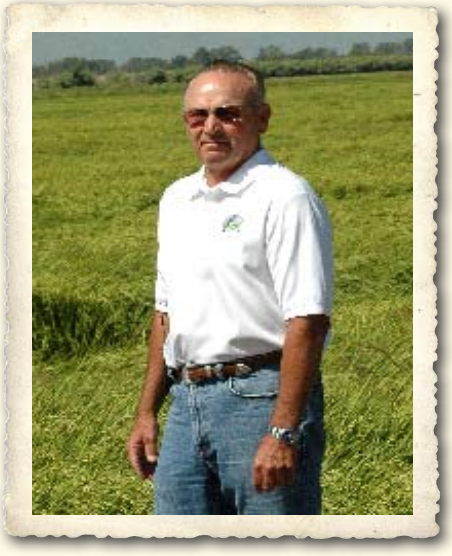
The district fostered a voluntary conservation partnership, procured funds, and implemented conservation practices from seven state and federal programs, including two U.S. Environmental Protection Agency 319 Projects, the USDA Environmental Quality Incentive Program, USDA Grazing Land Conservation Initiative Program, Coastal Wetland Planning, Protection, and Restoration Act, and various watershed planning and protection programs. These programs were carefully leveraged with district funds and in-kind contributions from rice producers and other landowners and managers. The net result was a great influx of con-

servation funds and support to the overall conservation partnership, far exceeding what would have been realized without a proactive, well-planned approach.

The primary best management practices were promoted and implemented throughout the parish. Water management practices included the installation of water-control structures, and grade stabilization structures, irrigation land leveling, underground irrigation pipeline, shallow-water management for wildlife on agriculture fields, monitoring and record keeping, and nutrient and pest management. In addition livestock practices were implemented throughout the parish: fencing, pipelines, heavy use area protection (pads), and watering facilities. All practices reduced nonpoint source pollution and water use by increasing irrigation efficiency and enhanced wildlife values of agriculture lands and adjacent wetlands. More than 118 producers and other land managers participated in district programs with over 8,550 ha (21,125 acres) of applied conservation practices in 2005.

Case Study #3: Protecting Ricelands in California's Sacramento Valley

California's agricultural production was worth more than $30 billion/year in the recent past with Sutter County alone valued at nearly $300 million (U.S. Department of Agriculture 2006). However, farmland in Sutter County, the center of rice production for the state, slowly is becoming scarce. According to the California's Department of Conservation Farmland Mapping and Monitoring Program (2002), more than 19,020 ha (47,000 acres) of the state's prime farmland was urbanized between 2000 and 2002. The urban sprawl of Sacramento and Yuba City are threatening the viability of California's core rice-growing region.



Al Montna, owner of Montna Farms

In an effort to combat the loss of ricelands in the Sacramento Valley, a conservation partnership was formed between the California Farmland Conservancy Program, David and Lucile Packard Foundation, Ducks Unlimited, Inc., and Montna Farms. This partnership crafted a conservation easement permanently protecting 500 ha (1,235 acres) of prime ricelands while providing important forage and resting habitat for waterfowl. Montna Farms is located between the Sacramento International Airport and ever-growing Yuba City along state Highway 99.

To accomplish this project, the Farmland Conservancy Program provided base funds to initiate the easement acquisition with additional matching funds and donations provided by the Packard Foundation, Ducks Unlimited, and the Montna family. Partnerships that craft working solutions from existing policy networks and programs are essential to protecting Sacramento Valley ricelands and the wildlife habitat they provide in years to come.

CHALLENGES IN BUILDING ON COMMON GROUND

Our review of the policy landscape, fundamentals of policy networks, and case studies of conservation partnerships suggests there is great opportunity to integrate wildlife, rice, and water and build on common ground. However, numerous challenges remain and must be considered for the development of more holistic and sustainable conservation partnerships in the future.

Local economics - Economic pressures directly affect water rights. Water allocation to industry and residential development provides local government with a tax base and added benefits that out-compete less lucrative agricultural and waterfowl habitat uses. However, in rural regions waterfowl enterprises can contribute significantly to the local economy from lease hunting and ecotourism (Hite et al. 2003). To compete as a perceived component of an economic development strategy, the wildlife economic benefit must be quantified in a defensible way. A policy network could facilitate prioritization of these competing interests of wildlife, rice, and water in local communities.

Nonpoint and point source pollution - Rice producers fear changing regulations in the currently evolving regulatory climate of water-quality management. What is considered nonpoint source pollution today may be different tomorrow. Because rice producers and others who use irrigated systems move water in significant quantities through controlled openings (e.g., pipes), this practice is at risk of being declared a point source of pollution. Their actions to enhance waterfowl habitat could adversely affect water quality as an unintended consequence (e.g., increased sediment, nutrients, fecal coliform). Potential by-products of attracting waterfowl to a specific place for a length of time could raise producers' liability for water-quality pollution, and could dissuade producers from practices that enhance waterfowl habitat. A functioning policy network or partnership could facilitate solutions to this dilemma so producers would not be held liable for overt actions that attract waterfowl to their farm operation.

Shorter-season rice varieties and higher harvest efficiency will affect availability of rice to waterfowl

Improved rice production practices - Agricultural practices are being studied that affect waterfowl habitat and deserve consideration. Creative solutions to water conservation include shorter-season rice varieties, higher efficiency irrigation systems, incentives for surface water recycling, and multipurpose reservoirs. With proper planning and incentives, reservoir design could include protected shallow water or wetland components to reduce bank erosion while providing wildlife habitat. A conservation partnership could support research and education programs that build understanding of these and

other management practices that benefit waterfowl and provide economic gain for producers. Applications of such management practices can be encouraged through producer-friendly demonstration programs such as the crop verification programs that have become the mainstay of experiential learning in the Mississippi Delta.

RESEARCH AND EDUCATION NEEDS

Identification of needs for research and education typically arise from policy networks. Following are suggested focal areas for research and education that will foster future policy networks and move them to sustainable long-term conservation partnerships.

- Review past strategies for, and outcomes from, conservation partnerships involving wildlife, rice, and water, and identify important lessons learned.
- Review social acceptability of proposed land management alternatives to producers, hunters, and/or the general public through focus groups, personal interviews, telephone interviews, mail questionnaires, stakeholder meetings, or search conferences.
- Study effects of new or proposed agricultural practices on waterfowl, such as shorter-season rice varieties, higher efficiency irrigation systems, incentives for surface water capture and reuse, and multipurpose reservoirs.
- Investigate the practice of poultry litter application in Arkansas ricefields, its effect on water quality, and potential disease transmission from poultry to waterfowl.
- Quantify and document alternative management practices that benefit waterfowl and water quality while providing economic gain for producers.
- Study the economic feasibility of waterfowl enterprises as supplemental income or as an alternative for marginal agriculture lands.
- Quantify the financial benefits of wildlife as an economic development strategy, such that wildlife competes as an important economic component of the community.

CONCLUSION

Effective policy networks and partnerships have been designed and implemented by many professionals, including experts in agriculture and natural resources (e.g., Lowi 1972, McWilliams and Patten 1995, Northouse 2003). Starting with small, incremental steps is the best approach, preferably prior to the advent of potentially adversarial policy issues. This allows time for agencies, organizations, and other participants to overcome internal and external barriers, develop shared understanding, and build trust. Participants need to converse about what they have in common and in conflict without controversy. Ideally, these partnerships will result in resolving issues before they become controversial. If voluntary partnerships between those involved in wildlife, rice, and water are not currently present in each state or community, they need to be initiated immediately. Strong conservation partnerships are needed to overcome the challenges that are on the horizon, in regard to wildlife, rice, and water.

Building strong conservation partnerships takes time, energy, and commitment. Identifying participants oftentimes is the most difficult part of the planning process. It requires thinking "outside the box" and "peering into a crystal ball" to ensure those who are, or potentially could be, affected are represented at the table. It is important to convey what is at stake for those who have not made a solid connection of individual interests with the overriding issues. There has to be a reason—a good reason—for agencies, organizations, and other parties to be fully engaged with focused interest, full participation, and full commitment. Wildlife, rice, and water are indeed unifying issues. It is time to embrace today's unique circumstances and timely opportunities, promote voluntary collaboration, and make our wildlife, rice, and water policy networks strong and true voluntary conservation partnerships.

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