Policy Studies Journal, Vol. 19, No. 3-4, 1991 (534-541)

Water for Wildlife:
Integrating Science and Politics in Wildlife Conservation

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Water is one of the most critical habitat requirements for fish and wildlife (Leopold, 1933; Henning & Mangun, 1989). However, western water law and policy has not historically recognized fish and wildlife values in allocating and developing water (Wilkinson, 1989). Consequently, fish and wildlife have been threatened by diverting water out of streams for municipal, agricultural, and other "offstream" uses (West's fouled waters, 1989). In response to this situation, several public and private organizations have recently developed a variety of strategies, programs, and policies for legally keeping water "instream," unavailable for diversion and offstream use, for fish, wildlife, and other benefits (MacDonnell, Rice, & Shupe, 1989).

While many of these recent policy developments have been created by genuine ecological needs and are based on sound scientific information, their formulation and implementation have been fraught with conflict. Traditional offstream water users, perceiving a threat to their water rights and livelihoods, have resisted attempts to integrate instream flow protection into the legal and institutional framework for managing western water (McKinney, 1989a). Although there are several success stories in protecting instream flows throughout the West, these efforts illustrate the importance of effective public involvement and conflict management in developing and implementing fish and wildlife policy.

The purpose of this article is to illustrate that ecological needs and good science are necessary, but not sufficient conditions for fish and wildlife management. Although certain programs and policies may be ecologically and scientifically justifiable, they may be unworkable if they are unacceptable to affected parties and the general public. The challenge is to develop fish and wildlife policy that, from a scientific and ecological perspective will get the job done, and, from a political perspective, is generally acceptable to all affected parties.

The article begins by briefly examining the science of instream flow protection. The politics of instream flow protection is then reviewed by presenting several case studies. The article concludes with two recommendations on how to integrate the science and politics of fish and wildlife conservation.

The Science of Instream Flow Protection

The science of instream flow protection consists of a variety of components. However, the two most important components are: (a) technical methods to quantify the amount of water required to maintain fish and wildlife populations, and (b) legal and institutional strategies for maintaining and enhancing instream flows

(MacDonnell, Rice, & Shupe, 1989; McKinney, 1989a). These two issues define how much water is needed to protect instream flow values, and what management strategies are available within a given state.

Methods to Quantify Flows

One of the first tasks in providing water for fish and wildlife is to determine the need and goal for instream flow, specify its location, and quantify the amount of water required (Beecher, 1990). To date, the development of methods to quantify instream flow needs have centered on the requirements for fish (McKinney, 1989a). Very little effort has been devoted to developing methods for wildlife, riparian habitat, recreation, and other instream values.

The methodologies available to quantify instream flows for fish vary in sophistication and precision, ranging from simple visual judgments about the sufficiency of historical flows, to elaborate computer models that can estimate the habitat-flow requirements of selected fish species at various life-stages. "Standard setting methods" identify a minimum flow required to protect a given fish species, while "incremental methods" estimate the amount of suitable fish habitat as flow changes (Trihey & Stalnaker, 1985). A variety of specific methods are available within each of these general categories (Lamb, 1989).

The selection of which method to employ in a given situation is not an easy decision, and has been the subject of many articles (Gore & Nestler, 1988; Trihey & Stalnaker, 1985). Lamb (1986) convincingly argues that the decision of which method to employ is often influenced more by administrative and political forces than the ecological and scientific suitability of the method for a given situation.

Strategies to Maintain and Enhance Instream Flows

After quantifying the amount of flow required to protect fish and wildlife habitat, the next step is to select a management strategy for legally providing water. The strategies available for managing instream resources can be categorized according to whether they are designed primarily for: (a) maintaining a certain amount of existing (unappropriated) flow, or (b) increasing flows in dewatered streams (McKinney, 1989b).

The problem of maintaining existing flows is how to set aside, withdraw, or appropriate a particular level of unappropriated streamflow below which no new offstream or diversionary water rights can be granted. The purpose of such efforts is to maintain the status quo and to deter future offstream diversions that may threaten or harm instream values. Several strategies are available to achieve this objective, including: (a) denying and conditioning water use permits, (b) utilizing federal regulatory programs such as the Endangered Species Act and the Clean Water Act, (c) claiming instream water rights, (d) initiating private contributions and appropriations, and (e) prohibiting new diversions, such as through wild and scenic rivers (McKinney, 1989b). These strategies rarely create much controversy because they generally result in the acquisition of junior water rights that pose little threat to existing water users. However, while these strategies are generally effective in maintaining existing flows, they are not applicable to situations where streams are being dewatered by overappropriation, drought, or both.

In contrast to maintaining existing flows, the issue of increasing flows in dewatered streams is how to put water back into streams that are regularly or periodically dewatered. The purpose of these efforts is to retrieve some water now being diverted for offstream uses to enhance and protect instream values. Once again, a variety of legal and institutional strategies are available to accomplish this goal, including: (a) transferring existing water rights from offstream uses to instream uses, (b) coordinating reservoir releases and water uses to coincide with instream flow needs, (c) constructing new water storage facilities, (d) claiming federal and Indian reserved water rights, and (e) asserting the public trust doctrine (McKinney, 1989b; Shupe, 1989).

While all of these strategies are potentially effective in terms of putting water back in the stream, transferring water rights and coordinating reservoir releases and water uses are the preferred strategies because they are voluntary and protect existing water rights. Other strategies to increase flows in dewatered streams, particularly reserved water rights and the public trust doctrine, are more mandatory (i.e., they may require existing water users to alter their patterns of water use, whether they want to or not) and regulatory and thereby threaten the existing allocation and use of water.

The search for an appropriate strategy to protect instream flows should be based on an accurate definition of the instream resource problem. Is the problem one of maintaining existing flows or increasing flows in dewatered streams? Once the resource problem is clarified, the search for an appropriate management strategy is then likely to be conditioned by the interplay of political, administrative, and legal forces, as explained in the next section of this article. To inaccurately define the ecological and scientific dimensions of the problem, however, is to run the risk of adopting and implementing an inappropriate strategy.

Other important components of the science of instream flow protection include: (a) determining the economic value of instream flow uses (Colby, 1989), and (b) monitoring and enforcing instream water rights (Shupe, 1989).

The Politics of Instream Flow Protection

In light of the scarcity and development of water in the West, very few people would argue against the ecological need for maintaining some stream flow for fish and wildlife (MacDonnell, Rice, & Shupe, 1989). The science of providing water for fish and wildlife is responding to this ecological need by testing various methods for quantifying the flows required to protect instream values, and developing alternative management strategies to legally protect instream resources. Nevertheless, the overall tendency throughout the West has been to resist attempts to incorporate instream flow protection into the legal and institutional framework for managing western water.

This section examines some of the problems experienced in trying to formulate and implement instream flow programs in several western states. It illustrates that, although efforts to protect instream flows are based on ecological needs and valid scientific information, they are often molded and influenced by administrative and political forces.

Policy Formulation Efforts

Several efforts to formulate instream flow policies in the West have been either sidetracked or significantly delayed because of overwhelming opposition by agricultural and other traditional offstream water users. New Mexico, for example, is generally considered to be the only western state that does not legally recognize some form of instream flow protection (MacDonnell, Rice, & Shupe, 1989). During the 1989 legislative session, the National Wildlife Federation sponsored a bill that would have allowed unappropriated water to be appropriated for instream flows, and existing water rights to be transfered to instream purposes (Senate Bill 491, 1989). From a technical perspective, as mentioned above, these are two reasonable and fair strategies. However, after the bill passed the senate, it died in the house (*Fish, wildlife, and streamflow*, 1989). The bill was modified significantly by legislators supporting offstream water users and failed to gain full support from the environmental community by the end of the session. According to several observers of New Mexico water politics, as the unchallenged master of New Mexico water law and politics, the state engineer's opposition to the bill was all that was needed for the legislature to scuttle the proposal (Instream flow proposal is diverted in New Mexico, 1989).

As another example, it took the State of Wyoming 14 years to enact a law allowing for the legal protection of instream flows for fish (Reynolds, 1986). As in other western states, the impetus for this effort was a perception that unchecked water development threatened high-valued fisheries. After a considerable number of attempts to draft legislation that satisfied all the affected parties, an agreement was finally reached and instream flow legislation passed in 1986. However, some have argued that the political compromises required to pass the legislation have limited the potential effectiveness of the policy to protect instream values. Reynolds (1986) argues that the policy will be difficult to implement given the number of administrative agencies required to participate in the program, as well as the need for legislative approval of any proposed action to protect instream flows.

Finally, after a considerable amount of involvement by affected parties and the general public, a bill was introduced in the 1989 Montana legislature to allow the state Department of Fish, Wildlife and Parks to lease water rights from willing offstream water users to increase flows in dewatered streams (HB 707, 1989). From a technical perspective, this proposal was potentially effective and protected existing water rights. However, it was overwhelmingly opposed by the agricultural community, died, but was resurrected during the final days of the legislative session. A modified bill finally passed and was signed into law, but is likely to be only marginally effective in providing water for fish and wildlife since it is a pilot program (four years) and limited to no more than five stream reaches (McKinney, 1989c).

In contrast to these and similar problems in formulating programs and policies to provide water for wildlife, several western states have developed statutory instream flow programs, including Alaska (AS 46.15.145), Colorado (CRS 37-92-102(3)), Idaho (IC 42-1501), Montana (MCA 85-2-316), Oregon (ORS 538.300), Utah (UC 73-3-8), and Washington (RCW 90.22 and 90.54). However, as

explained below, implementation of these programs varies and depends on a variety of factors.

Policy Implementation Efforts

According to McKinney and Taylor (1988a), Colorado has acquired over 1,000 water rights for instream flow purposes, while Oregon and Washington have both acquired and hold over 400 instream water rights. Montana has established nearly 100 water rights for instream uses, Idaho 35, and Alaska and Wyoming have acquired less than 10 instream flow water rights. Utah has yet to acquire any water rights under their statutory instream flow program.

Although the protection of instream flows is well under way in the West, McKinney (1989a) observes that such efforts are based less on ecological and scientific needs than organizational and political forces. An examination of the implementation of instream flow programs in Colorado and Washington reveals that the principal variable shaping implementation in both states is the organizational disposition of the implementing agency—that is, the agency's predisposition to aggressively implement an instream flow program in light of their traditional mission, constituents, and standard operating procedures.

The dispositions of the agencies in Colorado and Washington, however, are polar opposites (McKinney, 1989a). The implementing agency in Colorado has adopted a relatively conservative approach to implementing the state's instream flow program, due primarily to the role of offstream water users on the agency's governing board, and its tradition of supporting water development. In contrast, the implementing agency in Washington, driven by an environmentally-oriented staff with considerable autonomy, along with other organizational mandates to protect the environment, has aggressively implemented Washington's instream flow program.

While organizational disposition has been the driving force behind implementation in both states, this disposition has been affected by a variety of political forces (McKinney, 1989a). In Colorado, offstream water users, as the traditional constituency of the implementing agency, have utilized both legislative and administrative channels to constrain and mold implementation of the instream flow program. In Washington, by contrast, conflicting interest groups have had only minimal effect in shaping the implementation of the instream flow program. Instead, general public sentiment and constituent groups have created an atmosphere of support for the instream flow program in Washington. Moreover, the courts have established a judicial mandate for the protection of instream flows in Washington in response to lawsuits initiated by Indian tribes. In contrast, general public opinion and constituency groups have not significantly influenced the implementation of Colorado's instream flow program.

In both Colorado and Washington, ecological needs and scientific information have taken a back seat to political pressure. The primary strategy adopted in each state to protect instream resources, to claim water rights, has limited the degree of conflict and controversy since it results in junior water rights that threaten very few, if any, existing water right holders. As mentioned above, this strategy is designed to maintain existing, unappropriated water for instream uses.

McKinney (1989b), however, argues that this is not an effective strategy to protect instream resources in the long run because the primary problem with instream resource management, from an ecological perspective, is how to increase flow in dewatered streams—not how to maintain existing flows which may or may not be sufficient to protect the resource. Although Colorado has incorporated a strategy to increase flows in dewatered streams by transferring existing offstream water rights to instream uses, it has been sparingly used because traditional offstream water users fear that it will threaten their water rights. Washington has only recently addressed this issue.

Although Colorado has acquired over 1,000 water rights for instream flow purposes, the acquisition of these rights appears to be based more on the potential level of conflict and controversy than ecological needs and scientific information. Most of the instream flow water rights in Colorado are located high in the watershed, where there is little, if any, threat to either fish and wildlife reserves or existing water users. In addition, as mentioned above, there have been relatively few attempts to increase flows in dewatered streams, a significant ecological need because of the likely resistance from agricultural and often traditional water users. In Washington, instream flow protection appears to be based more on ecological needs and scientific information given the general atmospheres of political and administrative support for the program. However, as mentioned above, Washington has only started to address the more ecologically important and politically sensitive issue of increasing flows in dewatered streams.

The primary message of this brief discussion is that efforts to provide water for fish and wildlife are conditioned by a host of institutional and political variables. Although the science and ecology of instream flow protection are generally accepted, efforts to protect and enhance instream flows are resisted by traditional water users, water development agencies, and other parties affected by this newly recognized use of water.

Conclusion

Recent efforts to provide water for fish and wildlife in the West illustrate that new interests and values can be integrated into existing legal and institutional frameworks for managing natural resources. However, these efforts also illustrate that, while certain programs and policies may be ecologically and scientifically justifiable, they may be unworkable if they are unacceptable to affected parties and the general public.

Two recommendations emerge from this observation on how to integrate science and politics in fish and wildlife conservation. First, there is a need to develop planning and policymaking processes that allow affected parties to jointly shape programs and policies proactively, before full-blown disputes emerge and parties become polarized. Such processes should be based on the principles and techniques of environmental dispute resolution, and should provide the opportunity for collaborative problem solving and decisionmaking (McKinney, 1988b). Compared to traditional planning and policymaking processes, collaborative problem solving

processes are more likely to result in an appropriate integration of science and politics by: (a) promoting the sharing of values and interests, (b) encouraging joint fact finding, and (c) focusing on the issues and concerns raised by the parties. The outcomes of such processes are also more likely to be implemented given that all affected parties have participated in the process.

The second recommendation is that resource managers and administrators need more training in public involvement and conflict management. In several areas of wildlife conservation and management, scientifically and ecologically justifiable plans and programs are opposed by affected parties who have not been adequately involved in their development. While ineffective planning and policymaking processes are part of the problem, most resource managers and administrators have had little, if any, training in public involvement and conflict management. They not only resist the public telling them how to do their job, but also lack the essential tools for effectively involving the public and resolving complex, multi-party disputes.

Instream flow protection, as well as other wildlife conservation goals, are more likely to be achieved in the future by increasing the communication, cooperation, coordination, collaboration, and consensus among affected parties, resource managers, and policymakers.

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