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Mediating socio-political barriers to water quality improvement in surface water on grazed wildlands

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Introduction

Acute and growing social and legal conflict over regulation of non-point source pollution in Washington State has hampered proactive efforts to improve water quality in streams dominated by grazed watersheds. Livestock farmers caught in the conflict over water quality experience legal risk, reduced quality of life, and financial risk. Nonpoint source pollution is “pollution that is not released through pipes but rather originates from multiple sources over a relatively large area”. This diffuse pollution is notoriously difficult to regulate. Because causality is often not definable, coercing behavior is problematic, and most efforts to address nonpoint source (NPS) pollution rely on promoting voluntary practices. Washington State University Extension, in partnership with the National Riparian Service Team and conservation districts, developed a water quality risk assessment outreach program to focus livestock managers and regulators on the drivers of riparian function and water quality, riparian and upland health rather than sporadically collected water quality monitoring data (Hall *et al.*, 2014). The goal of this long-term outreach has been to influence both regulatory philosophy and farmer behavior. Cooperative Extension has operated as a classic boundary spanner organization (Guston, et al., 2001), (Carr and Wilkinson, 2005), facilitating social interaction in the policy/science/social conflict of water quality in grazing areas. The boundary-spanning role is likely even more critical toward behavior change outcomes in natural resource conflict than the land grant university’s role as source and interpreter of scientific information.

Boundary spanner organizations and individuals “exist at the frontier of the two relatively different social worlds of politics and science”, interacting with principal actors from both sides of the boundary, in order to create a “site of . . . co-production, the simultaneous production of knowledge and social order” (Guston, 2001, p. 401). They have three defining characteristics: “1) they help negotiate the boundary between science and decision-making, 2) they exist between two distinct social worlds with definite responsibility and accountability to both sides of the boundary, and 3) they provide a space to legitimize the use of boundary objects” (Cash, 2001, p. 439). Boundary-spanning individuals are called to exercise cultural awareness in order to see past surface words and gestures to the underlying beliefs and values which are the true seat of behavior; they then exercise diplomacy to bridge this cultural chasm toward a mutually beneficial end.

Materials and Methods

Challenges: The challenges to productive social interaction between environmental regulatory authorities and livestock farmers are numerous. Roots of the conflict are less about differences of opinion over environmental outcomes and more about a clash of worldviews. In fact, some common agreement over environmental outcomes was the genesis for creation of a key boundary object, a water quality risk assessment for grazing areas produced by WSU Extension. This document, a scientific model of sorts, facilitated cross-cultural communication and progress toward behavior change. Detailed here are some of the substantive and socially significant barriers which serve to define the subcultural boundary lines, lines grounded in beliefs and values, not just varying interpretations of scientific information.

Philosophy of stewardship: Environmental regulators often have little experience with or familial affinity to the agriculture subculture. This results in a strong intrinsic social barrier between subcultures and individuals prior to formal, personal contact between a livestock farmer and regulator which manifests as interpersonal conflict and failure to persuade the farmer toward behavior change (the entire purpose of the contact).

Farmers have a different view of property rights than environmental regulator community, a view that resists being coerced to manage private land toward public benefit (Caldwell, 1974). They do not resist generating public benefits such as ecological goods and services – they resist coercion of production. Use of surface water is both a public and private good. Landowners have the right to use surface water, within the boundaries of each state’s water law, for private benefit, such as irrigating crops and watering stock; but surface water is also a public good, and users have the responsibility to protect the quality of water for other users.

Farmers believe that they are granted wide legal latitude in the use of private property and are understandably resistant to efforts to curtail certain uses such as riparian grazing or watering stock directly from a stream, a practice which is also protected by state law in Washington (RCW 90.22.040). The regulatory community may see land use more like a (Western) water right, in which the water right holder does not own water but is permitted by the state to put such water to beneficial use. This idea of land use as a usufructuary right dates to the conservationists of the 1800s but gained popularity in the 1970s (Caldwell, 1974). Farmers believe that they bear responsibility to take care of the land, that care is necessary for sustained profit in agricultural enterprise, and that the owner of land can make better decisions about the proper use of land than the government.

Legal: Both state and federal laws provide support for nonpoint source regulation, but Washington State's pollution control law establishes a legal basis for a zero tolerance policy, even though zero is rarely attainable in a wildland setting.



Fig 1. Willows are recovering in this grazed riparian zone in response to changes in timing and duration of livestock use, resulting in enhanced sediment capture, channel development, and stream access to the floodplain.

Management differences: Because NPS water quality improvement relies on voluntary practices, the regulatory authority must attempt to persuade livestock farmers to change behavior. Livestock farmers are resistant to the idea that normal grazing activities on agricultural and wildland ecosystems can result in water quality impairment. They perceive that livestock-related pollutants such as sediment, bacteria, nitrogen, and phosphorus may not be an ecological problem at low levels, i.e., do not cause either riparian or aquatic ecosystem dysfunction because they are natural substances which are only a problem when they are present in the wrong amounts or in the wrong place. Farmers recognize that these low levels may exceed regulatory thresholds established to protect human health. We may call this the chemical cleanliness v. ecological function dilemma.

Livestock farmers make decisions on riparian management based on a large suite of factors: livestock movement logistics, pasture design and limitations, habitat objectives, water supply and timing, forage conditions on adjacent uplands, and more. The regulator typically believes regulatory considerations trump all others. This is confounded, however, by the real regulatory and scientific uncertainty as to what conditions and practices contribute significantly to pollution in a non-point setting

Results and Discussion

WSU Extension focused on persuading instead of informing in order to change behavior in both groups through an extended period of interaction with producers and regulators grounded in mutual trust and common goals. WSU Extension is unique in that the institution, by definition, is tasked with creating and interpreting and applying new scientific information (Cash, 2001).

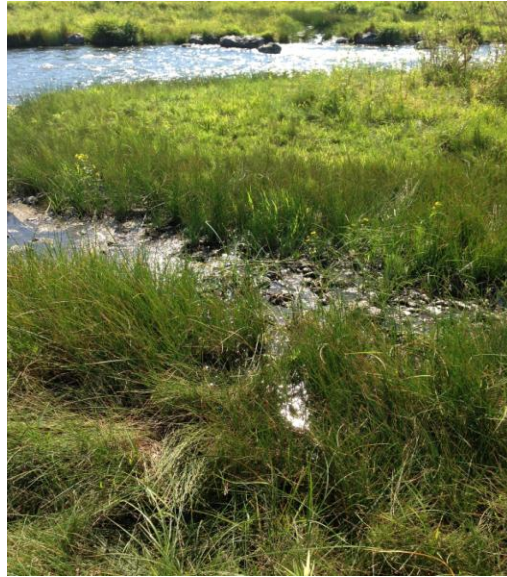


Fig 2. A grazed Intermountain West riparian zone

Conclusion

The tenor of dialogue has become more cooperative, both sides of the boundary have acknowledged the complexity of this issue, and both have embraced the necessity of site-specific solutions. The content of dialogue and newly drafted regulatory guidance allows that well-managed livestock grazing in stream zones may be sustainable if done well, where ‘done well’ is results-oriented, i.e., sustainable grazing is that which maintains riparian proper functioning condition and upland health.

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