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Exploring Nonprofit Views on Water Management and Conservation Strategies

by

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A thesis submitted in partial fulfillment of the
requirements for the degree of

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in
Geography

Thesis Committee:
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Abstract

Valuing water resources presents a multitude of methodological and theoretical challenges, including economics, biodiversity, and cultural significance. Information is not readily available on the individuals working every day on water resource management and how they navigate such a complex topic. This project is designed to help all parties better understand the opinions of individuals working for nonprofit organizations and Watershed Councils in the State of Oregon about current methods of water resource conservation. The results reflect respondents' personal views on the process and practices of valuing water and are designed to prompt deeper discussions between the organizations, communities, and policymakers.

A survey on water valuation and conservation strategies was distributed to 134 individuals working in organizations throughout Oregon that focus on water resource conservation. 55 respondents provided information on their project locations and/or focal areas, which offers an overview of the regions represented in the survey results and geographic impacts on their work. Some notable findings include strong interest in valuing water beyond monetary terms, a consensus that non-human and cultural needs require more attention, and limited use of market-based conservation strategies in practice. There is an emphasis on restoration, agriculture, and fish with significant concerns for climate-driven changes to water supply. The similarities in responses demonstrate opportunities for increased collaboration and support for redefining the value of water while navigating the tension of working within a neoliberal economy.

Dedication

For my nephew, Christopher,

Your generation deserves better.

Acknowledgments

Thank you to my advisor, Alida Cantor, who reassured me early on she was here to help me achieve my academic goals and worked with me through three years of roadblocks. To my committee - Hunter Shobe, you have amazing teaching skills and insight. Melissa Haeffner, you have unparalleled efficiency providing advice.

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To my family for their love and support throughout my life and our outdoor adventures, though hikes with my brothers now include lamenting back pain. To Kodi, who has stood by me 25 years and counting. To Tai, my supplier of Wawa coffee and weird Delaware news. To Breck, who insisted I was capable of moving and returning to grad school. To Jennifer – my Golden Girl, thank you for being a friend. To Lis, my Work Bestie through all the stress. To Matt, for patience with my scattered attention between work and school. To Thien-Kim and Jillian for their friendship and encouragement as I navigate life on the left coast. To Eli, Ellie, and Abby, for companionship past and present, and always putting the “more” in non-human.

To the rivers and lakes who inspire me and listen as I talk through my ideas while hiking or camping along your banks – Thank you for sharing your wisdom.

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Land Acknowledgment

Portland State University is located in the heart of downtown Portland, Oregon in Multnomah County. We honor the Indigenous people whose traditional and ancestral homelands we stand on, the Multnomah, Kathlamet, Clackamas, Tumwater, Watlala bands of the Chinook, the Tualatin Kalapuya, and many other indigenous nations of the Columbia River. It is important to acknowledge the ancestors of this place and to recognize that we are here because of the sacrifices forced upon them. In remembering these communities, we honor their legacy, their lives, and their descendants.

INTRODUCTION

Water is vital for the survival of every living thing on the planet and finding successful ways to equitably share water resources for all human needs, as well as plant, animal, and long-term conservation requirements, has become increasingly important. Water bodies themselves suffer or cease to exist without proper management – a striking example is the Colorado River now dries up before reaching its delta (Gerlak et al. 2013). Many would agree that water resource management needs creative, cooperative solutions, yet the form of those solutions varies widely. For addressing issues of water quantity and instream flow, water conservation efforts may include financial strategies such as buying, selling, and leasing water rights in efforts to ensure more water stays in the rivers. Other strategies use less market-based approaches, such as passing regulations or even granting personhood rights to rivers. Additional approaches are integrated to address water quality, and range from education campaigns, to ecosystem restoration and maintenance, to legal actions. Each strategy represents a different perspective on how water should or could be valued and managed.

The purpose of this study is to better understand the opinions of individuals who work in nonprofit organizations or with Oregon's Watershed Councils about current methods of water resource conservation. Watershed Councils are community groups which work with local, state, and federal partners along with private landowners within a specific watershed to preserve and repair the water within it (Oregon.gov). Oregon was selected as the study region due to its nearly forty years of experience managing the legal and financial aspects associated with water rights for instream flow. The existing water markets are established well enough to utilize with confidence. This eliminated hesitance

due to the uncertainty of new markets as a reason they are not more widely used by survey participants (Neuman, 2004). Diverse landscapes throughout Oregon create a range of natural and manmade water management challenges. The climates range from cool, breezy coastal regions with temperate rainforests to the snowcapped Cascade Mountain Range to the hot, arid, high desert region with abundant sagebrush covering much of southeastern Oregon. This diversity provided an opportunity to examine potential influences from multiple geographies and climates (Highsmith and McNamee, 2023). Figure 1 shows an array of landscapes around the state to illustrate this variety.

In this research, I conducted a survey of individuals who work in nonprofit organizations or with Oregon Watershed Councils to learn about their views on financial solutions to water conservation, valuing water in monetary terms, regional threats to water bodies, and strategies that they utilize other than market-based options. The goal was to prompt a closer investigation into how water is valued and managed. In critical academic literature, there is growing interest in moving away from an anthropocentric and market-based focus in planning and valuation. There is increasing discourse on non-consumptive value and evaluating the colonial and paternalistic aspects of water markets (Watanabe et al. 2006; Robertson and Wainwright 2013; Kopnina 2016; McShane 2016; Collard and Dempsey 2017; Kay and Kenney-Lazar 2017a; Kay and Kenney-Lazar 2017b; Kay 2018; Kopnina et al. 2018). It is unclear how well, if at all, these scholarly concepts have been translated outside of academia and into the actual work of water conservation (Bakker 2012). This research assesses how nonprofit employees and members of Watershed Councils approach critical issues of value and market-based environmental conservation.

Figure 1: Oregon Landscapes

Top Left: Wilson River, Coastal Range.
Top Center: Willamette Valley along I-5 corridor.
Top Right: Mt. Hood National Forest in the Cascade Mountain Range.
Bottom Left: Oregon Badlands in the High Desert region.
Bottom Center: Columbia River Basin.
Bottom Right: Aerial view of agriculture on the western edge of the Blue Mountains.
Source: photographs by Jillian Farley

Overall, this study broadens conversations on water conservation by creating opportunities to bridge the gaps between academic discourse and on-the-ground practice. Scientific communication needs ongoing progress between the Academy, water conservation advocates, and communities. I hope to create an opportunity to discuss different strategies, including water markets and their alternatives. This study recognizes the benefits of focusing attention on "real world" applications. Through this research I explore nonprofit perspectives on water conservation, as well as challenges and barriers to change.

This study was prompted by the theory that participants would have similar reactions and responses regardless of region or specific project goals. Key takeaways support this theory, starting with a strong interest in valuing water beyond monetary terms and a consensus that non-human and cultural needs require stronger attention. The survey was designed to explore opinions on market-based conservation strategies. Its findings revealed that such strategies are limited in practice although the responses did reveal similar thoughts on the negative aspects of placing dollar signs on water resources mixed with the possible benefits. There was greater emphasis on restoration, agriculture, and fish with substantial concerns for climate-driven changes to the water supply. The similarities in responses demonstrate opportunities for increased collaboration and support for redefining the value of water.

LITERATURE REVIEW

Background

Water markets have developed for nearly forty years in the State of Oregon; its political system allowed for water laws to evolve into a system which was primed for the creation of the first water trust in 1993. The pivotal moment was 1987 legislation on instream flow rights, which allowed priority for withdrawals to retain the water rights' current seniority status even if transferred to another person or entity. This action created a quantifiable value suited to financial markets. There are other key moments in the state's history, but 1987 was the one that truly shifted the approach to water management (King 2004; Neuman 2004; Neuman et al. 2006).

Through this legislation, the land trust model and use of conservation easements, which transfer ownership or control of a natural resource to a non-profit or non-governmental organization for management and maintenance, expanded to water trusts and wetland conservation. The water trust then applies in-stream flow or ecosystem protection as the beneficial use for the rights. Leasing water rights to a water trust allows the water rights holder to maintain those rights without risking forfeiture from abandonment claims if they lack a current need for the water (Cole 2000; King 2004; Bates 2014). Although this process may sound complicated, it is straightforward in practice aside from the challenge of determining the monetary value for the market transaction. The practice of leasing to water trusts played a key role in developing water markets and the associated financial aspects of water management. While water trusts

have done a great deal of good in preventing waste, they have had the unintentional side effect of encouraging the commodification of water (Neuman 2004).

Critical Geography

The issue of water trusts and water markets is grounded in broader critical scholarship examining market-based environmental management tools and monetary values of ecosystem services. Several scholars have sought a greater understanding of how water trusts work to better connect their relationship to water markets and potential for valuation outside of neoliberal methods. Water trusts help keep water in the rivers, which has a range of benefits including ecosystem health, thriving fish populations, and preservation of the water flow. All these benefits align with assigning value outside of neoliberalism, but there is concern growing use of market-based conservation will overshadow alternate values (King 2004; Ng and Eheart 2005; Netusil and Summers 2009; Klitgaard and Krall 2011; Alam 2013; Bakker 2014; Kay 2018). Critical Geography has taken on the challenge of addressing how to determine value, and whom that value benefits, which are rarely mutually exclusive concerns.

Marxist concepts show up repeatedly in scholarly literature on valuing nature as a framework for examining the unpaid labor provided by natural resources (Collard and Dempsey 2017). Water, and essentially all ecosystem services, are unpaid labor for economic growth. Consumptive uses take and give nothing back while creating economic gain for humans. The U.S. property rights system is ideal for exploiting this, although it also creates opportunities to utilize the system for conservation finance (Kay 2018). If

assigning a monetary amount is the goal of valuing water, one must determine the value of water's unpaid labor (Robertson and Wainwright 2013).

From a political ecology perspective, it is necessary to know that unpaid labor's economic value to advocate a transition into intrinsic value. Discussions between different institutions have gone in circles over the years trying to define value in relation to nature and what is the source of the value, particularly if the aspect of nature in question has multiple uses with different economic benefits. This has led to conflicting definitions and a question of if value always exists in relationship to something else (Robertson and Wainwright 2013). If one entity's value is always in relation to a separate entity or use, that may eliminate any prospect for developing independent value, which ties into the ethical considerations discussed in the following section. Setting aside the question of nature's intrinsic value, government agencies have made a strong case for why they need to put a dollar amount on resources such as water to properly regulate it within their current systems (Robertson and Wainwright 2013).

Assigning value has been considered unnecessary at times, with "unnecessary" being a euphemism for difficult or inconvenient. This debate is what prompted bringing in Marx's theories on valuation despite misconceptions surrounding it (Robertson and Wainwright 2013), and Marxist discourse spread throughout critical geographic scholarship on valuing nature. The discourse frequently centers on the concept previously mentioned of unpaid labor and the "work" done by non-humans such as animals, plant life, or water. This offers a route to compare those things to economic gain or loss, therefore also regarding the potential economic impact of regulations. A unified value theory, should one be achieved, would allow interdisciplinary comparisons and policies.

It has been argued given the increasing strain on ecological resources that it is imperative social scientists collaborate to build a framework to define value (Kay and Kenney-Lazar 2017a).

This collision of economics, free labor of nature, and who benefits from the surplus value created by nature and allowing it to absorb costly externalities leads to more questions than answers, the majority of which center on who is assigning the value or suffering the repercussions. It raises debate around how businesses are impacted by paying the cost of environmental degradation if the environment has a value assigned or who must otherwise absorb the cost of that degradation either economically or physically. Existing political and corporate power structures receive the highest benefit from not placing a capitalist value on nature of any kind. This provides them greater control to shape the narrative around value and suppress efforts to further define it. Setting aside the power structures, there is still the ongoing challenge of how to assign value, which is a discussion seemingly going in circles, at times attempting to work within neoliberal constraints and at others debating how valuing nature essentially devalues it (Collard and Dempsey 2017; Kay and Kenney-Lazar 2017b).

Ethics

There is ample discourse in academic journals debating appropriate valuation methods (Vucetich et al. 2015), colonial and paternalistic aspects of water markets and conservation easements (Owley 2011), and critiques of focusing value on anthropocentric needs (Kopnina 2016; McShane 2016; Kopnina et al. 2018) through a primarily ethical lens. Social sciences outside of Geography, particularly Anthropology, frequently debate

the differences between the rights *of* nature versus the rights *to* nature. The benefits of utilizing an anthropocentric focus in any system of valuation are questioned and analyzed from multiple angles to determine if or how those angles should be combined (Kopnina 2016; McShane 2016; Kopnina et al. 2018). Perpetuating colonialism and paternalism through conservation easements is not as much of an issue with water trusts as it is with land trusts. However, any type of ownership, even through temporary leasing, has an exclusionary impact on those unable to afford leasing additional water rights or potential to exploit rights holders in financial need (Owley 2011). The colonialist aspects of water valuation and management also come from the power structures inherent to assigning and distributing value discussed in Geography literature (Kay and Kenney-Lazar 2017b).

Other articles dive into the overall ethical implications of valuing nature either in anthropocentric terms or incorporating non-human aspects (Kawall 2010; Hulme 2014). Geographer Mike Hulme connects these ethical considerations directly to concerns about climate change and the cultural mindset. He argues solutions are based not only in science, but in esoteric concepts such as love and kindness, and points to changes throughout the world in anthropocentric views and growing skepticism of neoliberal practices (Hulme 2014). The strongest way to value and protect water beyond anthropocentric methods is to grant it legal personhood (Pecharroman 2018). Currently, the rights of water are rarely protected to this extent, although it has the profound impact of preventing transfer of ownership of that waterbody. Out of necessity, since water cannot advocate for itself, a guardian is appointed to represent its interests and legal concerns, so there is still human involvement (De Vries et al. 2019; Zenner 2020). The rights of water, and nature overall, could lead to a lengthy philosophical debate of the

extent to which it is possible to remove all anthropocentric impacts from any valuation of nature (Kohl and Walenta 2023).

Economics

Additionally, researchers and scholars have critiqued market-based environmentalism and water markets and examined these approaches through an economic lens. This includes early studies on water allocation in the Upper Klamath Basin (Jaeger 2004), economic impacts of salmon and other wildlife protection (Watanabe et al. 2006; Garrick et al. 2009; Garrick and Aylward 2012), costs of externalities (Horne et al. 2008), economic value of riparian zones and holistic ecosystem approaches (Guillozet 2015; Hansjürgens et al. 2016), and water transaction valuation (Kendy et al. 2018; Plumb et al. 2018; De Vries et al. 2019; Quintas-Soriano et al. 2021).

Market environmentalism includes five key elements: privatization, marketization, liberalization of governance, commercialization, and environmental and economic valuation. Privatization and marketization are the most relevant aspects water trusts purchasing or leasing water rights. The liberalization of state governance over water regulations made it easier to conduct private transactions. Environmental economic valuation involves full cost accounting for consumers, and corporatization allows public corporations to get involved in municipal water management (Bakker 2014). This is an extremely simplified summary, and commodifying natural resources is an enormous, complicated, and controversial process as previously discussed. State dominance over water was justified during early stages of urbanization and industrial growth, but the

associated governance practices and lack of regulatory oversight led to what some consider market failures (Bakker 2014).

Economic perspectives frequently center around criticizing the cost of externalities, such as pollution. Economists have suggested no corporation would be profitable if they had to pay for their externalities (Azqueta and Delacámara 2006; Bazin 2009; Trucost PLC 2013; Armsworth et al. 2017), and that calculating the price of those externalities would affect the dollar value of the water used. There are recurring themes throughout these academic discourses on environmental and social justice concerns such as stakeholder exclusion and disregard for cultural aspects.

There have been attempts to define monetary value for land or water trusts using willingness to pay (WTP) or willingness to accept (WTA) contingent valuation techniques. These approaches have been successful with surveying landowners adjacent to water bodies on their WTP or WTA regarding conservation easements (Nohner et al. 2018). A similar approach was taken using hedonic pricing methods, which utilized the actual sale prices of property with and without associated water rights (Butsic and Netusil 2007). This idea of hedonic pricing and WTP/WTA will be revisited in the discussion in regard to its potential for combining intrinsic, non-human, and economic value.

RESEARCH QUESTIONS

Despite the prolific research on valuing water and other natural resources emerging within academia, there is minimal work regarding whether and how nonprofit groups have implemented these critiques. In my study, I fill this gap by examining how individuals doing water conservation work utilize market-based approaches or other

strategies, and the impacts of external influences. I do so by asking the following research question:

> How do employees of nonprofit organizations and members of Watershed Councils working in Oregon think about the use of market-based tools and strategies to accomplish water conservation goals?

This research question informs a broader, theoretically-grounded conversation. By better understanding nonprofit employees' perceptions of market-based methods of resource management and their alternatives, I seek to understand:

- How often are market-based tools utilized in comparison to other strategies for water conservation, such as education, ecosystem restoration, or legal and regulatory options? In which strategies do respondents show the most interest, and what are the potential implications?
- How do individual participants in my study view questions on valuing water and their overarching implications?
- What similarities emerge between responses, and do these indicate statewide trends and/or opportunities for collaboration? How can these results facilitate communication and open exchanges of water conservation strategies and ideas?
- What influencing factors, such as physical geography (e.g. geographic location within Oregon, concerns over natural risks and hazards, etc.), impact participant responses?

METHODS

Data Collection

An email survey was selected as the most appropriate method of data collection for this study. It allowed for the broadest reach to acquire responses from as many individuals throughout Oregon as possible. Surveys do not allow for the depth and nuance of interviews, but it was determined that a larger number of responses would provide a more useful dataset to answer the proposed research questions (Montello and Sutton 2013). Questions were written based on concepts from articles in the literature review, frequent themes in current events, and ideas that emerged through personal conversations. The survey questions were posed primarily with Likert or generic scale response formats, each including a variation of "unsure/no opinion," with minimal multiple choice and open-ended questions. Questions were grouped thematically. Only the water conservation methods section was set up as a matrix grid, because this question style has multiple columns and rows and is more difficult to navigate on mobile devices. The goal was to make the survey easy to complete on any type of device and increase the response rate.

Employees and staff of all relevant nonprofit water- and wetland-focused organizations with projects in the State of Oregon, as well as Oregon's Watershed Councils, were contacted with a request to complete the survey. The list of nonprofit organizations was generated from CauseIQ.com, and the list of Watershed Councils was acquired from State of Oregon records. The organization's mission and scope of projects was used to determine relevance and exclude those who work primarily with forests or coastal regions that treat freshwater benefits as secondary impacts. The lists were

compared since many Watershed Councils are also registered nonprofits, and duplicate names were removed. Contact emails and links were gathered from information published on the websites of each organization or in Oregon's Watershed Council listing.

The survey was distributed online using Qualtrics web-based software through a link sent with an overview of the project and consent form to each organization's email or contact option listed. The length was designed to take no more than fifteen minutes unless the participant opted to spend more time on an open-ended question. The survey was distributed via an anonymous survey link; no identifying information was collected. Participants were instructed to respond with their personal views, not on behalf of their organizations. As an incentive to complete the survey, recipients were offered the opportunity to enter a random drawing to win a $50.00 REI gift card. To maintain anonymity, the final page of the survey included a link to a separate webpage to enter an email address, which did not have to be the one associated with their organization.

The survey remained open for approximately four weeks and then was closed after a full week had passed with no new responses. Initially, 134 individuals from 99 organizations were contacted by emails listed or "Contact Us" links on organizations' websites and Oregon's Watershed Councils publicly available contact information. In total, 119 contacts on the list were reached after removing bounced emails from inactive addresses. Four emails received autoreplies with new contact information, which were updated and re-sent. Out of 119 contacts, 55 responses were received, of which 46 respondents completed the entire survey for an overall 39% completion response rate.

Participants were asked to provide information on their project locations and/or focal areas to create an overview of the regions represented in the survey results. This

allowed for a comparison between the distribution and response areas to determine if there was a meaningful relationship between them to confirm a representative sample of completed surveys.

Data Analysis

Following the survey's closure, the results were exported from Qualtrics into Excel spreadsheets. Each question was totaled on its own, as well as tallied by region. These responses were grouped into the eight watershed basins utilized by the USDA Natural Resource Conservation Service in Oregon (NRC Basins), which align with county lines (Figure 2). The NRC Basins were selected for geographic regions since they are divided by counties, which creates uniformity if this research is expanded to include political divisions or census data organized by county breakdowns.

The survey results were primarily quantitative and analyzed numerically. There were two write-in "other" questions for which a qualitative data coding method was used. The additional suggestions for beneficial water use were sorted into four categories: (1) Separate wildlife and hunting, (2) Riparian/habitat/quality, (3) Climate change related/mitigation aspects, and (4) Cultural/tribal. These would be in addition to the existing twelve beneficial use categories that Oregon accepts statewide as an active use of water rights. Additional conservation strategies were sorted into the four primary categories from the provided options: (1) market-based/financial, (2) education, (3) legal/regulatory/best-practice standards, and (4) ecosystem maintenance/restoration. The full lists of additional beneficial use category and conservation strategy suggestions are

Figure 2: USDA Natural Resource Conservation Service Watershed Basins

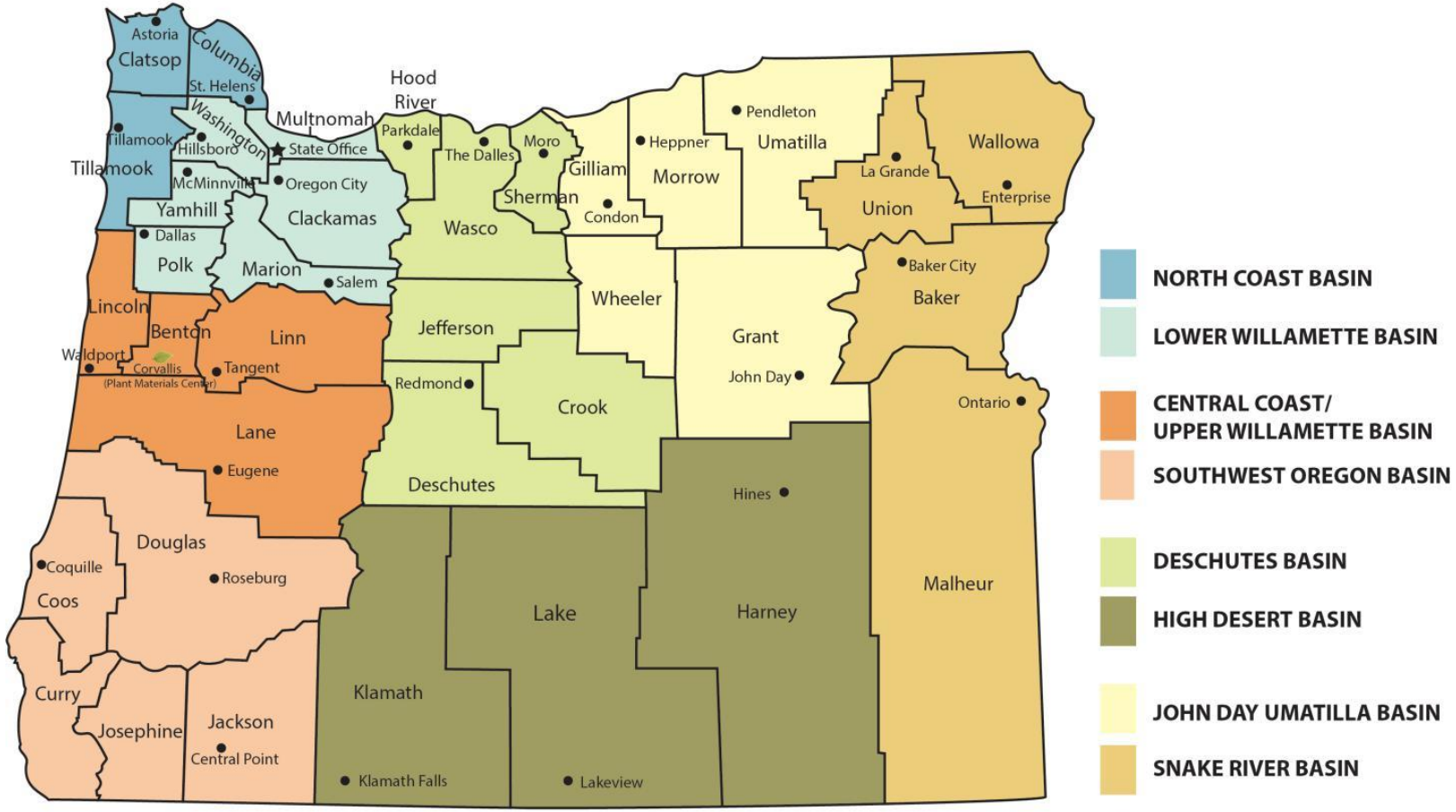

Figure 2: Map of USDA Natural Resource Conservation Service Watershed Basins in Oregon shown by basin and county. Source: USDA Natural Resource Conservation Service.

available in Appendix A. The write-in responses for risks and hazards of concern in Question 19 were varied and specific enough to merit individual attention.

The responses were converted into charts or tables for analysis, and significant relationships and points of consensus were noted to examine in further detail. Key aspects were then compared by region, with responses tallied for each basin and then evaluated for similarities and differences. In order to investigate Research Question 2, the locations of the survey recipients and locations provided in the responses were mapped to assess if the relationship between the two datasets aligned enough to consider as an influencing factor. The ratio of survey recipients to respondents was then calculated to confirm that a significant relationship existed. For additional perspective, Oregon's landcover is shown. The southeastern section, which had minimal organizations available for contacts and four counties from which no responses were received, is primarily shrub/scrubland and herbaceous (Figure 3).

RESULTS

The survey first asked respondents which of Oregon's beneficial use categories is/are considered most important within the context of their work. This provided a baseline overview for similar priorities and concerns prior to moving into the strategies and valuation questions. A large percentage of respondents across multiple regions considered the fishing and wildlife and hunting categories a priority, along with the fish and aquatic life category, although some specified these categories should be better clarified and separated. Given the relationship between healthy fish and aquatic life populations and the capacity for fishing, it is difficult to separate the priority of the two

Figure 3: Survey Participant Locations, Ground Cover, and NRC Basins in Oregon

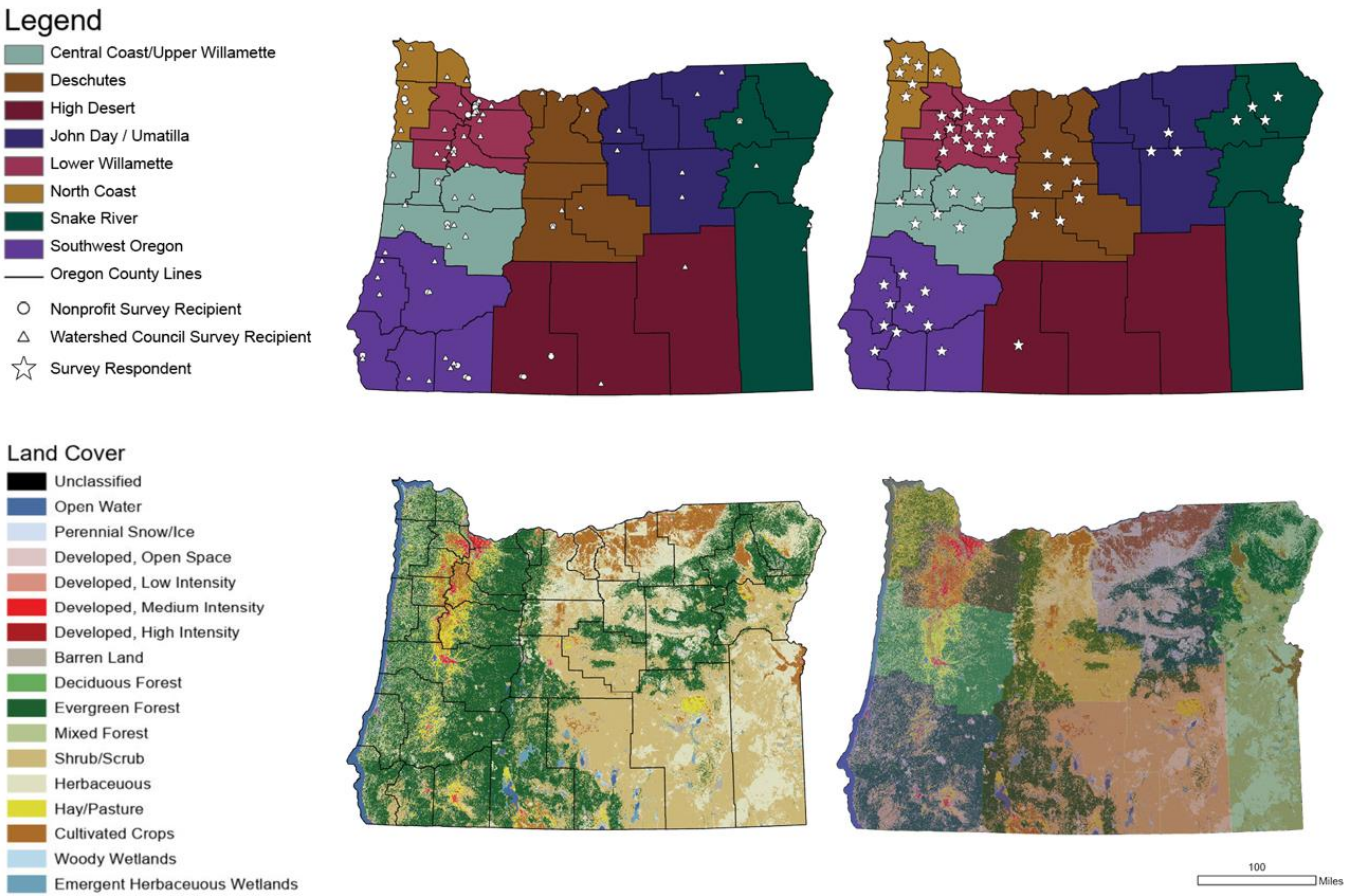

Figure 3: Locations of survey recipients (top left), survey respondents (top right), Oregon land cover by county (bottom left), and Oregon land cover overlaid on NRC Basins (bottom right). Data sources: Organization websites, USDA Natural Resource Conservation, Oregon Spatial Data Library.

categories. Domestic water supply ranked second in importance, with irrigation and livestock watering scoring close in level of priority. Approximately a third of the respondents suggested additional beneficial use categories, and key themes emerged. For instance, wildlife and hunting should be separated so that wildlife and birds not related to hunting have their own category. Climate resilience aspects such as floodplain health and wildfire mitigation should be included. Two other repeated suggestions were riparian health and habitat protection along with cultural and tribal significance (Figure 4 and Table 1).

Figure 4: Prioritizing Oregon's Beneficial Water Use Categories

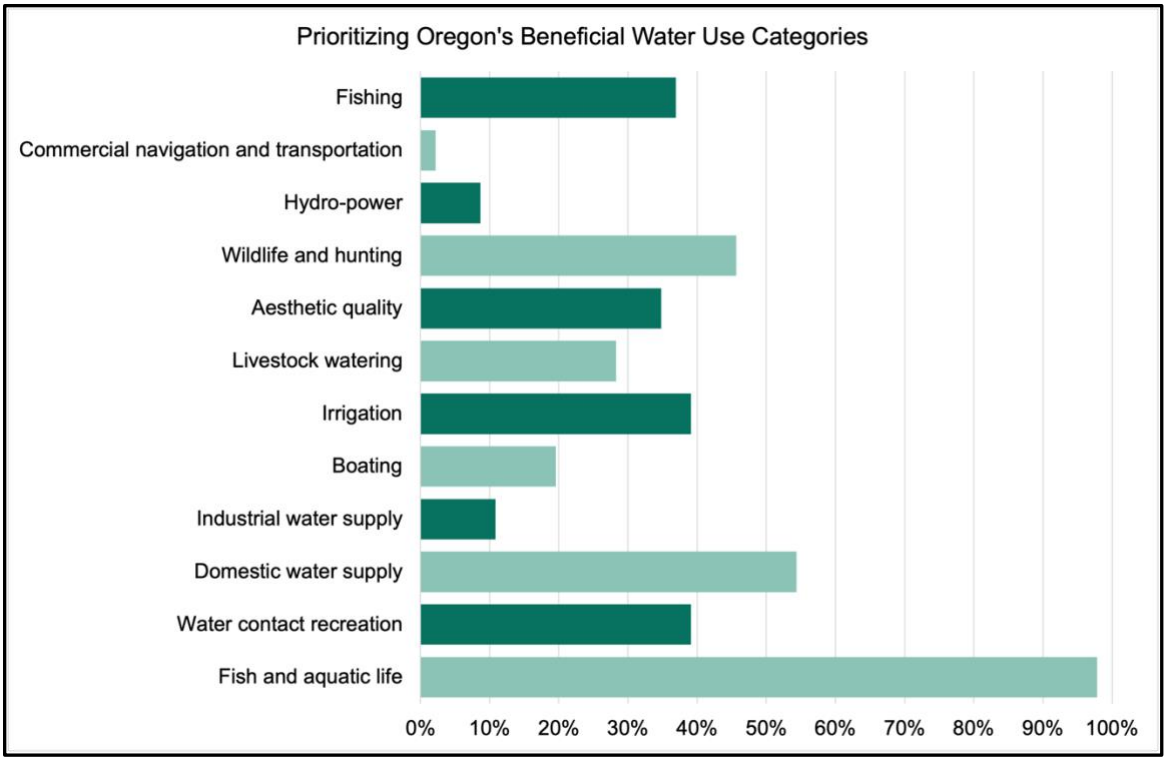

Figure 4: Responses to Question 10. Percentage of total respondents indicating the beneficial use categories they consider most important within the context of their work. N=46

Table 1: Beneficial Use Priorities by NRC Basin

The State of Oregon has 12 designated "Beneficial Water Use" categories – which do you consider most important? (Participants can make multiple selections)								
USDA Region of Oregon and number of respondents working within it:	**North Coast Basin (6)**	**Lower Willamette Basin (15)**	**Central Coast/ Upper Willamette Basin (7)**	**Southwest Oregon Basin (9)**	**Deschutes Basin (7)**	**High Desert Basin (1)**	**John Day/ Umatilla Basin (3)**	**Snake River Basin (4)**
Fish and aquatic life	100%	93%	100%	100%	100%	100%	100%	100%
Water contact recreation	67%	67%	29%	33%	43%	-	33%	25%
Domestic water supply	50%	67%	71%	56%	14%	-	-	75%
Industrial water supply	-	20%	-	11%	-	-	-	-
Boating	17%	20%	-	22%	14%	100%	67%	-
Irrigation	-	27%	43%	11%	43%	100%	-	100%
Livestock watering	-	13%	14%	22%	29%	100%	67%	50%
Aesthetic quality	17%	33%	57%	67%	14%	-	33%	25%
Wildlife and hunting	17%	47%	43%	22%	43%	100%	67%	100%
Hydro-power	-	-	14%	-	14%	-	-	25%
Commercial navigation and transportation	-	7%	-	-	-	-	-	-
Fishing	17%	33%	-	33%	43%	100%	33%	100%

Table 1: Results for Question 10. Percentage of respondents indicating the beneficial use categories they consider most important within the context of their work broken out by NRC basin. N=46

Water Management Strategies

Delving into the water management strategies is when opportunities for information sharing and collaboration began to emerge. Riparian zone and wetlands restoration was clearly the most popular strategy for water conservation. Protecting the quality of the water by utilizing the existing ecosystem's natural ability maintains the supply of available clean water without requiring constant human oversight. Out of the strategies listed, dam removal ranks closely behind restoration (Figure 5). When examined by region, riparian zone and wetlands restoration ranked first in all eight basins, with dam removal either tied at first or ranked second. After the ecological strategies, education initiatives at either the school or community levels, or both, were among the most frequently used strategies in seven out of the eight regions. This includes programs in schools, student field trips, community education centers, and/or community outreach programs (Figure 6).

The market-based and financial strategies showed the highest level of disinterest (Figure 5). The most popular strategies regarding their use or interest involved some type of partnership, such as funding irrigation upgrades as a trade for water rights or working with water trusts. The least-used options involved direct payments for water rights (Figure 5). This lack of use of market-based strategies may be due to financial constraints. Only twenty out of the ninety-nine organizations solicited to participate in the survey have an annual budget $1 million or higher, and only five of those have annual budgets over $2 million (causeIQ.com, 2022).

Strategies falling in legal and/or advocacy areas had the widest range of responses. For instance, 30% of respondents used legal and regulatory actions while just

Figure 5: Water Conservation Strategies

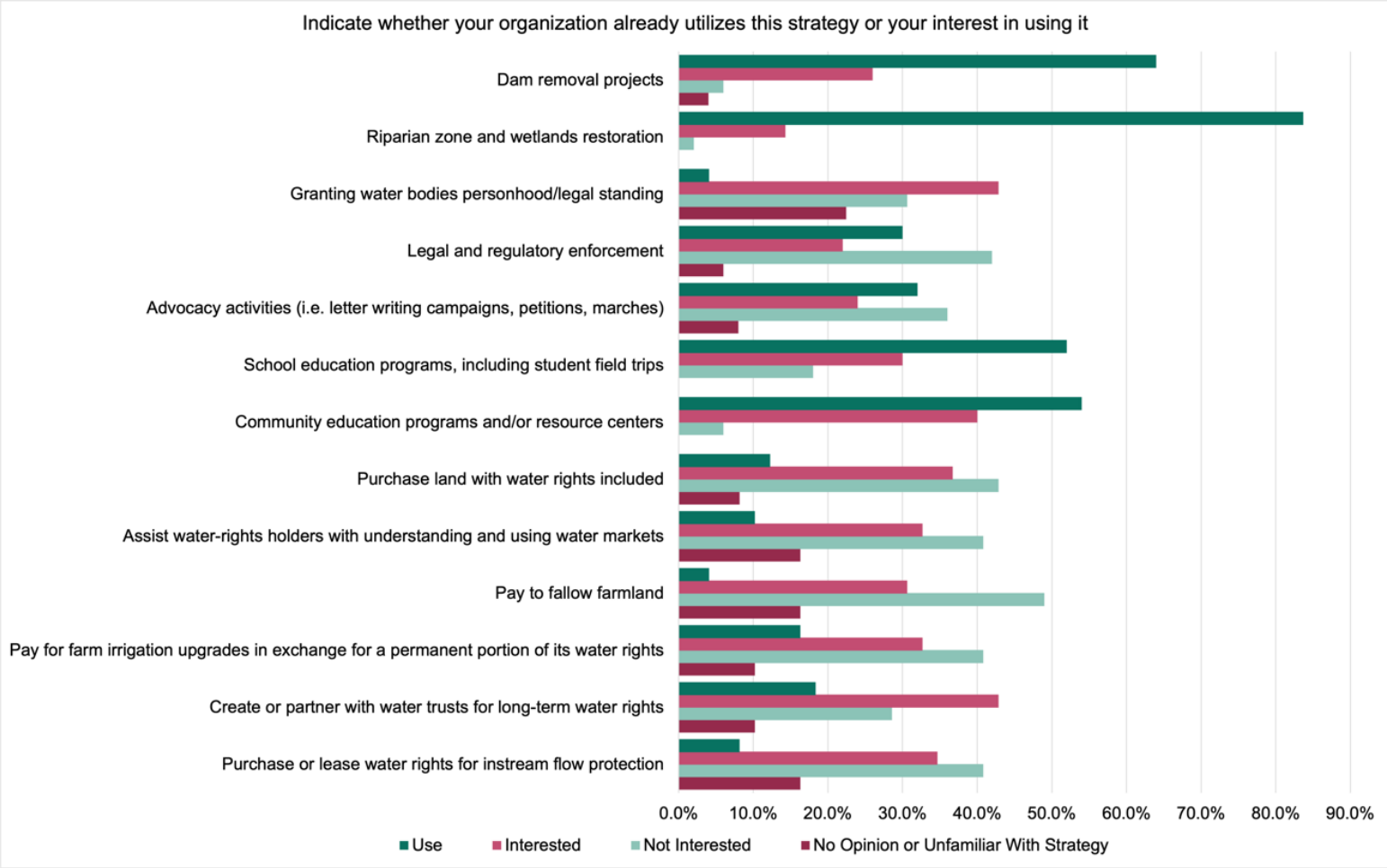

Figure 5: Responses to Question 13 on whether the respondent's organization already uses a strategy or, if not, how interested they are in that strategy. N=46

over 40% had no interest in them. Advocacy activities had a similar split in responses (Figure 5). Possibly the lack of use in this category is due to the expense of legal action and time investment. One strategy in the legal category showed significant interest from just over 40% of the respondents – granting waterbodies personhood or legal standing. This is not a new idea. There has been discussion on granting legal rights to non-human living beings for decades (Stone 2010). However, there were few successful applications to waterbodies until recently, with one of the most well-known examples being the success of the Māori community in New Zealand attaining personhood for the Whanganui River in 2017 (Zenner 2020). The interest in personhood for waterbodies demonstrates a willingness to start moving beyond applying neoliberal ideologies to nature.

Two of the statements at the end of the survey in the open-ended field for additional thoughts best summarized the importance of making this shift from a human-centered capitalist approach to valuing nature in multifaceted, non-economic ways. One respondent wrote, “I disagree with adding a monetary value to water, but I can understand why you would want to do that in our capitalist economy and when working with capitalists, but ultimately adding a monetary value to water could lead to water being the currency of the climate crisis” (Appendix C). Another respondent stated, “Water is a right for all living creatures and should never have monetary amounts assigned to it. That places it into capitalism which will never prioritize conservation over profits” (Appendix C). Both are powerful statements capturing the conflict between capitalism and nature.

Figure 6: Top 3(+) Strategies Used in Each Basin

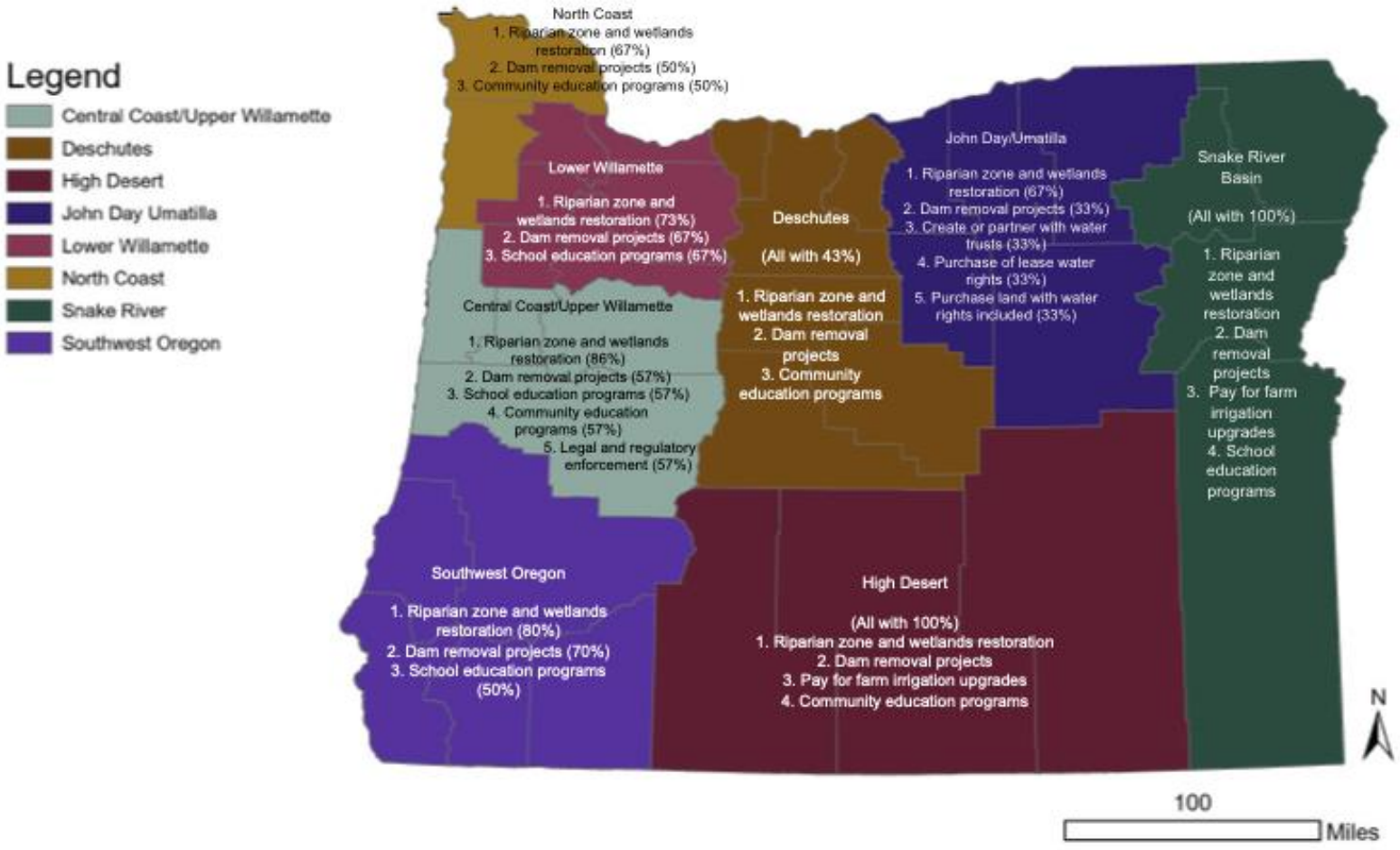

Figure 6: The top three water conservation strategies used in each basin. In the event of a tie, additional strategies were included in the basin's list. N=46

Community Dynamics in Prioritizing Water Use

To examine how valuing water impacts decision making, the survey posed questions on ways in which their community navigates competing water needs. 75% of the respondents stated their community deals with a moderate amount to a great deal of disagreement over prioritizing water use (Figure 7). The level of disagreement in each basin related to the climate and land development of each region. The drier, eastern parts of the state dealt with more disagreement than the coastal areas. Given the mix of urban development, industry, agriculture, and vineyards, which also promote tourism (oregonwine.org 2023), in the Lower Willamette Basin, disagreement over water priorities in that area was inevitable.

Figure 7: Disagreement over Prioritizing Water Use

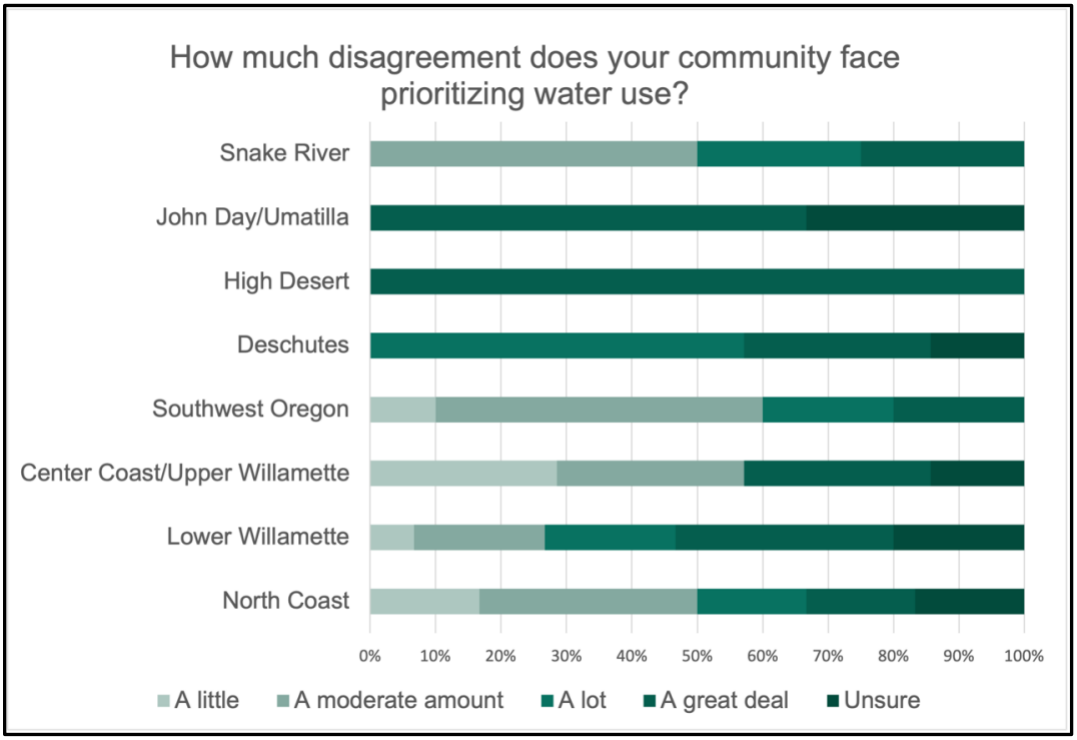

Figure 7: The perceived level of community disagreement over water use by participants in each NRC Basin.

While approximately 70% of respondents across Oregon agreed it is important to place some type of monetary value on water to facilitate communication, over 60% also stated they find collaboration more difficult when the stakeholders have different views on how to utilize monetary values. This aligns with the results of a University of Tennessee case study using land parcels set aside by The Nature Conservancy from 2000-2009 to examine the efficacy of including economic costs and return on investment calculations in conservation planning. It modeled multiple scenarios with different conservation priorities and demonstrated that the level of benefit or detriment was dependent upon the relationship between ecological benefit and economic cost (Armsworth et al. 2017). This relationship was also exemplified by another respondent's statement on how valuing water relates to planning:

> Whether to create monetary values for water depends on what the situation is. If you are providing cost-benefit ratios, the various values need to have a monetary value. But we don't need to make everything into a monetary value. Water, and other natural resources/processes are not easily valued monetarily, so we don't want to spend a lot of resources doing that if the job can be done by simply listing water benefits as co-benefits of a particular course of action. We need to be careful about jamming things that have intrinsic value, like water, into our spreadsheets when we don't have to. But using water for people does not necessarily mean other uses will benefit. They can, but it depends on how they are designed (Appendix C).

Spending resources in order to put monetary value on water and other natural resources is a key point in the above quote. Staff time is limited, and organizations must ensure they are maximizing labor resources as efficiently as possible. Overall, the majority of respondents (72%) stated that placing monetary value on water was helpful in spite of the potential to increase conflict between stakeholders.

This closely relates to the opinions on assigning monetary value to beneficial use categories. Nearly 60% of respondents stated that assigning a monetary value to water for all beneficial uses, including ones like aesthetic value, is slightly or moderately helpful when evaluating and prioritizing water management. Only 11% did not consider it at all helpful. When later asked if they thought it was necessary to assign a monetary value to water to maximize methods for water rights management, 34% somewhat disagreed or strongly disagreed. The nuance between these responses is worth noting, as it indicates that just over 20% consider assigning monetary value is helpful to some degree, even if they do not consider it necessary.

As a follow-up to the question rating community agreement on prioritizing water use, the survey asked how often the respondent's organization met with other stakeholders to discuss competing needs. About half of the participants' groups meet on some type of as-needed basis, whereas only 8% stated there were never such meetings. It was encouraging that one respondent's organization received a grant specifically to host events with their community stakeholders.

Assigning Monetary Value

The questions on prioritizing and valuing all uses and needs for water showed an interesting relationship. They were grouped in a section on valuing water, and respondents were asked to select their level of agreement or disagreement. There was a fairly even divide in responses to the statement that "equal weight should be applied to multiple water uses regardless of economic benefits." However, 80% disagreed and only 5% agreed with the statement "a higher value should be placed on human needs over

animal/aquatic life/plant needs." The first statement specifically references economic benefits, whereas the latter uses the broader term "value" which has countless possible definitions based on the water user(s) (Figure 8). Valuing water resources is a challenging topic to navigate, and a survey cannot properly capture the nuance and conflicts involved. For example, should a variable weight of importance be allocated, or would all needs always receive equal priority? If a variable weight is considered more efficient, how and when do priorities shift based on external conditions?

The difference between the two statements "It is necessary to assign a monetary value to water to maximize methods for water rights management" and "Placing monetary value on water diminishes its intrinsic value" (Figure 9) had a similar disparity to the equal weight/higher value responses. In order to gain more insight into this particular difference, the participants' individual responses were compared. Each of the two statements received fifty responses. Of these, twenty either were neutral to both, somewhat agreed with both, or were neutral to one and then either somewhat agreed or somewhat disagreed to the other. Twenty participants provided inverse responses, meaning they agreed with one and disagreed with the other to the same extent. To break that twenty out further, eight respondents strongly disagreed it was necessary to assign monetary value to maximize methods and strongly agreed it would diminish water's intrinsic value. Two respondents had the opposite opinion; they strongly agreed it is necessary to assign monetary value and strongly disagreed that it diminished intrinsic value. Those last two are perhaps the most important to note. Since they are the only two responses that strongly disagreed with the latter statement, it provides useful context to

Figure 8: Valuing and Prioritizing Water Uses

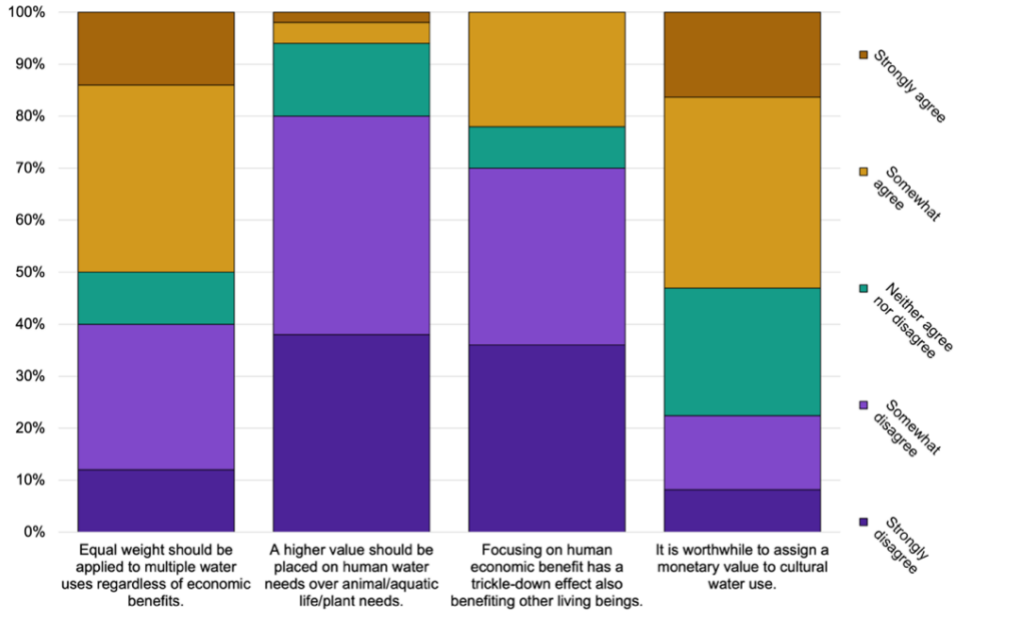

Figure 8: Results of Questions 21-24 on how much participants agreed or disagreed with statements on prioritizing water use and placing value on non-human and cultural uses.

Figure 9: Necessity of Valuing Water and Impact on Intrinsic Value

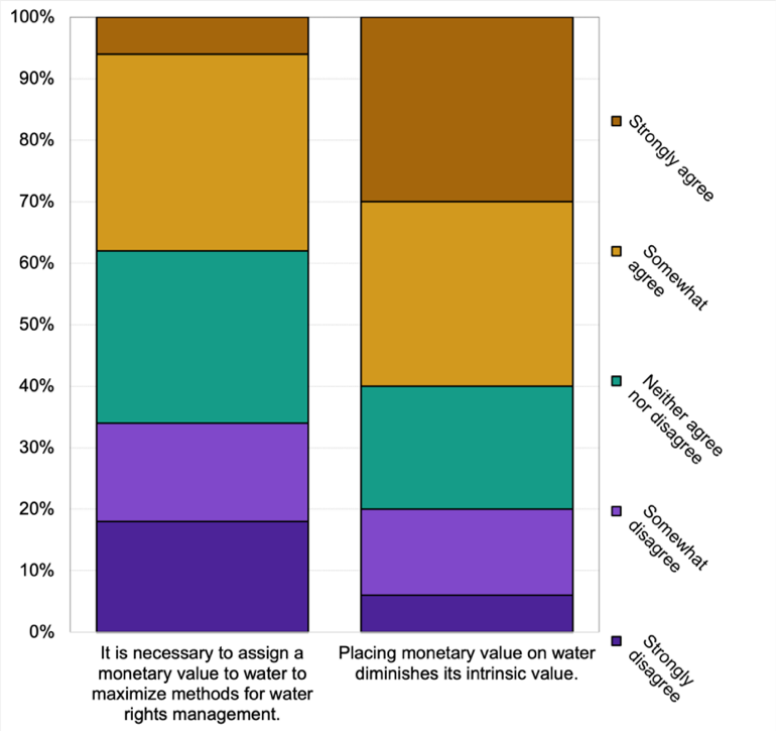

Figure 9: Results of Questions 19 and 20 on how much participants agreed or disagreed with statements about assigning monetary value to water.

see they also strongly agreed with the usefulness of assigning monetary value as it implies they do not think doing so diminishes water's intrinsic value.

The next statement in the valuation section, "focusing on human economic benefit has a trickle-down effect also benefitting other living beings," was also heavily weighted towards disagreement. 70% of respondents disagreed, just over 20% replied somewhat agree, and no one selected strongly agree (Figure 8). Economic benefit ties back to the state's Beneficial Use categories. The State of Oregon created the categories as productive uses of water eligible for allocation of water rights, and "productive" essentially meant economic benefit. This view changed with the 1987 legislation that recognized in-stream flow as a beneficial use, but also emphasized that keeping water in the rivers and lakes has enormous economic potential from water contact recreation and sport-fishing. This shift away from economic value was also evident in the survey's open-ended responses for additional thoughts, which included many comments on the needs of other living beings, the overall importance of water, and that respondents had never considered assigning monetary value to water (Appendix C).

Regional and Local Challenges

The final two survey questions asked respondents which regional or local challenges they face impacting water quantity and/or quality and if those challenges affected their choice of water management strategies. They were provided eight options to select as challenges along with a space to include their own and were allowed to select multiple challenges. Nearly all respondents (91%) selected drought. Increasing heat waves and contamination from agricultural runoff were selected by 80% of respondents.

The responses were separated by region for comparison. Those three challenges – drought, heat waves, and agricultural runoff – as well as irrigation shortages were included by respondents from all basins (Figure 10 and Table 2). On average, 50% of respondents stated the regional or local challenges impacted their strategy selection either "a lot" or "a great deal" (Figure 10).

As a final piece to identify similarities and potential opportunities for collaboration, the four categories of water management strategies, which are ecosystem maintenance/restoration, legal/regulation/best practice guidelines, education, and market-based/financial, were charted by regional challenge. Given the significant influence that challenges have on respondents' strategy decisions, this was a worthwhile comparison that revealed key similarities in their approaches. Ecosystem maintenance/restoration was the primary strategy category favored in the survey, as previously shown. That category remained favored based on regional challenges as well, along with the same heavy reliance on education initiatives. There is little variation on how frequently legal/regulatory/best-practices are used, and they continue to show low popularity with fewer than 25% of responses. Out of all the challenges, market-based/financial methods were used most heavily for addressing drought (Figure 11).

Figure 10: Regional and Local Challenges

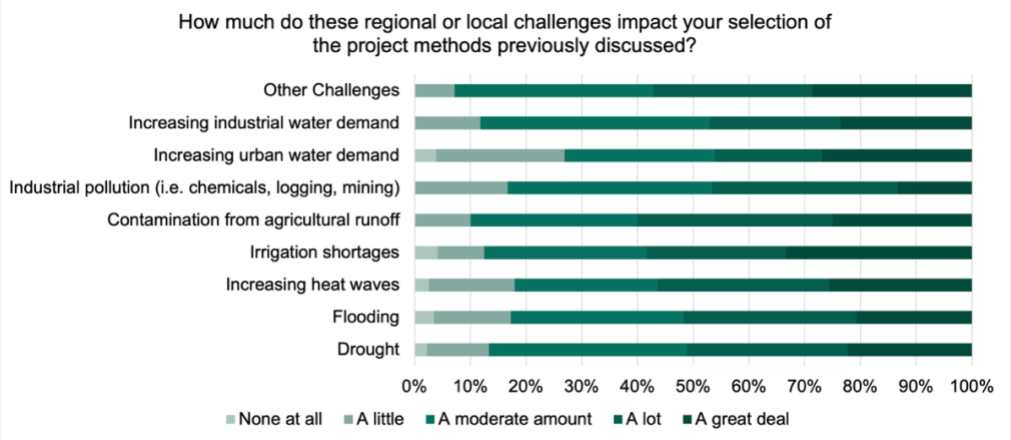

Figure 10: Responses to Question 26 asking how much the regional and local challenges, either natural or manmade, impact their water conservation strategy choices. N=46

Table 2: Assessing Challenges by NRC Basin

	North Coast	Lower Willamette	Central Coast/ Upper Willamette	Southwest Oregon	Deschutes	High Desert	John Day/ Umatilla	Snake River	Statewide
Drought	83%	79%	100%	100%	86%	100%	67%	100%	100%
Flooding	67%	79%	57%	20%	43%	0%	67%	100%	100%
Increasing heat waves	83%	100%	100%	70%	71%	100%	67%	25%	67%
Irrigation shortages	17%	29%	57%	50%	71%	100%	100%	100%	67%
Contamination from agricultural runoff	67%	93%	86%	100%	71%	100%	100%	50%	67%
Industrial pollution (i.e. chemicals, logging, mining)	100%	86%	71%	50%	29%	0%	67%	75%	33%
Increasing urban water demand	33%	64%	43%	50%	43%	0%	0%	25%	100%
Increasing industrial water demand	17%	64%	29%	20%	29%	0%	0%	0%	33%
Other	0%	21%	29%	40%	14%	100%	0%	50%	67%

Campers within riparian zones		x						
Changes to stream morphology and instream structure can decrease flood attenuation and accelerate dewatering and/or groundwater draw down in the dry season.				x				
Contamination and negative impacts to water quality from urbanization and development including stormwater runoff and riparian habitat removal		x	x	x				
Dam management that completely disrupts natural (pre-dam) river hydrologic regimes and ecology					x			
Expansion of residential communities throughout the west that exceeds current water capacity for given towns/districts				x				
Increasing agricultural demand; increasing demands for storage; increasing demands for instream flows given climate change and species extinction.							x	x
Fire/Increasing wildfires			x					x
Lack of instream flows and cold water regugia				x				
Overallocation, natural soil chemistry, cultural conflicts, misinformation, aquifer depletion, wetland depletion						x		
The summer months (usually around July/August) we begin to see steep drops in water availability. This becomes an issue for many water uses.							x	
Illegal irrigation withdraws and lack of oversight for permitted water use		x						

Table 2: Responses to regional and local challenges separated by NRC Basin and includes the written-in responses. N=46

Figure 11: Water Conservation Strategies for Regional Challenges

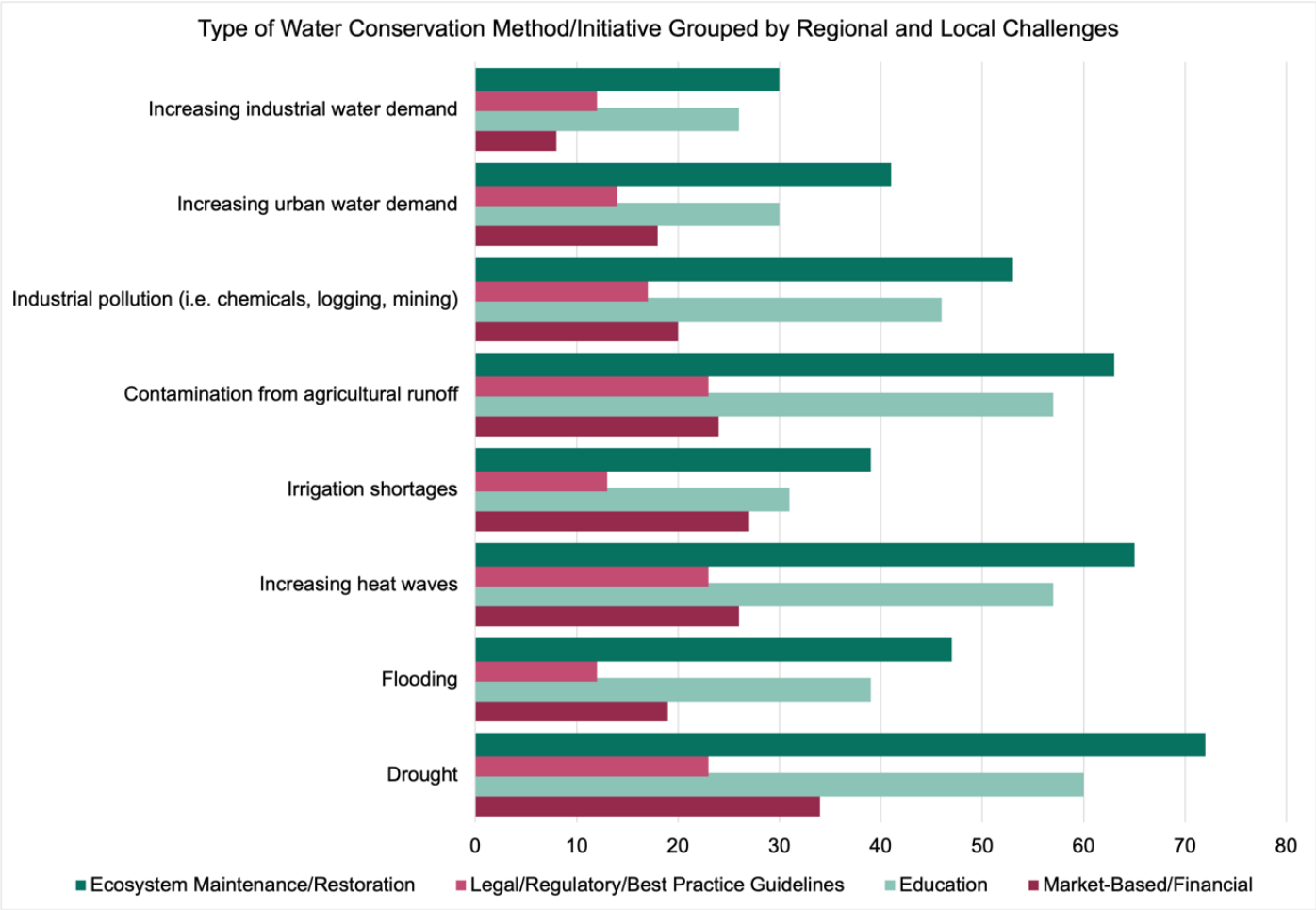

Figure 11: Frequency of use for the four primary categories of water conservation strategies based on regional or local challenge the respondents face. N=46

DISCUSSION

Influencing Factors: Drought

Although the initial focus of this study was to examine ideas on valuing water and the application of market-based strategies for management and conservation, multiple influencing factors emerged related to impacts of physical geography and proximity to agricultural, urban, or industrial areas. The results in Figures 10 and 11 showed regional challenges had a moderate to strong impact on many of the strategy choices, with drought as the most significant challenge stated by nearly all respondents. Considering drought's ability to exacerbate all other challenges, much like a domino effect moving through different ecosystems and climate zones, the widest array of water management strategies was utilized to mitigate damage caused by drought. Increasing heat waves and contamination from agricultural runoff ranked closely behind drought in both level of concern and range of management approaches, all with a heavy emphasis on ecosystem maintenance and restoration and education.

Prioritizing Ecosystems

Ecosystem maintenance and restoration projects, as mentioned, are the most frequently used category of strategies to address all challenges, and this category has the most resources available. Compared to many of the other strategies, water conservation groups are set up for success with ecological projects. The Oregon Watershed Enhancement Board (OWEB), which is a State of Oregon natural resource agency (www.oregon.gov/oweb), provides grant opportunities to fund such projects. The OWEB also supports the Network of Oregon Watershed Councils, which assists regional

Watershed Councils statewide (oregonwatersheds.org). OWEB recognizes the coming need to address aging dams throughout the state, has set aside funding for dam removal projects, and offers guidance on the process (Hoffert-Hay 2008). There are grant opportunities, and the Watershed Councils mostly focus on this aspect. This may be because ecological projects are the easiest for measuring success since tangible and measurable improvements can be seen over time. For instance, sediment and water can be checked for pollutant levels, fish can be counted, water temperatures monitored, etc. In the absence of monetary values to calculate a return on investment, this is how funders can determine "successful" use of their grants and donations.

Ecosystem maintenance and restoration are possibly less divisive than creating education programs, setting regulations, or engaging in market-based activities. "Less" is, of course, a subjective term but worth additional inquiry should this study be expanded with more qualitative research methods and inclusion of political influences. One respondent touched on the broader picture of focusing on ecosystems versus economics and the potential repercussions:

> Managing resources for economic benefit in the short-term is not equal to long-term sustainable management. Resiliency in natural resource returns requires an understanding of the biology/hydrology that isn't necessarily recognized by purely economic interests. So poor decisions in the short-term economic interest may not take into account the hidden costs associated with overlooking the politics, culture, aquifer depletion, wetland benefits, water quality benefits, recreational benefits, etc. (Appendix C).

Ecosystem maintenance does endure larger roadblocks to success when it intersects with regulatory issues. Another respondent had commented "regulators need to regulate and the DOJ [Department of Justice] needs to enforce penalties" (Appendix C).

The conflict between ecosystem protection, long-term sustainability, regulations, and financial interests is currently wrapped up in the legal system as the Biden administration and lawmakers debate what qualifies as "Waters of the United States" in regard to the 1972 Clean Water Act (Fischler 2023; Graham 2023). Allowing more pollutants into any part of a watershed will create additional need for ecosystem restoration projects. It raises the question of how the nonprofit industry can or should best utilize limited financial resources. Do they invest in legal battles in order to fight for regulations that will protect ecosystems from absorbing the damage of business externalities? Or, do they spend that money trying to mitigate or undo the damage of lenient policies? This is just a single example of how finance and conservation strategies begin overlapping and force hard choices on opportunity costs. Economics and politics find their way into all aspects of water and examination of the political influence merits further research.

Beneficial Use: Fish and Wildlife

Another overlap and potential conflict with economics is immediately apparent in another key finding of the survey. Nearly all respondents marked fish and wildlife as one of their top priorities of Oregon's twelve beneficial use categories. This category is broad and incorporates issues ranging from sport and commercial fishing to tribal and cultural uses. The fact that fish were a priority does not mean everyone is thinking about the same fish, in the same ways, for the same reason. Dams and other human interventions with natural water flows have caused enormous disruptions to riverine habitats, and as a result the restoration needs to protect different aquatic species conflict with each other. There

are multitudes of differences and nuances wrapped up in this single category of fish and wildlife. There are clear economic gains and losses for humans, measurable by sport fishing tourism and recreation revenue, seafood sales, and irrigation impacts to the agriculture industry if less water is available for withdrawal due to habitat protections. This category requires expansion of the questions and responses in the survey to put greater emphasis on valuing all of nature and potential market-based solutions to the overarching needs of non-human populations.

Value, Economics, and Market-Based Conservation

The study revealed minimal usage of market-based conservation strategies in practice. This may be the result of the abundance of immediate challenges to address. Many nonprofits may not have the budget to engage in expensive methods and projects like leasing water, and most appear to be better equipped to do smaller, on-the-ground projects (Appendix E). How do nonprofits participate if they do not have the money to buy into the market-based system (e.g. leasing land or water, paying for water conservation upgrades on farms, etc.)? There was low interest in the market-based or financial strategies, but not a total absence of interest. Of the options provided in the survey, over half the respondents selected “use” or “interested” for the Question 13 option “Create or partner with water rights trusts for long-term water rights.” Four times as many participants selected “interested” compared to “use” for the Question 13 option “Purchase or lease water rights for instream flow protection” (Figure 5). These two responses support the theory that a lack of internal funding prevents some organizations from engaging in water markets. This raises a very real concern: if nonprofit

organizations can be outpriced in water markets, how will individuals with minimal financial resources, such as small farms, survive should the free market fully commodify water?

Shifts in value, particularly stretching the idea of value beyond capitalist measures, are difficult. Such a shift requires breaking out of the dominant ideology of Western cultures and embracing a system not centered on anthropocentric needs and wants. How can this be achieved? Value(s) are implicitly worked into everything an organization does, so the question becomes how to make such value(s) explicit. Many respondents felt it could be helpful to put monetary value on nature, but that it was problematic or limiting. The statistics in the results section of this study, along with many of the written comments provided, show an interesting picture of how the participants would value water theoretically.

Fitting ecosystem services into the financial system makes it more attractive to some investors (Guillozet 2015). For-profit businesses incorporating environmental sustainability into their models want a way to demonstrate their return on investment. Leader in Energy and Environmental Design (LEED) certified buildings evaluate the cost of energy efficient appliances, fixtures with lower water consumption, etc. against utility savings and benefits which decrease costs over a period of time (Maltzman and Shirley 2011). Foundations and corporate funders typically ask for financial budgets in addition to narratives describing less tangled aspects of a project in considering grant allocations, which again is a way to measure return on investment with monetary value (Ciconte and Jacob 2009). Even altruism comes with a price tag. How can this change? Or is it already changing? There is evidence of a cultural shift with Generation-X and Millennial

philanthropists, who express much greater interest in seeing the results of their investments in tangible measures such as increased student success, more affordable residences made available for unhoused individuals, or less environmental degradation and pollution (Goldseker and Moody 2017).

The economic measurements set up under capitalism could potentially adjust for non-monetary valuation. Supply and demand curves intersect with customers' willingness to pay an additional amount for an added benefit or the amount a seller is willing to accept for a good or service. Contingent and hedonic valuations fit into these models. This is a simplification of the process, but it is currently in use for Environmental Economics with success. Opportunity also exists here to incorporate Marxist theories discussed in literature view which are frequently incorporated into determining valuation approaches (Robertson and Wainwright 2013; Kay and Kenney-Lazar 2017a; Kay and Kenney-Lazar 2017b; Collard and Dempsey 2017).

Hedonic methods, such as the varying selling prices of property with and without attached water rights, provide a possible measurement for the price of water (Butsic and Netusil 2007; Field and Field 2009). While this is just one example of an attempt to measure revealed preferences over WTP/WTA stated preferences, it indicates creative thinking for placing value water resources. Real estate property can demonstrate an enormous range of values in other areas, such as proximity to forests, water bodies suitable for recreation, or environmentally degraded neighborhoods. How does this translate to non-monetary value? Does the buyer enjoy the quiet backyard or do they value it because the animals living in it are safe on their property? Is living near a lake that is safe to swim in worthwhile for the recreation benefit or is it secondary to the

benefit of simply enjoying the water's presence? These questions are challenging to answer as real estate purchases require financial investments, which excludes part of the population. However, even if there is a financial requirement involved, it provides an opportunity to consider what the buyer truly values. Would a homebuyer pay the same price for a property if the building size was limited in order to leave more space for plants and animals? There are neighborhoods with this type of deed restriction in place available for study. Obvious outliers will exist among property owners, but it could demonstrate cultural shifts in environmental ethics and priorities.

This survey's results show a clear desire to move away from financial constraints in water management mixed with a pragmatic understanding of how deeply entrenched the United States is in neoliberal systems. Many participants felt placing a monetary value on water diminishes its intrinsic value, and that non-humans need better recognition and allocation of natural resources. Unfortunately, working within this system is still necessary, as there are a number of short-term needs that cannot be ignored, minimized, or used, either intentionally or unintentionally, against individuals trapped within the system's confines. People rely on water to generate income necessary to survive in the current macroeconomic conditions. Having compassion for those who must focus on immediate needs for food and shelter, even if the results are damaging or antithetical to long-term sustainability, is necessary to foster productive communication.

Although this survey distribution list was limited to nonprofit organizations and Watershed Councils, it did include responses from a range of geographic regions throughout Oregon that showed encouraging similarities, despite potential differences in priorities, context, politics, etc. There were not markedly different interest groups that

emerged, and this indicates the potential for statewide collaboration. Many of the same values, ideas, and opinions emerged, such as decentering human needs and the risks associated with monetary pricing for water resources.

Collaboration and Information Sharing

There was demonstrated interest in conservation strategies used by some organizations and not others, appearing to vary somewhat based on region but not in all cases. Sharing information between organizations could help them assess which strategies are the best approach for an individual organization's specific set of problems. In particular, sharing outcomes can keep organizations from trouble-shooting the same stumbling blocks. Knowledge-sharing may have particularly strong benefits in determining how to implement ideas on valuing water and navigating economic constraints.

When respondents were asked how effective they considered their strategies, one specifically wrote "effective in educating the community and building stewardship, improving the watershed" (Appendix C). The concept of stewardship is worth focusing on so that communities feel a connection to the water and its ecosystem. Education programs provide an excellent opportunity for collaboration since groups can exchange lesson plans, resources, and methods for engaging their communities in water-related topics. While not all the programs would easily transfer between regions, education initiatives could be adapted to suit the needs of different physical geographies, economic concerns, or ideologies. Organizations could create a network of information similar to open education resources used in academic settings.

Sharing information and data can be time-consuming and challenging, but it is worth the effort to communicate with other groups doing similar work. Information sharing may prevent an even more time-consuming process of collecting a set of data that already exists (Sadai and Merner 2023). Technology makes it possible to collaborate across distances that would otherwise be prohibitive. Databases could be created or incorporated into existing file sharing resources to curate a central hub with educational resources, project results, reports, survey data, etc. The key is to have collaborative, open-access information that multiple groups can use in a central location.

FURTHER RESEARCH DIRECTIONS

It is important to note the voices missing from the study results, due to the criteria of the study itself. For instance, there are a few geographic areas which would require more specific, targeted outreach. Southeastern Oregon was not represented in the results, but there were few organizations available from the survey distribution criteria. This region is sparsely populated and may require reaching out to groups beyond the few Watershed Councils or nonprofits that focus specifically on water.

In addition, the recipient list's narrow focus on nonprofit organizations and Oregon Watershed Councils inadvertently excluded community groups that are not formal 501(c) organizations. This lack of nonprofit status may be due to a variety of reasons. The processing fee could be cost-prohibitive, or the paperwork aspect may present a challenge. Such community groups may not feel that nonprofit status is necessary to achieve their goals, particularly if they do not fundraise. However, community groups may have markedly different opinions on valuing water and

prioritizing non-human needs, and therefore this study should be expanded to incorporate their perspectives as well.

The demographic information collected in the survey was to set a baseline for any expansion on this research rather than as a primary point of comparison in this study. The majority of the survey respondents were of similar ages and education backgrounds, and they primarily identified as Caucasian. Appendix D provides a full breakout of participant demographics. A comparison between the survey demographics and the demographic makeup of Oregon's nonprofit industry would provide beneficial insight into this lack of diversity. More inclusive participation would undoubtedly broaden and enhance this study's results, which only touched the surface of this subject matter.

Likewise, the data collection must be expanded with qualitative methods. Interviews would provide additional information on dealing with challenges and how the conflict between capitalism and nature is addressed. Historically marginalized groups need sensitive outreach that inspires confidence that their opinions are wanted, valued, and taken into consideration. Indigenous communities must not be treated as if their experience of caring for the water and land, which was ignored, diminished, and stolen from them for centuries, is now mandatory to share with the systems responsible for their harm. Qualitative methods such as interviews would respect the varying cultural forms of knowledge sharing.

This study was a beginning. The simple goal of the survey was to gather opinions about monetizing water and identify similar responses. It reached out to groups whose opinions have not been reflected in any of the publications on valuing nature. However,

without pursuing greater inclusion and additional perspectives, the potential impact of these results is limited.

CONCLUSIONS

The survey responses provided an abundance of information addressing the research question. First, individuals working with nonprofits and Watershed Councils in Oregon had many interesting opinions on how to value water and strategies to accomplish water conservation goals, although they do not often utilize market-based tools. In fact, the results showed less use of market-based water conservation strategies than any other option, and potential reasons ranged from lack of funds to the time involved in calculating monetary value. In conjunction with the primary research question, the study investigated how often market-based water conservation strategies are used compared to other options, influences related to physical geography, and the possible implications. The focus on ecosystems and education provides multiple opportunities for information sharing, and the even greater benefit of these two categories is the more holistic approach to problem solving.

To paraphrase Albert Einstein's popular expression, one cannot solve a problem with the same type of thinking that created it. This connects to the idea of using a holistic approach to water management as well as the survey's findings and the responses about valuing water. There was a clear preference for moving beyond human-centered approaches, including non-human needs, and valuing water outside of neoliberal monetary terms. The open-ended responses expressed a multitude of opinions on the challenges and necessity of making this shift along with a mix of frustration and

pragmatism. At the heart of the responses was the recurring theme that approaches to water conservation need systemic change in water resource valuation methods. The open-ended responses particularly emphasized a need for change which mirrored the discourse in the scholarly literature.

However, does this truly reflect the Academy's influence on nonprofit groups or Watershed Councils? After receiving the survey responses then re-examining the literature, it is more likely academic scholars are engaging in theoretical discourse based on practical examples. Robertson and Wainwright centered their paper "The Value of Nature to the State" on examples of debates between government agencies on the need to value watersheds. Kelly Kay and Miles Kenney-Lazar, in their articles, discussed the unpaid labor of nature in relation to multiple natural resource examples. The articles focused primarily on economic aspects of valuing water utilized case studies and market statistics. Without knowing in which academic fields participants may have studied, it is difficult to say how much empirical data from the economic articles or theoretical concepts from Critical Geography has reached them or influenced their decision making.

The final question under the research goals asked how these results can facilitate communication and open exchanges of conservation strategies and ideas. This brings the conversation back to the topic of science communication. As a growing and evolving field, science communication emphasizes how to tailor scientific messages to specific audiences. This can mean keeping the topic fun and engaging for school children, providing an abundance of data at a conference of peers, or giving the summarized version to the general public or industry professionals. Finding the right approach is as much an art as it is a science. These survey results provide enough preliminary

information to demonstrate the viability of fostering a communication network between nonprofit organizations.

The unique challenge of science communication is taking subject matter full of hard data and converting it into an emotional appeal that emphasizes the interconnectedness of stakeholders (Kearns 2021). If the survey participants could see the commonalties in their opinions on valuing and prioritizing nature, it would build the foundation for a bridge over these troubled conversations about water management. Growing pressure exists to meet everyone's water needs, and certain expedient solutions will damage the health and long-term survival of water sources. Forming a consortium for water conservation agencies and people who value water in similar ways could ease the way to statewide collaboration on immediate and long-term solutions for water management.

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Appendix A: Survey Questionnaire (Excluding Demographic Questions)

Q1-Q3: Description of project and acknowledgement of consent.

Q4: Age Range
- 18-25
- 26-39
- 40-44
- 45-57
- 58-65
- 66+

Q5: Race/Ethnicity
- White/European Descent
- Black/African American
- Hispanic and/or Latinx
- Asian/Asian American
- Native American/First Nation
- Middle Eastern/North African
- Southwest/Central Asian
- Native Hawaiian/Pacific Islander
- Mixed Race/Multiracial/Biracial

Q6: Gender Identity
- Male
- Female
- Non-binary / third gender
- Prefer not to say

Q7: What is your education background? (7 options are provided. You can check more than one.)
- High School / GED
- Associate degree / Trade School
- Bachelor's Degree
- Master's Degree
- Doctoral Degree
- Informal / On-the-Job Training
- Other Certification Course(s)

Q8: How long have you worked in environmental conservation? (blank text field)

Q9: What is/are your current role(s) or responsibilities? (10 options provided and an "other" field to type in your own response. You can check more than one.)
- Administrative
- Advocacy
- Board Member
- Fieldwork
- Finance
- Fundraising
- Education
- Lawyer/Legal Consulting
- Management
- Scientist
- Other _____

Q10: The State of Oregon has 12 designated Beneficial Water Use(s) categories. Which do you consider most important within the context of your work?
(The 12 beneficial use categories are listed. You can check more than one option.)

- Fish and aquatic life
- Water contact recreation
- Domestic water supply
- Industrial water supply
- Boating
- Irrigation
- Livestock watering
- Aesthetic quality
- Wildlife and hunting
- Hydro-power
- Commercial navigation and transportation
- Fishing

Q11: Are there additional water uses you think should be included in the permitted Beneficial Use list?

- Yes
- No

Q12: Do you think it is helpful assigning a monetary value to water for all beneficial uses, including ones like aesthetic quality, when evaluating and prioritizing water management?

- Not at all helpful
- Slightly helpful
- Moderately helpful
- Very helpful
- Extremely helpful
- No opinion

End of Block: Background Information

Start of Block: Water Conservation Strategies

Q13: 13 strategies for water management are listed. Please indicate whether your organization already utilizes it or your interest in using it.

	Use	Interested	Not Interested	No Opinion or Unfamiliar With Strategy
Purchase or lease water rights for instream flow protection	○	○	○	○
Create or partner with water trusts for long-term water rights	○	○	○	○
Pay for farm irrigation upgrades in exchange for a permanent portion of its water rights	○	○	○	○
Pay to fallow farmland	○	○	○	○
Assist water-rights holders with understanding and using water markets	○	○	○	○

Purchase land with water rights included	○	○	○	○
Community education programs and/or resource centers	○	○	○	○
School education programs, including student field trips	○	○	○	○
Advocacy activities (i.e. letter writing campaigns, petitions, marches)	○	○	○	○
Legal and regulatory enforcement	○	○	○	○
Granting water bodies personhood/legal standing	○	○	○	○
Riparian zone and wetlands restoration	○	○	○	○
Dam removal projects	○	○	○	○
Other strategy my organization uses:	○	○	○	○

Q14: How effective do you consider the strategies you use?

_____

End of Block: Water Conservation Strategies

Start of Block: Community Dynamics: Please respond based on your personal perspective

Q15: How much disagreement does your community face prioritizing water use?
- None at all
- A little
- A moderate amount
- A lot
- A great deal
- Unsure

Q16: How often does your organization meet with other stakeholders to discuss competing needs?
- Never
- As needed
- Annually
- Monthly
- Weekly
- Other _____

Q17: How important do you consider having a monetary value placed on water to facilitate communication and management between stakeholder groups?
- None at all
- A little
- A moderate amount
- A lot
- A great deal
- Unsure

Q18: Do you find collaboration more difficult when the groups involved hold differing views on utilizing monetary values?

- Never
- Sometimes
- About half the time
- Most of the time
- Always
- Unsure

End of Block: Community Dynamics: Please respond based on your personal perspective

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Start of Block: Valuing Water: Please indicate your agreement/disagreement on each statement

Q19: It is necessary to assign a monetary value to water to maximize methods for water rights management.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q20: Placing monetary value on water diminishes its intrinsic value.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q21: A higher value should be placed on human water needs over animal/aquatic life/plant needs.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q22: Equal weight should be applied to multiple water uses regardless of economic benefits.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q23: It is worthwhile to assign a monetary value to cultural water use.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q24: Focusing on human economic benefit has a trickle-down effect also benefiting other living beings.

- Strongly disagree
- Somewhat disagree

- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q25: Do you have any additional thoughts or reactions to these questions you would like to share?

_____

End of Block: Valuing Water: Please indicate your agreement/disagreement on each statement

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Start of Block: Geographic Details

Q26: Which regional or local challenges do you face impacting water quantity and/or quality?

8 options and an "other" field are provided. Check all that apply.

- Drought
- Flooding
- Increasing heat waves
- Irrigation shortages
- Contamination from agricultural runoff
- Industrial pollution (i.e. chemicals, logging, mining)
- Increasing urban water demand
- Increasing industrial water demand
- Other _____

Q27: How much do these regional or local challenges impact your selection of the project methods previously discussed?

- None at all
- A little
- A moderate amount
- A lot
- A great deal

Q28: I would like to collect information on participants' project focus areas to explore possible relationships between survey responses and geographic locations.

Please list the areas in Oregon (name of the river/river section, lake, city, county, watershed, dam, etc.) in which your projects focus or have previously occurred in the space below:

_____

End of Block: Geographic Details

Appendix B: Regional Listing Results from Question 28

Q28 Results: List of areas in Oregon in which participants state their projects currently or previously focused, as written by each respondent and coded by the USDA Natural Resource Council Oregon Watershed Basin.

Areas in Oregon (name of the river/river section, lake, city, county, watershed, dam, etc.) in which projects focus or have previously occurred (All responses as written by participant, some areas repeated if given by multiple participants)	**USDA NRC Basin(s)**
Columbia County, Oregon, and the Lower Columbia River	1
Nehalem River	1
Nestucca, Neskowin and Sand Lake watersheds	1
Columbia River Gorge National Scenic Area	2
Columbia Slough Watershed	2
Columbia Slough Watershed	2
Molalla-Pudding	2
The Columbia River Gorge	2
The Columbia River Gorge National Scenic Area	2
Tualatin River	2
Tualatin River Watershed	2
Tualatin River, Washington County, OR	2
Willamette River	2
Middle Fork Willamette Watershed, Upper Willamette River, Lane County	3
South Santiam River and tributaries	3
South Santiam Watershed (Linn County)	3
Willamette Basin	3
All watersheds in Curry County, Oregon, along with the Coquille and Coos watersheds.	4
Curry County - specifically the lower Rogue River (up to RM 55)	4
Douglas County/Umpqua Watershed	4
Rogue River Basin	4
Rogue River basin, southwest Oregon	4
Southwest Oregon (Coos Watershed)	4
Tenmile Lakes Oregon	4
The Middle and Upper Rogue River Basin (Josephine and Jackson Counties).	4
The Umpqua Basin	4
Central Oregon. Whychus Creek specifically but some in the Upper Deschutes	5

Areas in Oregon (name of the river/river section, lake, city, county, watershed, dam, etc.) in which projects focus or have previously occurred (All responses as written by participant, some areas repeated if given by multiple participants)	**USDA NRC Basin(s)**
Central Oregon. Rivers: Deschutes, Little Deschutes, Tumalo, Whychus, Crooked. Dams on Deschutes and Crooked rivers	5
Crooked River Watershed exclusively	5
Crooked River, Crook County, Oregon	5
Lower Deschutes River	5
Klamath	6
North and Middle Fork John Day Rivers	7
South Fork John day	7
Grande Ronde River and Imnaha River subbasins	8
Grande Ronde River Basin	8
Grande Ronde watershed	8
Union & Wallowa County, Specifically the Grande Ronde Basin focusing on the Grande Ronde River, Wallowa River, and Catherine Creek mainstems and tributaries.	8
All over Oregon	9
Statewide (Oregon).	9
Through our watershed work, we support restoration and conservation projects in source watersheds across Oregon and Washington, but we do not do direct work on the ground in watersheds.	9
Cascadia bioregion; Willamette, McKenize, Rogue, Umpqua, Columbia Rivers; Leaburg and Winchester dams	1,2,3
Lower Columbia, Mid-Columbia, Lower Snake, White Salmon, Hood, Lewis	1,2
Columbia River	1,2
Luckiamute and Ash Creek watersheds (southern Polk County and northern Benton County)	2,3
Willamette River	2,3

Appendix C: Select Open-Ended Responses

Question 14 “Other”: How effective do you consider the strategies you use?

1. The strategies are effective at incentivizing instream or floodplain restoration. For example, working with a landowner to upgrade their irrigation infrastructure in return for removing some of their floodplain areas from production for restoration. We are still unsure how much these efforts are contributing to more water in the river.
2. Community engagement, education, and advocacy are very effective and necessary.
3. 75% on the whole - we are getting our highest priority projects completed within the context of a working lands watershed.
4. Mostly very effective but a never-ending uphill battle.
5. Fairly effective.
6. Effective but limited do (sic) to the size of our waterways.
7. Effective given the collaborative nature of watershed councils working with willing landowners to restore the landscape at varying levels.
8. Quite effective.
9. Very.
10. Moderate.
11. Effective for our capacity and mission but may need to consider more flow conservation strategies in the future.
12. Generally effective. Depends on the goal of the specific program and campaign target.
13. I think our strategies work for us. We work specifically on the ground to create environmental uplift and climate resilience through habitat restoration.
14. With respect to dam removal and riparian restoration - very effective.
15. They are effective for the size of our organization. However, I'm looking to expand our capacity.
16. Very effective.
17. They are very effective with a range of benefits.
18. Effective but slow.
19. I think the strategies I employ in watershed restoration and management are effective, but that effect is hard to quantify because it is typically dispersed and variable across the landscape.
20. We don't use many of these directly, but we do counsel communities to include various water conservation/protection options. I don't know that they are very effective in general because our valuation system doesn't put an appropriate value on clean, fresh water. We need more systemic tools.
21. Mostly effective.
22. Effective in reaching private landowners.
23. For water management specifically? Define effective. From this list - we are focused primarily on habitat improvements - the work is targeted water quality benefits, but can also improve summer base flows and - with enough implementation - dampen peak flows and flashiness. That is effective to us, we just need to implement on a large scale.
24. Effective in educating the community and building stewardship, improving the watershed.
25. The wording of this question is odd because you say water management but the options include only options that are targeting water conservation and beneficial use. Water management has more broad strategies than you are providing here such as working with irrigation districts to manage water. We are challenged here because when we do any irrigation efficiency projects the savings are not functionally increasing flow, they are passed on to other district patrons. We consider most

projects water quality benefits more so than quantity. Though juniper removal to increase water availability is certainly the most cost-effective way that we manage water.

26. Only moderately effective - voluntary conservation is weak - regulators need to regulate and the DOJ needs to enforce penalties.
27. We are focused on land use in the Columbia Gorge National Scenic area, but water is integral.
28. Hard question-all listed strategies have utility and value based on the stakeholders/users you are working with.
29. For our goals and within our mandate, relatively effective.
30. Very effective and beneficially impacting our communities.
31. Very effective.
32. Effective within our legal statutes.
33. Limited.
34. The goal of the GRMW is to act as a coordinating entity within the GR Watershed to restore rivers within the GR basin. To that ends our partnership with other organizations has been our greatest strategy for accomplishing our mission. There is always room for improvement, but we find this to be very effective.
35. Effective, but with little to no scientific evidence.
36. Effective.
37. Moderately successful. Large-scale restoration is not the best option for multiple small landowners, more direct land/water purchase or greater easement incentives are more effective.
38. Very effective, depending on scale.
39. Somewhat effective. On a water right by water right basis, our approach is very effective. However, most of the projects we work on are small (in a relative sense) rights. So, it will take many transactions before the "uplift" adds up to effective conservation.
40. Usually effective after long term commitment to the cause.

Question 26: Do you have any additional thoughts or reactions to these questions you would like to share?

1. I think the real challenge is to balance water uses resulting in widespread benefits. We should be using our newer knowledge base to build better dams (fish passage designed in) and retain more water in watersheds in natural systems (floodplain recharge).
2. Water is life. One's relationship with water is so deeply personal and unique yet universally significant. Very difficult to place an adequate intrinsic value on something as invaluable as water in the context of the systemically colonized/discriminatory law and policy framework as it currently exists.
3. I don't care for the term monetary value, would think some other ranking system would be preferable.
4. Good Luck... ;)
5. Very skeptical of methods used to place monetary values on resources/values not regularly traded in markets for money. Arbitrary decisions on issues such as who (literally or hypothetically) holds the property right to start with dramatically effect the results. Also very skeptical of monetary values in general as a proxy for social welfare given issues such as varying levels of income/wealth (meaning a dollar spent by one person is more or less significant than a dollar spent by another).
6. I disagree with adding a monetary value to water, but I can understand why you would want to do that in our capitalist economy and when working with capitalists, but ultimately adding a monetary value to water could lead to water being the currency of the climate crisis.

7. Monetizing water use has benefits in certain contexts but there are situations where the cultural or ecological value of water may not be possible to quantify in monetary terms.
8. Water is a right for all living creatures and should never have monetary amounts assigned to it. That places it into capitalism which will never prioritize conservation over profits.
9. I have not thought of monetizing water before. I think it would be tricky because everyone values water in a different way. Who gets to say? The majority? The rich? The ecosystem?
10. This is a complex topic that is hard to answer in a categorical sense.
11. The questions above are vague; it's difficult to answer them because my answers are more nuanced than the multiple choice responses allow.
12. I'm not sure I understand what is meant by "cultural water use". It would also be helpful to have a better understanding what monetizing water would look like.
13. Whether to create monetary values for water depends on what the situation is. If you are proving cost-benefit ratios, the various values need to have a monetary value. But we don't need to make everything into a monetary value. Water, and other natural resources/processes are not easily valued monetarily, so we don't want to spend a lot of resources doing that if the job can be done by simply listing water benefits as co-benefits of a particular course of action. We need to be careful about jamming things that have intrinsic value, like water, into our spreadsheets when we don't have to. But using water for people does not necessarily mean other uses will benefit. They can, but it depends on how they are designed.
14. I don't understand enough about how a monetary value system would work to answer these questions. I am also largely answering for myself personally on the questions regarding monetary value rather than for the organize (sic) I work for. It would depend on how it is structured on how the watershed council would or would not get involved. Finally, our organization does not use many of the tools, but would look to (and hope) our partners at the Soil and Water Conservation Districts (SWCDs) and Natural Resources Conservation Service (NRCS through federal programs) would work on those programs. WE would happily refer landowners to those programs even if we are not implementing them ourselves.
15. I have not thought about a monetary value associated with water in the context of my work because that is not the way the system is set up so it feels hypothetical. However, as I was walking by the Deschutes river this weekend I was pleased to see all of the flow because irrigation season is over. I said to my husband that I wish that people who use water as a hobby had to pay more for it than people who farm. Living in the desert it is great to have ag production be viable but it is maddening to have the natural systems in decline because there are so many hobby farmers that over irrigate and destination resorts that water golf courses or water landscaping for aesthetics. Cultural values for tribes is great and should receive a higher monetary value but the cultural value of a Western rural way of life that supports people trashing their land so they can have a few animals is a wasteful use of our shared resources.
16. There is a portion of our society that only thinks in numbers/dollars, so this is a good strategy. It is worthwhile to consider a premium for those that create economic gain from use of the resource.
17. Ecological economics is a critical field that should be assigned to water.
18. Economics fundamentally are a short sighted approach to ecological processes that occur at a longer than human life span scale. Monetizing water uses will invariably miss some important ecological function and result in the gamifying of the system resulting in ecological damage, not benefit.
19. Monetizing water (and other ecosystem elements/systems) is tricky and nuanced. Some of the questions in this survey are worded in ways that I am not comfortable responding to. Monetizing elements of the natural world make partnering with Tribes, BIPOC and other historically underrepresented communities in this space very difficult. While I recognize some benefits to

commodifying elements of the natural world, I also have strong concerns about both the equity and the risk of unintended consequences from tying elements of the natural world to capitalistic systems.

20. I would say that proper management of water rights to adjust for issues such as historical overallocation and ensuring water quality are perhaps more important than assigning monetary values. Working with landowners to help shift their view away from practices such as flood-irrigation and creating more efficient water use has proven to be effective in reducing overall use without creating unnecessary confrontation or requiring water rights in exchange for assistance (though sometimes landowners are willing to make these agreements). We want to work with our community to ensure abundance and quality of water for all uses. It is worth noting that the majority of this work is completed by our partners since we as the coordinating entity within the GR Basin have oversight, but do not implement many projects on our own.
21. Managing resources for economic benefit in the short-term is not equal to long-term sustainable management. Resiliency in natural resource returns requires an understanding of the biology/hydrology that isn't necessarily recognized by purely economic interests. So poor decisions in the short-term economic interest may not take into account the hidden costs associated with overlooking the politics, culture, aquifer depletion, wetland benefits, water quality benefits, recreational benefits, etc.
22. Have direct experience with difficulty of assigning monetary value to complex biological/ecological values that have few or no metrics. As result economic analysis of such things tend to underestimate value.
23. My equivocation on monetizing uses/ intrinsic values of water relate to difficulties I see in assigning monetary values to many uses and values.

Appendix D: Participant Demographics

How long have you worked in environmental conservation?	**%**	**Count**
Less than a year	4%	2
1-5 Years	20%	11
6-10 Years	16%	9
11-15 Years	14%	8
16-20 Years	16%	9
21-30 years	25%	14
30+ Years	5%	3
Educational Background (7 options, can select more than one)	**%**	**Count**
High School / GED	8.97%	7
Associate's Degree / Trade School	2.56%	2
Bachelor's Degree	37.18%	29
Master's Degree	28.21%	22
Doctoral Degree	7.69%	6
Informal / On-the-Job Training	5.13%	4
Other Certification Course(s)	10.26%	8
Age Range	**%**	**Count**
18-25	3.57%	2
26-39	33.93%	19
40-44	14.29%	8
45-57	26.79%	15
58-65	19.64%	11
66+	1.79%	1
Gender Identity	**%**	**Count**
Male	40.00%	22
Female	58.18%	32
Non-binary / third gender	1.82%	1
Race/Ethnicity	**%**	**Count**
White/European Descent	81.97%	50
Black/African American	1.64%	1
Hispanic and/or Latinx	6.56%	4
Asian/Asian American	3.28%	2

Native American/First Nation	1.64%	1
Middle Eastern/North African	0.00%	0
Southwest/Central Asian	1.64%	1
Native Hawaiian/Pacific Islander	0.00%	0
Mixed Race/Multiracial/Biracial	3.28%	2
What is/are your current role(s) or responsibilities?	**%**	**Count**
Administrative	12.80%	27
Advocacy	9.48%	20
Board Member	3.32%	7
Fieldwork	12.80%	27
Finance	6.16%	13
Fundraising	13.74%	29
Education	8.53%	18
Lawyer/Legal Consulting	1.90%	4
Management	18.01%	38
Scientist	7.11%	15
Other:	6.16%	13
Water policy (state and federal)		
Restoration Project Manager		
Events		
Restoration Biologist		
Grant Writer/Planner		
Volunteer management		
Founder, past Executive Director of Coalition for the Deschutes; continued involvement in water issues		
Business owner		
Programmatic work - helping communities plan for climate change, which is heavily focused on water quality and quantity across the West.		
Community Partnerships		
IT Management, Remote Pilot, Network/Database/Website Manager, Geographic Image Processing.		
Director		

Appendix E: Organizations Receiving the Survey Link

Organization Name	Council	Budget (in $1k)
Bark	N	$ 765
Beyond Toxics	N	$ 473
Cascadia Wildlands	N	$ 607
Coalition for the Deschutes	N	$ 51
Coast Range Association	N	$ 84
Columbia Riverkeeper	N	$ 2,200
Curry Watersheds Nonprofit	N	$ 73
Deschutes River Alliance	N	$ 327
Deschutes River Conservancy (DRC)	N	$ 1,900
Friends of Netarts Bay Watershed Estuary Beach and Sea Webs	N	$ 102
Friends of the Columbia River Gorge	N	$ 1,900
Geos Institute	N	$ 456
Grande Ronde Model Watershed Foundation	N	$ 1,700
Human Access Project	N	$ 207
Klamath Watershed Partnership	N	$ 641
Klamath-Siskiyou Wildlands Center	N	$ 888
Lomakatsi Restoration Project	N	$ 4,000
Middle Rogue Steelheaders	N	$ 34
Oregon Water Resources Congress	N	$ 528
Partnership for the Umpqua Rivers	N	$ 1,500
Rogue Basin Partnership	N	$ 441
Salmon-Safe	N	$ 703
Sandy Drainage Improvement Company	N	$ 1,100
South Umpqua Rural Community Partnership	N	$ 138
Sprague River Water Resource Foundation	N	$ 144
The Central Oregon Flyfishers	N	$ 23
The Freshwater Trust	N	$ 9,800
The Wetlands Conservancy (TWC)	N	$ 521
Tillamook Estuaries Partnership (TEP)	N	$ 1,700
Tualatin Riverkeepers	N	$ 383
Upper Klamath Water Users Association	N	$ -
Water for Life Foundation	N	$ 115
Waterwatch of Oregon	N	$ 938
Western Rivers Conservancy	N	$ 9,000
Willamette Partnership	N	$ 1,200
Willamette Riverkeeper	N	$ 1,100
World Salmon Council	N	$ 85
Alsea Watershed Council	Y	$ 0
Applegate Partnership and Watershed Council	Y	$ 541
Bully Creek Watershed Coalition	Y	
Calapooia Watershed Council (CWC)	Y	$ 672
Clackamas River Basin Council	Y	$ 1,000
Coast Fork Willamette Watershed Council	Y	
Columbia Slough Watershed Council	Y	$ 470
Coos Watershed Association	Y	$ 1,500
Coquille Watershed Association	Y	$ 2,200
Crooked River Watershed Council	Y	$ 320
Ecola Creek Watershed Council	Y	
Elk Creek Watershed Council	Y	$ 258
Elk/Sixes River Watershed Council	Y	
Euchre Creek Watershed Council	Y	
Floras Creek/New River Watershed Council	Y	
Gilliam-East John Day WC	Y	
Glenn-Gibson WC	Y	
Greater Oregon City Watershed Council	Y	$ 79

Organization Name	Council	Budget (in $1k)
Greater Yamhill Watershed Council	Y	$ 47
Harney County Watershed Council	Y	$ 1,500
Hood River Watershed Group	Y	
Hunter Creek/Pistol River WC	Y	
Illinois Valley WC	Y	
Johnson Creek Watershed Council	Y	$ 666
Lake County WC	Y	
Long Tom Watershed Council	Y	$ 1,400
Lower Columbia River WC	Y	
Lower Nehalem Watershed Council	Y	$ 403
Lower Rogue & South Coast WC	Y	
Lower Rogue WC	Y	
Lower Willow Creek Working Group & Malhuer WC	Y	
Luckiamute Watershed Council	Y	$ 426
Malheur Watershed Council	Y	$ 803
Marys River Watershed Council	Y	$ 239
McKenzie River WC	Y	
Midcoast Watersheds Council	Y	$ 371
Middle Fork Willamette Watershed Council (MFWWC)	Y	$ 427
Molalla River Watch (Molalla River Watershed Council)	Y	$ 215
Necanicum Watershed Council	Y	$ 124
Nestucca Neskowin and Sand Lake Watershed Council	Y	$ 973
Network of Oregon Watershed Councils	Y	$ 329
North Coast Watershed Association	Y	$ 140
North Fork John Day Watershed Council (NFJDWC)	Y	$ 989
North Santiam Watershed Council	Y	$ 283
Oswego Lake Watershed Council	Y	$ 84
Owhyee Watershed Council	Y	$ 756
Pacific Rivers Council (PRC)	Y	$ 319
Powder Basin Watershed Council	Y	$ 224
Pudding River Watershed Council	Y	$ 85
Rogue Basin Water Users Council	Y	$ 144
Rogue River Watershed Council	Y	$ 818
Salmon Drift Creek Watershed Council	Y	$ 159
Sandy River Basin Watershed Council	Y	$ 1,100
Scappoose Bay Watershed Council	Y	$ 116
Siuslaw Watershed Council	Y	$ 810
Smith River Watershed Council	Y	$ 509
South Fork John Day Watershed Council	Y	$ 537
South Santiam Watershed Council (SSWC)	Y	$ 256
Tillamook Bay Watershed Council	Y	$ 172
Tryon Creek Watershed Council	Y	$ 78
Tualatin River Watershed Council	Y	$ 273
Umatilla Basin Watershed Foundation	Y	$ 292
Upper Deschutes Watershed Council (UDWC)	Y	$ 918
Upper Nehalem Watershed Council	Y	$ 350
Walla Walla Basin Watershed Council	Y	$ 1,200